Bahaaeddin Alareeni
Islam Elgedawy   *Editors*

AI and Business, and Innovation Research: Understanding the Potential and Risks of AI for Modern Enterprises

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Bahaaeddin Alareeni · Islam Elgedawy
Editors

AI and Business, and Innovation Research: Understanding the Potential and Risks of AI for Modern Enterprises

Editors
Bahaaeddin Alareeni [ID]
Middle East Technical University
Kalkanlı, Güzelyurt, KKTC, Türkiye

Islam Elgedawy
Faculty of Computer Science
and Engineering
AlAlamein International University
Alexandria, Egypt

Preface

We are thrilled to present this edited book titled *AI and Business, and Innovation Research: Understanding the Potential and Risks of AI for Modern Enterprises.* In an era defined by rapid technological advancements, artificial intelligence (AI) has emerged as a transformative force that is reshaping the way modern enterprises operate and innovate.

This compilation represents the collective efforts of esteemed scholars and experts who have joined forces to explore the intricate relationship between AI, business, and innovation. The book aims to provide readers with a comprehensive understanding of the potential and risks associated with AI adoption in modern enterprises.

AI technologies, with their ability to analyze vast amounts of data, recognize patterns, and make autonomous decisions, have the power to revolutionize industries, drive growth, and create new opportunities. However, with this immense potential comes a need for a deep understanding of the risks and ethical considerations that accompany AI integration. This edited book seeks to address these critical aspects and equip readers with the knowledge and insights necessary to navigate the complex AI landscape.

The chapters within this book cover a wide range of topics, examining the multi-faceted dimensions of AI's impact on various aspects of business and innovation. From strategy and operations to customer experience and product development, the contributing authors explore real-world case studies, research findings, and expert insights to illustrate the transformative power of AI in diverse organizational contexts.

We would like to express our gratitude to the contributors who have generously shared their expertise, research findings, and insights in this book. Their diverse backgrounds and experiences have enriched the content, providing readers with a holistic understanding of the subject matter. We would also like to extend our appreciation to the readers for their interest in this book and their commitment to exploring the potential of AI in business and innovation.

We hope that this book serves as a valuable resource for professionals, academics, and students who seek to understand the transformative potential of AI for modern enterprises. Our intention is to inspire readers to embrace the opportunities presented by AI while navigating the associated risks in a responsible and ethical manner.

May this book ignite curiosity, foster thought-provoking discussions, and stimulate further research and innovation in the realm of AI and its impact on business. Let us embark on a journey to understand the potential and risks of AI, unlocking new avenues of growth, driving innovation, and shaping a future where AI and business thrive in harmony.

Kalkanlı, Türkiye   Bahaaeddin Alareeni
Alexandria, Egypt   Islam Elgedawy
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Judith Flores-Albornoz [ID], **M. M. Nirmala, K. P. Jaheer Mukthar** [ID]**,
Edwin Asnate-Salazar** [ID]**, Edwin Hernan Ramirez** [ID]**, and V. Raju**

Abstract This research paper aims to explore the challenges faced by modern cities in terms of urban transportation and propose potential solutions to address these issues. The paper identifies key problems such as traffic congestion, air pollution, inadequate public transportation, and inefficient infrastructure. Various strategies and technologies are discussed, including the promotion of sustainable transportation modes, the implementation of smart city initiatives, the integration of autonomous vehicles, and the development of innovative mobility solutions. The paper concludes by emphasizing the need for a holistic and collaborative approach involving policy-makers, urban planners, transportation experts, and the public to unlock the solution for urban transportation woes.

Keywords Urban transportation · Bus rapid transit · Challenges · Rural people

1 Introduction

Urban transportation is a critical issue plaguing modern cities around the world. With rapidly growing populations, increasing congestion, and mounting environmental concerns, finding effective solutions to address the challenges of urban transportation has become more important than ever. The traditional reliance on private vehicles has led to traffic congestion, air pollution, and inefficient use of infrastructure [1]. However, by embracing innovative approaches and making strategic changes, cities can unlock the solution to these urban transportation woes.

J. Flores-Albornoz · E. Asnate-Salazar
Universidad Nacional Santiago Antúnez de Mayolo, Huaraz, Peru

M. M. Nirmala · K. P. J. Mukthar (✉) · V. Raju
Kristu Jayanti College Autonomous, Bengaluru, India
e-mail: jaheer@kristujayanti.com

E. H. Ramirez
Universidad Cesar Vallejo, Lima, Peru

With the rapid urbanization and increasing population density in cities worldwide, transportation has emerged as a critical aspect of urban living. The efficient movement of people and goods within cities is crucial for economic growth, social well-being, and environmental sustainability. However, the prevailing transportation systems are often struggling to keep pace with the demands and complexities of modern city life. Therefore, it is imperative to explore innovative solutions to address these urban transportation challenges effectively.

2 Research Objectives

The primary objectives of this research article are:

To identify and analyze the key challenges associated with urban transportation in modern cities.

To examine various technological innovations that can enhance the efficiency, safety, and sustainability of urban transportation.

To explore sustainable mobility options that promote public transportation, non-motorized transport, and shared mobility solutions.

To investigate effective urban planning strategies that can support seamless transportation networks, reduce congestion, and improve accessibility.

To present case studies highlighting successful urban transportation initiatives implemented in different cities.

To propose recommendations for policymakers, city planners, and transportation authorities to improve urban transportation systems and address the challenges faced by modern city dwellers.

3 Challenges of Urban Transportation

Population Growth and Congestion

Rapid urban population growth has resulted in increased traffic congestion, longer commuting times, and reduced overall mobility [2]. The escalating demand for transportation services has exceeded the capacity of existing infrastructure, leading to inefficiencies and frustrations for commuters.

Environmental Impacts

Urban transportation is a significant contributor to air pollution, greenhouse gas emissions, and noise pollution. The reliance on fossil fuel-powered vehicles and inefficient transportation systems has adverse effects on public health and the environment, necessitating the adoption of sustainable transportation alternatives [3].

Inadequate Public Transportation

Many cities struggle with inadequate and inefficient public transportation systems, characterized by limited coverage, overcrowding, and unreliable schedules Insufficient investment, poor infrastructure, and suboptimal service quality undermine the viability of public transport as a desirable alternative to private vehicle use [4].

Last-Mile Connectivity

The lack of convenient and efficient last-mile connectivity options poses a considerable challenge in urban transportation. The difficulty of accessing public transport stations or reaching final destinations from transit stops discourages commuters from utilizing sustainable modes of transportation [5].

Technological Innovations

Intelligent Transportation Systems

Intelligent transportation systems leverage advanced technologies, such as real-time data, sensors, and communication networks, to optimize traffic management, improve signal coordination, and enhance overall transport efficiency [6].

Ride-Sharing and On-Demand Services

Ride-sharing and on-demand services, facilitated by digital platforms, offer convenient and flexible transportation options that can reduce private vehicle ownership and congestion. Carpooling, ride-hailing, and micro-transit services provide efficient and cost-effective mobility solutions.

Electric and Autonomous Vehicles

The adoption of electric vehicles (EVs) can significantly reduce greenhouse gas emissions and improve air quality in urban areas. Additionally, the development of autonomous vehicles holds the potential for safer, more efficient transportation systems with reduced congestion [7].

Mobility-as-a-Service (MaaS) Platforms

Mobility-as-a-Service platforms integrate various transportation modes, such as public transport, ride-sharing, bike-sharing and scooter-sharing, into a single digital platform. MaaS offers travelers a seamless and convenient experience by providing real-time information, booking options, and payment integration, thereby promoting the use of sustainable and multimodal transportation.

Sustainable Mobility Options

Public Transportation Enhancements

Investments in improving and expanding public transportation infrastructure, including the development of efficient bus and rail networks, can encourage a shift from private vehicle use to public transport. Integration of smart technologies, such

as contactless payment systems and real-time passenger information, enhances the overall reliability and attractiveness of public transportation.

Non-Motorized Transportation Infrastructure

Creating safe and accessible infrastructure for pedestrians and cyclists, including dedicated lanes, bike-sharing systems, and pedestrian-friendly walkways, promotes active modes of transportation. Encouraging walking and cycling not only reduces traffic congestion but also promotes healthier and more sustainable urban lifestyles.

Carpooling and Car-Sharing Initiatives

Promoting carpooling and car-sharing programs incentivizes shared vehicle use, reducing the number of private vehicles on the road. By providing platforms and incentives for ride-sharing arrangements and facilitating car-sharing services, cities can optimize vehicle utilization and alleviate congestion [8].

Integration of Micro-Mobility Options

Micro-mobility solutions, such as electric scooters and bikes, offer flexible and environmentally friendly transportation options for short-distance trips. Integrating these micro-mobility options into existing transportation systems enhances the overall connectivity and accessibility within urban areas.

Effective Urban Planning Strategies

Transit-Oriented Development

Transit-oriented development focuses on creating compact, mixed-use neighborhoods centered on public transportation hubs. By integrating residential, commercial, and recreational spaces around transit nodes, cities can promote walking, cycling, and the use of public transport while reducing dependency on private vehicles.

Mixed-Use Zoning

Implementing mixed-use zoning policies that encourage the coexistence of residential, commercial, and recreational spaces within the same neighborhood reduces the need for long-distance commuting. This approach enhances accessibility and minimizes travel distances, thereby reducing congestion and transportation-related emissions.

Pedestrian-Friendly Infrastructure

Designing urban spaces with pedestrian-friendly features, such as wider sidewalks, pedestrian-only zones, and enhanced street crossings, prioritizes the needs of pedestrians and fosters walkable communities. Improved pedestrian infrastructure not only

promotes active transportation but also enhances the overall livability and vibrancy of urban areas.

Reducing Parking Requirements

By reducing parking requirements for new developments and implementing parking management strategies, cities can discourage private vehicle ownership and encourage the use of alternative modes of transportation. This approach frees up valuable urban space, reduces traffic congestion, and incentivizes the adoption of sustainable transportation options.

4 Case Studies

Curitiba, Brazil: Bus Rapid Transit (BRT) System

Curitiba's BRT system is recognized as a successful example of efficient and sustainable public transportation. By prioritizing dedicated bus lanes, integrating feeder routes, and implementing efficient fare collection systems, Curitiba has achieved high ridership and reduced private vehicle usage.

Amsterdam, Netherlands: Cycling Infrastructure

Amsterdam's extensive cycling infrastructure, including dedicated bike lanes, traffic-calming measures, and bike-friendly policies, has made cycling a preferred mode of transportation. The city's commitment to creating a safe and comprehensive cycling network has contributed to reduced congestion and improved air quality.

Singapore: Congestion Pricing

Singapore's Electronic Road Pricing (ERP) system has effectively managed traffic congestion by dynamically adjusting tolls based on real-time traffic conditions. By implementing congestion pricing, Singapore has successfully reduced traffic volumes, encouraged public transport use, and improved overall traffic flow.

5 Policy and Governance

Collaboration between Government and Private Sector

Effective urban transportation solutions require strong collaboration between government entities and the private sector. Governments can provide the necessary regulatory frameworks, incentives, and funding to support the development and implementation of innovative transportation solutions. Public–private partnerships can bring together the expertise, resources, and innovation necessary to address urban transportation challenges effectively.

Funding Mechanisms for Transportation Projects

Developing sustainable funding mechanisms is crucial for implementing transportation projects. Governments can explore various options such as public funding, user fees, congestion charges, and partnerships with private investors to secure the necessary funding for infrastructure development, maintenance, and operation.

Policy Interventions to Encourage Sustainable Transportation

Policy interventions play a crucial role in shaping transportation behavior and promoting sustainable alternatives. Governments can implement policies such as fuel efficiency standards, emissions regulations, incentives for electric vehicles, and land-use planning policies that prioritize public transportation and active modes of transportation.

Summary of Findings

This research article has highlighted the challenges faced by urban transportation systems in modern cities, including population growth, congestion, environmental impacts, inadequate public transportation, and last-mile connectivity issues. It has explored potential solutions, including technological innovations, sustainable mobility options, and effective urban planning strategies.

6   Suggestions

One key strategy is to promote alternative modes of transportation. Encouraging the use of public transit, cycling, and walking can reduce reliance on private vehicles, easing traffic congestion and reducing emissions. Expanding public transportation networks, creating dedicated cycling lanes, and improving pedestrian infrastructure are crucial steps.

Another important approach is implementing smart mobility solutions. Utilizing technology to optimize transportation systems can improve efficiency and reduce travel time. Intelligent traffic management systems, real-time public transit information, and digital platforms for carpooling and ride-sharing can make a significant difference.

Developing integrated transportation networks is also essential. Seamless connections between various modes of transportation, such as buses, trains, trams, and bicycles, make it easier for people to switch between them. Integrated ticketing systems and proper infrastructure integration contribute to efficient transfers.

Sustainable infrastructure plays a vital role as well. Building dedicated bus lanes, expanding bicycle infrastructure, and establishing charging stations for electric vehicles can make urban transportation more sustainable. Transportation hubs that integrate multiple modes of transport enhance convenience and efficiency.

Encouraging shared and electric mobility is another crucial aspect. Carpooling, ride-sharing, and bike-sharing services should be promoted, and incentives for electric vehicle adoption can be provided. Electric buses and public charging stations contribute to reduced emissions and improved air quality.

Implementing congestion pricing and parking policies can manage traffic flow. By discouraging private vehicle use during peak hours through pricing mechanisms, cities can reduce congestion and encourage alternative modes of transportation. Effective parking policies and smart parking solutions also play a role.

Fostering urban planning and mixed land use is important for reducing travel distances. Mixed-use developments that integrate residential, commercial, and recreational spaces can minimize the need for long commutes. Enhancing walkability and creating compact urban environments encourage active modes of transportation.

Data-driven decision-making is crucial. Analyzing travel patterns, congestion hotspots, and transportation demand can help optimize transportation systems. This leads to more effective policies and investments.

Lastly, promoting behavioral change through education and awareness campaigns is essential. Informing citizens about the benefits of sustainable transportation choices and their positive impacts on air quality, emissions, and physical health can encourage a shift in attitudes and habits.

7   Conclusion

Transport demand in most of the Indian cities has increased substantially due to increase in population as a result of both natural increase and migration from rural areas and smaller towns. Availability of motorized transport, increase in household income, and increase in commercial and industrial activities has further added to it. Unfortunately, public transport systems in Indian cities have not been able to keep pace with the rapid and substantial increase in travel demand. Rail based public transport services and well-organized bus transport services are limited to few big cities only. In urban area everyone has busy. So that public transportation playing their role as very effectively. Developed facilities also they are using. But it leads to increase rate of accident and pollution.

8   Scope for Future Research Directions

There is significant scope for future studies and research to address urban transportation challenges in modern cities. Exploring emerging technologies, such as autonomous vehicles and advanced data analytics, studying the potential of Mobility-as-a-Service platforms, and examining last-mile connectivity solutions are key areas of interest. Additionally, understanding the equity implications of transportation

systems, enhancing resilience to climate change, and promoting multi-modal integration are important avenues for future research. By considering behavioral insights, evaluating long-term planning and policies, and assessing social and economic impacts, we can unlock innovative solutions and create more sustainable and efficient urban transportation systems for the future.

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Development Challenges of Techno Parks in Small Open Economy States

George Abuselidze , **Olha Sylenko** , **and Olena Korotunova**

Abstract The existence of techno parks (startups) is very important for the economic development of the country; however, the important challenge of their development is financing issues, which is also one of the main challenges for Georgia. The aim of the paper is to discuss the problems of financing techno parks and to search for ways to solve them. The paper presents the foundations of the formation and development of the Techno Park, supporting programs, development prospects and its legislative regulation. Access to funding sources of Techno Park, pros and cons of supporting programs are also discussed. Significant attention is focused on the foreign experience of techno park supporting programs, their startup environment and funding opportunities. In the final part, it is suggested: taking into account the foreign experience, the ways of development that should be guided by the state, credit and other interested parties for the development of the startup ecosystem.

Keywords Techno parks · Startups · Development · SOE

1 Introduction

The presence of technoparks occupies an important place in the Georgian and world markets. Throughout centuries of history, people have tried to ease their work with new, innovative inventions that are still relevant today and help mankind to carry out many activities. There were people who made a big turning point in history, turned their ideas into startups and played an important role in shaping prosperity.

G. Abuselidze (✉)
Batumi Shota Rustaveli State University, Ninoshvili, 35, 6010 Batumi, Georgia
e-mail: george.abuselidze@bsu.edu.ge

O. Sylenko · O. Korotunova
National University "Zaporizhzhia Polytechnic", Zhukovskogo, 64, Zaporizhzhia 69063, Ukraine

Techno Park was first mentioned in 1976 in Forbes magazine, which was used to highlight the growing company (1976 Forbes 15 Aug). There are different opinions regarding the definition of Techno Park. According to Silicon Valley entrepreneur Steve Blank, Techno Park is a temporary organization used to find a repeatable and scalable business model [1]. According to Eric Ries, a techno park is an institution of people, created to receive a new product or service in conditions full of extreme surprises [2]. He believes that the value that a company creates is not directly related to the product itself, but to the people and the organization that they have created. Also, one of the definitions is offered by Paul Graham, the founder of Y combinator, according to whom Techno Park is a company based on rapid development. It doesn't matter if you're a new founder, if you're working on technology, if you've received venture capital, if you have a certain solution. The most important thing is how you develop.

All other factors related to the techno park derive from the definition—"STARTUP = GROWTH" [3]. According to Steve Blank [1], there are 6 different types of Techno Park:

1. Life startups: self-employed,
2. Small business startups: small income businesses for families,
3. Large-scale startups: startups with the potential to expand and become large companies,
4. Marketable startups: Designed for resale,
5. Startups of large companies: invent or die,
6. Social Startups: Mission—Making a difference.

As we can see, Techno park is related to different definitions, however, we can finally come to the conclusion that Techno park is a newly conceived innovative business idea, which should be transformed into a business and whose main goal is to make a social impact on the environment using a specific innovative business model and taking into account certain risks.

In the modern period, against the backdrop of high-tech development, a new, innovative techno park has a particularly important role, which is characterized by a greater growth trend and, accordingly, more products are created on the market. However, it is important to consider the fact that an idea is more than a startup, which is mainly due to lack of or insufficient funding and less experience of startups, which in turn leads to poor business management.

Techno parks have an important role in the economic and social development of the country. The experience of developed countries shows that their development is the result of the efforts of startups and entrepreneurs. The development of entrepreneurship contributes to the establishment of new companies, the creation of material wealth, the creation of new services, the reduction of poverty and, accordingly, economic and social development. To achieve this, politicians have developed different policies for the development of entrepreneurship in different countries in recent years. Some policies include encouraging people to become startups and create

additional products to market. Such policies mainly include tax incentives and project financing [4–14]. Project financing mainly refers to startups that aim to create a new product on the market [15–21].

2 Methods

The studies discussed in the paper are mainly based on statistical analysis. Based on various data, it is discussed what are the indicators of the financing of techno parks in Georgian and foreign markets; what kind of financing, supporting programs exist in general and specifically both in Georgia and in other countries. The paper also separates pros and cons of financing techno parks, ways to solve them and advice. The research used both Georgian and foreign literature, various data from the websites of Georgia and foreign countries, official data of techno parks supporting programs based on their official websites [22–29].

3 Results and Discussion

3.1 Legislative Regulation of Technopark Activities

According to the order of the Minister of Economy and Sustainable Development of Georgia dated June 29, 2016, within the framework of the promotion program for start-up enterprises (technoparks) by the Georgian Innovation and Technology Agency "On approval of the rules for financing projects", the total budget for project financing is 2,000,000 GEL, the sources of which are:

- Agency budget within 1,000,000 GEL,
- The budget of the partnership fund is within 1,000,000 GEL.

According to this order, the maximum amount of investment money that can be obtained by the start-up winning company is 100,000 GEL.

According to today's data, a total of 51 startups have been financed by the agency. Based on the data analysis, we can categorize the startups, divide them into groups and draw appropriate conclusions (Table 1).

According to the table, in the first group we can distinguish startups whose budget is more than 100,000 GEL, and in the second group we can assign startups with a budget of < 100,000 GEL. There are 31 startups in the first category of startups (4-year data), 15 of which received the maximum funding of 100,000 GEL, which is 29.4% of the total amount. This is a rather bad indicator from the point of view of both Startup Georgia and startups, because Startup Georgia fulfilled only 50% of its full plan (allocated financing 3,999,700 GEL, planned financing 8,000,000 GEL), and the startups failed to meet the financing criteria: innovativeness of the startup,

Table 1 Startups financed by "Startup Georgia"

The name of the startup	Startup budget		Investment redemption period
	Investment of startup Georgia	Other financing/own funds	
Holosseum-holographic museum	100,000 GEL	126,000 GEL	–
Eco build georgia (production of building materials)	100,000 GEL	77,200 GEL	7 years
Recycling of used tires	100,000 GEL	30,000 GEL	–
CARGOHUB-Cargon (transportation and logistics)	100,000 GEL	25,000 GEL	5 years
Eduroad	100,000 GEL	20,000 GEL	5 years
Enterprise of drones of artificial flying machines	100,000 GEL	15,000 GEL	–
Descom	100,000 GEL	15,000 GEL	
IRC (information technology)	100,000 GEL	15,000 GEL	5 years
Production of medical equipment	100,000 GEL	12,000 GEL	–
Georgian natural tea packed with innovative technology	100,000 GEL	12,000 GEL	5 years
Production of nitrogen-containing zeolitic fertilizer obtained by nanotechnology	100,000 GEL	11,500 GEL	5 years
Production of condensed milk with natural ingredients	100,000 GEL	11,200 GEL	–
Audio Guide Georgia	100,000 GEL	11,112 GEL	5 years
DR.Goods—production of medical textiles	100,000 GEL	–	–
My Georgia	99,000 GEL	11,000 GEL	–
BOS—electronic platform of business operating systems	99,000 GEL	11,000 GEL	5 years
Wingo	98,000 GEL	10,900 GEL	5 years
Production of organic-mineral fertilizers	96,000 GEL	4000 GEL	5 years
Personal advocate for truck drivers and visitors	95,000 GEL	10,000 GEL	–

(continued)

Table 1 (continued)

The name of the startup	Startup budget		Investment redemption period
	Investment of startup Georgia	Other financing/own funds	
Production of space-saving furniture	94,000 GEL	12,000 GEL	–
Covering wood surface with polymer material by electro-static method	93,500 GEL	12,000 GEL	–
Holo	90,000 GEL	10,000 GEL	–
Production of shoe soles	90,000 GEL	100,000 GEL	–
Construction with structural sandwich panels	90,000 GEL	10,000 GEL	5 years
Production of innovative decorative tiles and ceramic spatial bricks	90,000 GEL	10,000 GEL	4 years
Production of apple chips	90,000 GEL	20,000 GEL	5 years
Parking the vehicle in a vertical space	90,000 GEL	10,000 GEL	5 years
SATURN.GE	90,000 GEL	10,000 GEL	5 years
Digital laboratory	86,000 GEL	28,500 GEL	–
Insuranceshop.ge	86,000 GEL	11,500 GEL	–
Production of fellamush cubes	84,000 GEL	10,000 GEL	–
Micro-vegetable greenhouse	72,000 GEL	8000 GEL	5 years
Clinic online	70,000 GEL	10,000 GEL	5 years
I-Media Hub (telecommunications)	70,000 GEL	10,000 GEL	7 years
Polystyrene-concrete Lego block	68,000 GEL	30,000 GEL	–
Production of latex coated work gloves in Georgia	67,800 GEL	7600 GEL	–
Georgian toys factory	66,700 GEL	7500 GEL	6 years
Smart monitoring—GPS	66,000 GEL	10,000 GEL	–
Abiturienti.ge	62,000 GEL	7000 GEL	5 years
Screw	61,500 GEL	6840 GEL	5 years
Wehost	60,000 GEL	11,000 GEL	–

Table 1 (continued)

The name of the startup	Startup budget		Investment redemption period
	Investment of startup Georgia	Other financing/own funds	
Flow-type mobile wine processing unit	45,000 GEL	5000 GEL	–
Veggie press	45,000 GEL	5000 GEL	–
Production of decorative bricks of innovative design	40,000 GEL	4500 GEL	4 years
Gotrip	40,000 GEL	5000 GEL	–
Production of ceramic products processed with innovative technology	32,500 GEL	3700 GEL	7 years
Tripplanner	32,000 GEL	13,600 GEL	5 years
HR HUB	20,700 GEL	2300 GEL	–
Fly Wash Georgia	20,700 GEL	2500 GEL	5 years

Source Official website Startup Georgia: http://startup.gov.ge/ [15–17]

high technology, development trends, Profitability, etc. It is worth noting the fact that the first place among the funded is taken by the high-tech innovative startup—Holosseum hologram museum, which has a high trend of development and income. Startups of this type are rare in the market, and the demand is high from the point of view of interest in innovation, because such a trend makes art complex and more interesting—art and new technologies are combined, inaccessible works of art are digitized, which increases the interest of the customer, thus creating a prerequisite for income. The second and third places are occupied by startups working in the field of green economy, which are manufacturers, and therefore a lot of funding was needed to finance enterprise technologies. The development of green economy is important in today's conditions due to global threats.

Among the funded startups, it is important to group startups by field: 21 are digital technology companies (41%), 24 are manufacturing companies (48%), and 6 are in the service sector (11%). Despite unevenly distributed indicators, financing of manufacturing and digital technologies is currently a priority due to the country's technological underdevelopment and lack of production [18].

In the second group, in addition to Startup Georgia, the Georgian Innovation and Technology Agency (GITA) also has an important program for financing startups, which provides three categories of financing (Fig. 1):

1. 5000 GEL grants,
2. 100,000 GEL grants,
3. 650,000 GEL grants.

5000 GEL grants	100,000 GEL grants	650,000 GEL grants
- Thematic financing mechanism; - Goal: promoting the creation and development of startups; - 3 directions of funding: 1. Grant for creating a prototype 2. Event grant for the purpose of conducting events promoting innovations (hackathon, creathon, makeathon) 3. Travel grant - for participation in international events in the direction of innovations and technologies outside of Georgia.	- Goal: promotion of idea-based business development and entry into the international market; - consists of two components: innovative and high-tech component; - The project is evaluated by international Silicon Valley experts; - does not require financial participation of the applicant; - the agency remains a partner with a 5% share in the joint venture for a period of no more than 7 years; -Mentoring and coaching are provided.	- an entrepreneurial entity with at least 1 year of registration, with an annual turnover of up to 30 million; - Frequency of announcing the competition: always open, the results will be announced once a quarter; - Minimum requested grant - 150,000 GEL, maximum - 650,000 GEL; - Co-financing: at least 50% of the project budget Project duration: up to 24 months.

Fig. 1 Funding categories of the Georgian Innovation and Technology Agency (GITA). *Source* Georgian Innovations and Technologies [15–17]

The winners of the co-financing grants program of the Innovation and Technology Agency of the Ministry of Economy and Sustainable Development of Georgia in 2020 were awarded funding in the amount of 100,000 GEL each. The Georgian Innovation and Technology Agency announced the acceptance of applications within the framework of the World Bank's "Georgian National Innovation Ecosystem" (GENIE) project on November 8, 2019, where only 173 applications were received, of which 41 finalists were identified by specially selected experts for the co-financing program, who were prepared by invited specialists for the finals. The list of winning startups is as follows (Table 2).

Based on the analysis of the table, we can see that most of the startups funded by GITA are based on innovative digital technologies and artificial intelligence (AI) (75%), while the rest (25%) are high-tech enterprises [30]. Accordingly, we can draw the conclusion that priority is given to digital technologies and artificial intelligence, which is good on the one hand, and bad on the other, because less attention is paid

Table 2 Startups funded by the Georgian innovation and technology agency (GITA)

The name of the startup	Brief description of the startup	Funding
Transcorder optime	A product that will optimize "video transcoding"	100,000 GEL
SoloMoney	New system of "cash to card" and "card to card" payments	100,000 GEL
Gymstinct	Managing a fitness/wellness business using a cloud ERP system and smart devices	100,000 GEL
MyNannyServices	Virtual space for hiring babysitters	100,000 GEL
Ourwedding	A platform for generating holiday gift lists	100,000 GEL
Multilingual spellchecker	Multilingual grammar checker for different programs	100,000 GEL
Wenu	Digitization of paper menus, existing in the Horeka market	100,000 GEL
ANALYTICSON	A new platform for advertising and retargeting	100,000 GEL
Atime.io	A time planning tool for remote workers based on artificial intelligence	100,000 GEL
Zapa	An innovation to simplify information retrieval in e-commerce	100,000 GEL
20.ge	An innovative gifting platform	100,000 GEL
TYPLINE	Online space for queue management and selection of medical services	100,000 GEL
Multi	Inventory of supplies and fixed assets using a new method	100,000 GEL
Healthy snacks points	A healthy fragrance company	100,000 GEL
Smart-aeroponics	Innovative greenhouse farming	100,000 GEL
Kernel	Online financial management space for start-up businesses	100,000 GEL
Dataninja	An online space for website and ad management tools	100,000 GEL
H&Z	Treatment of diseases of bees, with homeotherapeutic means	100,000 GEL
Multifunctional self-cleaning window	Multi-functional, remotely controlled, self-cleaning window	100,000 GEL
Freeze tea	Iced tea factory	100,000 GEL

Source Grants Portal [15–17, 22–29]

to the field of production, which should be the opposite in the case of Georgia, production should be developed and Georgian products should be exported as well (wine tea already exported to the markets of China and the USA).

As for the categories of financing, we can highlight gaps: enterprises that have been in business for more than 1 year and their annual turnover is at least 30 million GEL do not need to be financed with a 650,000 GEL grant from the agency (they can take a bank loan or receive financing from an investor in exchange for owning shares), While this money can be used in other alternative startups that require funding at the initial stage and have a high potential for earning. As for the small grant of 5000 GEL, it is a very good thematic financing mechanism for the short term, however, it is insufficient for the creation of a prototype and for the purpose of carrying out an innovation event, it is necessary to mobilize and allocate more money for these categories, for example, if the budget allocated for the 650,000 GEL grant is used rationally, it can be redistributed to the other two categories for funding.

Unlike state programs, there are also the following programs for financing startups in the Georgian market:

1. USAID Georgia (US Agency for International Development) USAID ZRDA, which aims to finance innovative ideas in rural regions of the country, which are located on the borders of the occupied territories. In 2019, $500,000 was allocated within this program [19].
2. TBC Startup—a program supported by TBC Bank, in which startups can receive financial and non-financial assistance: loans, trainings, meetings, seminars. The purpose of the program is to stimulate young startups. Within the framework of the program, an innovative startup can receive financing of 200,000 GEL for a period of 7 years [20].
3. Bank of Georgia's Female Startup Program—this program was created in December 2016 and aims to stimulate female startups to implement innovative ideas. 25 million GEL financing was allocated for the project, and the financing limit was determined from 10 thousand GEL to 1 million GEL, for a period of 5 years, under exclusive conditions for each client [21].

These programs are a good mechanism for obtaining additional funding, independent of the state. These programs will help to solve such problematic issues as, in the case of USAID ZRDA, the issue of the territorial integrity of the country, and in the case of the female startup, the growth of the role of women in the business sector. As for the TBC startup and female startup, despite the fact that bank credit is one of the most accessible financing mechanisms, it is risky for new startups to take a loan, in case of unsuccessful development of the startup, they will not be able to borrow money from the bank.

The advantages and disadvantages between the financing of state programs and private economic institutions were highlighted. Grants received from state programs are "free", do not require the return of additional funds (Startup Georgia only has a redemption period for the investment) and the startup is independent in carrying out its activities, although as we mentioned, the state cannot ensure the full utilization of the budget and its rational distribution, accordingly, the number of those financed is

also small, which the state should take into account in order to finance more startups and distribute its own resources effectively. In addition, it is difficult to get a state grant, which is why not all startups can do it. As for bank financing, it is available to all startups that meet the given criteria, and obtaining financing is much easier. However, there is a downside, unlike government programs, startups in this case have to pay back the loan with their interest rate amount.

3.2 Prospects for the Development and Improvement of Startup Support Programs

The development and improvement of programs supporting startups is a priority for the state, for improving the welfare of the country, for which it is necessary to eliminate the disadvantages of these programs, improve these programs and finance more startups.

The first and main problem identified in startup support programs is, of course, the low number of funded startups. This is due to the uneven distribution of funds, as well as the lack of attracted investments. The main reason for this, of course, is the inappropriate investment environment. An investor is always interested in the existence of good programs and therefore, is ready to invest maximum in this program if it has good potential. Sometimes it happens that the distribution of funding is uneven, depending on the potential of the startups and the amount of funds needed to start the startup. A good example of this is startups that are based only on Internet resources and small software, which do not require special costs, but only human resources, knowledge and computer talent, which do not require additional cash. Such startups include, for example: Dataninja, Kernel, MyNannyServices, ANALYTICSON and other similar online platforms, which are funded by the Georgian Innovation and Technology Agency in the amount of 100,000 GEL each. Funding such startups is certainly good, but not with more money than is actually needed, when this money can be used in another alternative production project.

The second and also important problem is the lack of startup support programs in Georgia. The more support programs there are in the market, the more funding opportunities there are, and therefore the more funded startups there will be in the market. Currently, there are only five supporting programs on the market—Startup Georgia, Innovation and Technology Agency of Georgia, Bank of Georgia's "Female Startup", TBC Startup and USAID ZRDA. Which is really few and that's a problem for those looking for funding. It is necessary to create more startup hubs, business incubator centers, such as GITA—Georgian Innovation and Technology Agency. In addition to startup support programs, it is also important to get startup loans at preferential interest rates, which will help startups get additional cash.

The third disadvantage of programs supporting startups is the difficulty of obtaining financing. Finding support programs, and then going through all the stages, requires a lot of time and effort, and the end result is not always desirable. Most of

the startups do not get financing and in the end they are disappointed and have to look for other alternative financing, which as we mentioned is not enough in Georgia. This problem can be solved by giving startups more motivation to participate in other support programs and also with less funding in contrast to the winners. They will be motivated to continue their startup activities. An additional funding fund should be set aside for those who did not manage to win, and therefore, these costs should be used to train them as well as to provide a small amount of funding for their business. This problem can be solved by a fair distribution of funding, giving less funding to startups based on Internet platforms and funding startups in the manufacturing sector.

Considering and solving these problems is important because it is necessary to finance more startups, generate additional income and create jobs. All this will contribute to the economic development of the country, to attract more financial resources, interest of investors and, therefore, to create an economic state. In addition to attracting investors, it is important to use the budget rationally, to direct a large part of financial funds and grants not only to capital expenditures, but also to finance innovative ideas. By improving startup support programs, the startup ecosystem will improve, which will help generate more ideas and finance, which will also affect the country's economy.

4 Conclusions

Financing of startups is becoming more prioritized over time, both in Georgia and in the world, which is greatly contributed by the state's involvement in financing startups, in their promotion and therefore in the improvement of the startup ecosystem, which is certainly an area of interest of the state for improving the country's wellbeing. And for this, the state should ensure as much as possible the minimization of all problems in the funding sources of startups.

This paper discusses the issues related to the financing of startups, financing problems and ways to solve them, which the state should take into account to create a better startup environment. Startup financing problems were identified based on the discussion of various support programs and other funding sources. We identified startup support programs, in which shortcomings were identified, both in terms of their number and issues related to financing. We also discussed the availability of financing sources in Georgia, their types and shortcomings. We have identified the pros and cons of startup support programs, which must be considered and resolved for the development of the startup ecosystem.

We also touched upon foreign experience, examples of successful developing and developed countries in terms of startups, and the sources of financing available to them. Considering all these factors is important for improving startups through financing problems. First of all, it is necessary for the state to develop a policy that will contribute to the increase in the availability of funding for startups, and their regulation, control, and improvement of criteria should be done. For programs

supporting startups, it is necessary to establish criteria that force them to improve the mobilization and targeted use of funds (in the case of Startup Georgia, as we have seen, 50% of the planned budget was fulfilled). In addition to the regulations of support programs, it is also necessary to direct funding to innovative, technologically advanced startups rather than to capital projects (in 2019–2020, 79 and 75% of grants are directed to capital projects), it is necessary to balance them. The state should be able to attract more investments and use them in innovative and successful startups.

It is important to consider examples of foreign experience as well. As we have seen, Estonia is the best example for our country, as a developing country, which takes the leading position in terms of startups, and ranks first among developing countries, while Great Britain is second in the world and first in Europe in terms of startups. Their success, as we have seen, is due to the large number of sources of funding for startups in the market and, accordingly, their quality, which contributes to the improvement of the startup ecosystem.

Finally, we can conclude that it is necessary to increase the number and quality of funding sources in Georgia, taking into account the mentioned recommendations, as well as foreign experience, through the synthesis of examples of funding sources from different countries, which will significantly improve the startup ecosystem. There is a need to create funding sources such as "CROWDFUNDING" in Great Britain. It is also necessary to create more business incubators in different regions of Georgia (not only in the capital), which will increase the number of startups throughout the country. And most importantly, the state should ensure rational distribution and use of financial resources in innovative start-up projects, as well as control the activities of start-up support programs.

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Factors Affecting the Use of Telemedicine: An Empirical Analysis

Esmeralda Brati

Abstract The transition to telemedicine pandemic has expedited recently due to the COVID-19 pandemic, as a precautionary measure to reduce face-to-face interaction with healthcare professionals. The aim of this study is to employ Andersen's Model of Healthcare Utilization in order to identify the key factors that are associated with the utilization of telemedicine during the COVID-19 pandemic. This study aims to attain two main objectives, which are: firstly, to discern the advantages and barriers of adopting telemedicine; and secondly, to appraise the influence of socio-economic and socio-demographic factors in relation to the regular use of telemedicine by patients. The independent variables are categorized as the following: predisposing factors, enabling factors and need for care factors. From January to February in 2023, a cross-sectional survey was conducted. The total number of the online survey responses were 707, out of these, 171 (24.2%) reported to be user of telemedicine. To establish the correlation between telemedicine utilization and other independent variables a binary logistic regression model was used. The results show that there is a significant link between age, education, profession, region, and telemedicine utilization. Being a female, or aged between 30 and 50, having chronic diseases and using both virtual consultation and in-person visits with the doctors was associated with higher odds of telemedicine use. This study can potentially aid insurance companies in enhancing their knowledge and training pertaining to telemedicine. Through collaboration with policy makers, it is advisable to integrate education regarding insurance into the overall education program. Further research is needed to identify how telemedicine may reduce costs, as well as how optimal protocols can be constructed to enhance reimbursement mechanisms associated with said service.

Keywords Telemedicine · Andersen's framework · Covid-19 pandemic · Insurance

E. Brati (✉)
Department of Information and Intelligent Systems, University of New York Tirana, Tirana, Albania
e-mail: esmeraldabushi@unyt.edu.al

1   Introduction

The transition to telemedicine pandemic has expedited recently due to the COVID-19 pandemic, as a precautionary measure to reduce face-to-face interaction with healthcare professionals. Telemedicine is defined as "the use of advanced telecommunications technologies to exchange health information and provide healthcare services across geographic, time, social and cultural barriers [1]. In March 2020, the pandemic found our health system unprepared for such a large number of patients infected by Covid-19, and this forced a large part of Albanians to turn to private clinics and hospitals, paying staggering amounts to save their lives. Telemedicine had not yet been implemented in Albania before the pandemic, but was offered as a service in October 2021 by a private health insurance (Sigal). Telemedicine consultations can assist in upholding the continuity of healthcare for the wider community, particularly in situations where traditional face-to-face consultations are not practically feasible. Concurrently, telemedicine presents a potential solution to alleviate administrative workload by affording patients and healthcare providers the ability to arrange consultations and engage in virtual communication at their own discretion [2]. The availability of telemedicine services is likely to incentivize individuals to seek medical assessment in a timelier manner during the early stages of an illness, thus avoiding the consequences to their physical well-being and financial stability [3]. Virtual care, used in the form of phone calls, video meetings or remote monitoring of the patient can be a good substitute for physical visits to the doctor. This can significantly reduce health care costs especially for that population that has chronic diseases or who live in rural areas where the distance and time to go to the doctor is far [4]. The aim of this study is to employ Andersen's Model of Healthcare Utilization in order to identify the key factors that are associated with the utilization of telemedicine during the COVID-19 pandemic. This study aims to attain two main objectives, which are: firstly, to discern the advantages and barriers of adopting telemedicine; and secondly, to appraise the influence of socio-economic and socio-demographic factors in relation to the regular use of telemedicine by patients. This paper includes 6 sections. It starts with an introductory section providing a comprehensive definition of telemedicine, along with a discussion of the benefits it offers. The following section, the literature review focuses on the latest research endeavors related to telemedicine. Subsequently, the methodology section entails an explanation of the theoretical framework and the research methods that have been employed in this study. According to the findings derived from the binary regression analysis are included in results. In the discussion section, the outcomes of this study are juxtaposed with those of other researchers. The final section of this paper provides a comprehensive summary of the results obtained and their corresponding impact.

2 Literature Review

According to a global survey conducted in May 2021, a substantial 73% of participants reported that telemedicine experienced the largest growth during the pandemic [5]. Multiple studies have reported a notable surge in telemedicine utilization amidst the COVID-19 pandemic across the globe, including Canada and the United States. In Sweden, the employment of telemedicine technologies to establish communication between primary care physicians and their patients was reported to be as high as 95%. Similarly, in Switzerland, 81% of physicians employed comparable means, while in the United States, 79% of medical practitioners were observed to provide such service [6]. In their investigation, [7] found that several factors such as rural areas, patient demographics, and reimbursement regulations have significant impacts on health centers' choices with regard to the implementation of telemedicine. Cost, reimbursement, and technical issues were described as major barriers. According to the study [8] telemedicine use during the outbreak reaching 21.1% as compared to the pre-pandemic rate of 4.6%. The prominent determinants of telemedicine adoption were need-based circumstances and digital accessibility, rather than demographic factors such as age and income. Moreover, [9] found that telemedicine use increased with age, education level, and with family incomes and was highest in large metropolitan areas. The findings from the study [10] indicate that telemedicine implementation has the potential to augment the efficacy of healthcare provisions through the expedience of both time and cost savings associated with travel. Moreover, it has the potential to reduce the encompassing expenses of treatment, augment patients' standard of living, and expand access of vital healthcare provisions. Previous research has indicated that the only enabling factor linked to the application of telemedicine is the presence of multiple consistent healthcare providers. This observation may suggest that individuals in greatest need of medical attention are more receptive to novel modes of healthcare delivery. Lower educational attainment was less likely to report the utilization. The research findings in study [11] indicated that approximately fifty-eight percent of respondents agreed or strongly agreed that telemedicine will become an integrated aspect of routine clinical practice. Moreover, the participants of this study identified the need for additional education and training with respect to telemedicine, particularly in the context of consulting with clients. Rural, academic status, were not significantly associated with odds in the results of [12]. In addition, the results of study [13] shows that gender, race, age, and traveling distance were not associated with low telemedicine use. Furthermore, in the study of [14] older age was associated with a significantly lower odds and female gender was related with a higher odds of having a telemedicine experience.

3   Methodology

3.1   Theoretical Framework

The Andersen model of utilization of healthcare is used in this study as a conceptual framework to investigate variables related to the use of telemedicine in Albania during the COVID-19 pandemic [15]. Andersen's conceptual framework posits that the utilization of health services is determined by an individual's predisposing, enabling, and need-based factors (PEN) [16]. Many of the previous studies [15–19] describe the PEN as [17].

1. Predisposing variables including socio-demographic factors (age, gender, etc.) [18]
2. Enabling variables including socio-economic factors (income, region, waiting time)
3. The level of disease experienced and the reasons for seeking medical attention are referred to as the need for care [19]. The aim of this study is to identify factors associated with telemedicine using Andersen's Model of Healthcare Utilization.

Therefore, we hypothesize existence of predisposing, enabling, and need for care factors.

H_1: People who are older, female, with higher levels of education or been infected with Covid-19 were more likely to use telemedicine.
H_2: People who lived in urban area, in Center of Albania, who are employed, or with high income were more likely to use telemedicine.
H_3: People with chronic diseases, or unhealthy, or who used virtual consultation during pandemic were more likely to use telemedicine.

3.2   Methods

From January to February in 2023, a cross-sectional survey was conducted. The study's participation criteria included being an adult (older than 18) who is a user or non-user of telemedicine in Albania. This survey was conducted in connection to telemedicine and in particular to the "Teleshëndet" application. This application is part of telemedicine and makes it possible to communicate with the doctor online at any time. All data were collected through a self-administered questionnaire using convenience sampling. Out of 1200 distributed questionnaires, only 707 were returned completed. The questionnaire was designed in three parts. The first part includes questions about the frequency (in months) of using Telemedicine, technical problems that they may have occurred during online consultations, etc. The second part consists of questions related to health condition and pandemic Covid-19. The last part included personal socio-demographic and socio-economic characteristics. The present study utilized descriptive statistics for the purpose of providing an overview

of the sample characteristics. Furthermore, the study employed binary logistic regression in order to identify the factors that are associated with telemedicine utilization. The outcome variable was whether a respondent used telemedicine or not with (yes or no) being coded as 1 or 0, respectively. The choice of explanatory variables was based on the representation of the three distinct groups of characteristics, namely predisposing, enabling, and need factors. All data analyses in this study were performed using R program.

4 Results

The survey was completed by 707 people. Out of these, 171 (24.2%) reported to be user of telemedicine and 536 (75.8%) non-user of telemedicine. Overall, 58.4% of telemedicine users are women, which is higher percentage than men of 41.6%. Among telemedicine users, 70.7% were married and 57.3% were employed. Surprisingly, about 38% of the respondents who reported to use telemedicine have completed master's degree or more. Some of the technical problems that the respondents encountered while using telemedicine are: problems with the Internet (32.1%) and difficulty in using the application (15.7%). 95% of respondents of Telemedicine user agree that Telemedicine reduce the time and distance to went to the doctor for consultation and 70% think that the cost of telemedicine is less than visits in person to the doctor. Also, around 24.4% of respondents have been using telemedicine since 6 months, 23.8% since 1 year and 19.4% more than 1 year. Among of telemedicine service offered from insurance, Video and audio consultation was used by majority of the respondents 43.5%, followed by medical recipe 39.1% and check-up (24.2%). About 31% of respondents have used telemedicine once a month, 19% have used it twice a month, 18.4% used 3 times a month and 14.6% more than 3 times per month. Friends and relatives (33.1%) was the main source from which the respondents had received information about telemedicine, followed by media (25.6%) and agents of insurance companies (18.1%).

Table 1 shows the results of six items regarding the attitude towards the use of telemedicine. The results indicate that 70% of respondents have declared that virtual consultations with doctor are effective, 77% that would recommend the use of telemedicine to others, 84% have declared that doctors were polite during the online consultations and 74% that the utilize of telemedicine is an successful way to avoid corruption in medicine. Moreover, 52% have declared that replacing the in-person visits with virtual consultations is effective and 71% that the Covid-19 pandemic brought an increase in the use of telemedicine. The reliability of Cronbach's Alpha coefficient for all items included in the analysis is > 0.82, which is interpreted as good reliability.

Table 2 shows the results of binary logistic regression model. Based on the results of Table 2 we can conclude which of predisposing, enabling and need for care factors are related to the utilization of telemedicine in the binary regression model.

Table 1 Attitude regarding the use of telemedicine

Items	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	Cronbach's Alpha
Virtual consultations with doctor through telemedicine are effective	1.3%	7.5%	21.3%	38.1%	31.9%	0.83
I would recommend the use of telemedicine to my friends and relatives	2.5%	6.8%	13%	29.2%	48.4%	0.82
During online consultations, doctors are very polite and communicative	2.5%	1.3%	11.9%	23.9%	60.4%	0.84
The use of telemedicine is an effective way to avoid corruption in medicine	3.8%	5.7%	16.4%	17.6%	56.6%	0.84
It would be effective to replace in-person visits to the doctor with virtual consultations	9.9%	8.7%	28.6%	28%	24.8%	0.85
Telemedicine use increased as a result of the Covid-19 pandemic	3.1%	5.7%	19.5%	24.5%	47.2%	0.83

4.1 Predisposing Factors

Utilization of telemedicine was significantly related with a few factors: age ($p = 0.000$), education (0.043) and profession (0.000) Age group between 30 and 50 was positively related with telemedicine utilization [OR = 1.181, 95% CI: (0.644, 2.163)]. Female were reported to have higher probabilities of using telemedicine than males [OR = 1.272, 95% CI (0.799, 2.025)]. In the binary regression model, Albanians who were infected with Covid-19 [OR = 1.236, 95%CI (0.702, 2.177)] were more likely to use telemedicine services. Respondents who were professor had 3.731 high odds of reporting the utilization of telemedicine. Having a higher education and been married were not associated with telemedicine utilization. These findings partially support hypothesis H1 and are consistent with the results of [4, 14, 20], but inconsistent with results of [9].

Table 2 Results of binary logistic regression model

Variables	Odds ratio	95% conf. interval	Coefficient	*p*-value
Predisposing factors				
Age				
18–30 (ref)	1.000			
30–50	1.181	(0.644, 2.163)	− 1.039	0.0052
Over 50+	0.093	(0.043, 0.201)	− 1.375	0.0004
Gender				
Male (ref)	1.000			
Female	1.272	(0.799, 2.025)	0.241	0.309
Education				
High school or less (ref)	1.000			
Bachelor degree or more	0.561	(0.320, 0.983)	− 0.576	0.043
Marital status				
Unmarried (ref)	1.000			
Married	0.652	(0.381, 1.117)	− 0.427	0.119
COVID-19 susceptibility				
Uninfected (ref)	1.000			
Infected with Covid-19	1.236	(0.702, 2.177)	0.212	0.461
Profession				
Others (ref)				
Doctor	0.430	(0.174, 1.061)	− 0.843	0.067
Economist	1.475	(0.766, 2.841)	0.389	0.244
Professor	3.731	(1.732, 8.034)	1.316	0.0007
Architect	1.595	(0.699, 3.637)	0.467	0.266
Family size				
< 4 persons (ref)	1.000			
4 persons	1.023	(0.630, 1.661)	0.023	0.924
More than 4 persons	1.158	(0.684, 1.958)	0.146	0.584
Enabling factors				
Net monthly income				
More than €1000 (ref)	1.000			
< €500	0.513	(0.248, 1.062)	− 0.665	0.072
€500–€1000	0.736	(0.370, 1.462)	− 0.306	0.381
Employed status				
Unemployed (ref)	1.000			
Employed	0.529	(0.262, 1.064)	− 0.636	0.074
Region				
North (ref)	1.000			

Table 2 (continued)

Variables	Odds ratio	95% conf. interval	Coefficient	p-value
Center	0.431	(0.199, 0.934)	− 0.840	0.033
South	0.937	(0.493, 1.779)	− 0.064	0,843
Residences				
Rural (ref)	1.000			
Urban	1.763	(1.029, 3.020)	0.567	0.038
Health expenses during Covid-19				
More than €1000 (ref)	1.000			
< €100	0.749	(0.394, 1.423)	− 0.288	0.378
€100–€1000	1.015	(0.520, 1.827)	− 0.024	0.937
Sector				
Public (ref)				
Private	0.513	(0.317, 0.832)	− 0.665	0.006
Need for care factors				
Health				
Healthy (ref)	1.000			
Unhealthy	0.913	(0.585, 1.425)	− 0.090	0.689
Chronic condition				
No (ref)	1.000			
Yes	1.060	(0.629, 1.710)	0.041	0.868
Visits with the doctor during COVID-19				
In-person (ref)	1.000			
Virtual consultations	0.466	(0.291, 0.746)	− 0.759	0.001
Both	1.283	(0.688, 2.392)	0.247	0.440
LR chi-square (*df*)	19.58(8)			
Prob > chi^2	0.012			
% correctly classified	79.2%			
McFadden Pseudo-R^2	20.6%			

4.2 Enabling Factors

Living in urban area ($p = 0.038$), or in the central of Albania ($p = 0.033$), or working in the private sector ($p = 0.006$) were the enabling factor related with the utilization of telemedicine in the binary regression model, in part supporting hypothesis H2. Respondents who lived in an urban region had 1.763 times higher changes of reporting the use of telemedicine compared to those who lived in rural region. Individuals who reported to have spent 100–1000 Euro for check-ups and visits to doctors during the pandemic [OR $= 1.015$, 95% CI: (0.520, 1.827)] were more likely to use telemedicine service than other who have spent less than 100 Euro, this finding is consistent with

the results of [12]. Monthly income and employment status were not associated with telemedicine utilization. These results are consistent with the studies of [7] and [12] and inconsistent with some studies of [4] and [9].

4.3   Need for Care Factors

The only of need factors that is associated with telemedicine utilization is virtual consultations with doctors during pandemic ($p < 0.003$), partially supporting hypothesis H3. Self-rated health and chronic conditions were not associated with telemedicine utilization. About 45% of respondents have declared that have at least one chronic condition and 36.1% of telemedicine users had virtual consultations with the doctor during Covid-19, followed by in-person (12.2%) and both (22.8%). Respondents who had chronic condition were related with a higher likelihood of telemedicine utilization [OR = 1.060, 95%CI: (0.629–1.710)] compared to those who do not have chronic disease and for respondents who used both virtual and in-person consultation with the doctors during pandemic, the odds increased by 1.283 [CI: (0.688, 2.392)]. The results about chronic disease are consistent with the results of [4].

5   Discussion

Contrary to what we predicted, some of the factors were not significant in the binary regression model analyzing the use of telemedicine. Older age have very lower odds of telemedicine utilization this results are consistent with the studies of [13] and [20] which conclude that difficulties with technologies, smart-phone use, may play a role in this. According to study [21] the expanded utilize of telemedicine services among the younger age group indicate a gap in technical and digital education which should be tended to. In the same line with the results of [14] and [22], adequate technology, lack of training and knowledge among users and internet access are important factors for reducing barriers for telemedicine utilization. In this study, a higher percentage of respondents agreed that telemedicine reduced the time and distance to go to the doctor's appointment. Prior works of [12] have shown that saving travel time and transportation costs were significant benefits to telemedicine delivery. Moreover, according to the study [2], telemedicine may reduce health care expenditures and improve access to care for underprivileged groups. There are still many debates whether telemedicine should be a replacement or a supplement for face-to-face care. In our study the respondents somewhat agreed to replace the telemedicine with in-person consultations. This results is in accordance with the study of [11] and [23], saying that replacing telemedicine completely with face-to-face care is not reasonable and many clinicians believe that both face-to-face and telemedicine

modalities remain essential, and will presumably integrate into a hybrid model subsequent to the COVID-19 era. Including telemedicine services in the health insurance reimbursement system may be a solution to integrate telemedicine into health care system. Future work should examine the role of insurance status in implementing this service and how telemedicine and in-person care may work with each-other. The implementation of telemedicine in the health system will have a very positive impact on the developing countries, where the primary care service is not at the proper level and where corruption in medicine is high, compromising the provision of a quality and equal service for all. In this study, a higher number of respondents agreed that telemedicine can be considered as a way to reduce corruption and out of pocket payment. Moreover, 71% of respondents agree that telemedicine will be the trend of the future in the way medical consultations will be offered. This result is in the same line with the studies of [11] and [24], which maintain that in the upcoming years, telemedicine is anticipated to experience significant growth and could potentially become the new norm in routine practice for Community Health practitioners.

6   Conclusion

Telemedicine can help to bridge gaps in the existing health care system in Albania, by reducing out-of-pocket payments for primary health care. Using Andersen's Model, our findings show an important association between age, education, profession, region, employment sector (private or public) and telemedicine utilization. Being female, or aged between 30 and 50, or having chronic diseases and using virtual consultation was associated with higher odds of telemedicine use. This study has a few relevant limitations. Firstly, the questionnaire surveys shared online may also be subject to social desirability bias. The sample may not be representative of all populations of Albania because mostly of respondents were from central Albania and who lived in urban areas. Thirdly, this study identifies only some of the factors from Andersen's framework, but other factors can influence the telemedicine utilization. Despite these restrictions, this study can potentially aid insurance companies in enhancing their knowledge and training pertaining to telemedicine. Through collaboration with policy makers, it is advisable to integrate education regarding insurance into the overall education program. Further research is needed to identify how telemedicine may reduce costs, as well as how optimal protocols can be constructed to enhance reimbursement mechanisms associated with said service.

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Determinants of COVID-19 Mobile Advertising Acceptance Among Generation Z in Jabodetabek

Michael Christian , **Henilia Yulita** , **Eko Retno Indriyarti** ,
Suryo Wibowo , **and Sunarno Sunarno**

Abstract The advancement of digital technology and its applications has influenced user behavior, which varies depending on acceptance decisions. Looking back to when the trend of COVID-19 cases was still high, it is hoped that information about this case, including information about handling measures, can be widely utilized. Younger generations, such as Generation Z, are more open to accepting and even testing out new applications as members of the technology user community. This was also raised in this study, where it was determined that the determinants of receiving COVID-19 information in the form of mobile advertising for this group needed to be investigated. These determinants are built using the PLS-SEM framework paradigm. Quantitative research is conducted using surveys. The study included 170 Generation Z members from Jabodetabek who had seen COVID-19 mobile advertisements. According to the study's findings, generation Z favors the presence of mobile advertising. This group is unaffected by the environment's role in absorbing COVID-19 information via mobile advertising. This shows that while mobile advertising can provide benefits and entertainment, this group prefers to receive information. The use of sample criteria that are limited to one generation is one limitation of this study.

Keywords Digital technology · Mobile advertising · Generation Z

M. Christian (✉) · H. Yulita
Universitas Bunda Mulia, Jakarta, Indonesia
e-mail: michaelchristianid@gmail.com

E. R. Indriyarti
Universitas Trisakti, Jakarta, Indonesia

S. Wibowo
Indonesia International Institute for Life Sciences, Jakarta, Indonesia

S. Sunarno
Universitas Tama Jagakarsa, Jakarta, Indonesia

1   Introduction

Nielsen tracked 15 television stations, 161 print media outlets, 104 radio stations, 200 websites, three social media platforms, and billboards in Jakarta for its report, which revealed that advertising spending continued to rise in the first half of 2022 [1]. According to the, the public in Indonesia is increasingly accepting of mobile or digital-based advertising, particularly among the younger generations, such as generation Z. Individuals born between 1995 and 2009 comprise this generation [2]. This generation possesses several characteristics, including education and technology literacy, being innovative and creative [3, 4], being familiar with and using digital and social media [5], being principled in personal satisfaction, and being more sensitive to the social environment. Dolot [6] also confirmed that this generation prefers instant gratification, particularly when it comes to information technology.

Several previous studies have described studies on mobile ad acceptance, though research perspectives vary. For example, Nasution et al. [7] discovered that attitudes toward mobile advertising influenced acceptance of mobile advertising. On the other hand, it is explained that the benefits of mobile advertising have a significant relationship to the acceptance of mobile advertising [7, 8]. Furthermore, personal considerations regarding an advertisement's views, particularly in the form of a mobile advertisement, can form considerations in accepting the mobile advertisement itself [7–9]. Existing studies, however, only look at general or non-specific advertising audiences. The importance of this research lies in determining the reception of mobile advertising among Generation Z. Aside from being scientifically necessary, additional studies are also practically necessary so that businesses can better understand the factors considered by the generation Z audience when receiving product or service information in the form of mobile advertising. One of the challenges that the government faced during the COVID-19 pandemic was the community's rapid adoption of accurate COVID-19 information in order to raise awareness and knowledge [10].

The structure of this study consists of the research background in the first section, the conceptual framework of the literature and the hypotheses and paradigms proposed in the second section, the technical and analytical methods used, the presentation of results and discussion, and a concluding conclusion.

2   Literature Review and Hypothesis Development

2.1   Attitude Toward Mobile Advertising

Bringing back Varnali and Toker's perspectives [11], one of the most popular investigative topics is the acceptance or adoption of mobile-based marketing, which is also related to the theory of reasoned action (TRA). This view focuses on the increase in efforts to accept mobile advertising based on a review of the literature [12]. Attitudes are fundamentally linked to emotions, which are defined as individual psychological

evaluations of specific objects or behaviors [13]. Several subsequent studies have demonstrated that attitudes toward and acceptance of mobile advertising are positively correlated [12, 14–20]. In other generations, such as generation Z, attitudes are more open to information but also picky [21, 22]. Based on the preceding explanation, this study proposes the following hypothesis (H): **H1:** Attitudes toward mobile advertising have a significant impact on acceptance of mobile advertising.

2.2 Subjective Norms

Subjective norms are an individual's perceptions of social pressures that influence specific behaviors. Before taking any action, people usually consider their own reference group or social context [13, 23]. Studies on mobile advertising have discovered a significant relationship between subjective norms and acceptance of mobile advertising. Subjective norms play an important role in adoption behavior in Norway due to the superiors' social pressure [24]. Pressure to conform to group norms, combined with a desire to be included in a reference group, has a direct and positive influence on acceptance of new technology [25–27]. Nwagwu and Famiyesin's [28] study reported that this norm can develop a positive outlook as long as other members communicate positive experiences with mobile advertising. The following hypotheses are proposed: **H2:** Subjective norms significantly influence mobile advertising acceptance; **H3:** Subjective norms have a significant influence on attitudes toward mobile advertising; and **H4:** Subjective norms mediated by attitudes toward mobile advertising have a significant influence on mobile advertising acceptance.

2.3 Perceived Utility of Mobile Advertising

Acceptance of mobile marketing is more likely when it satisfies the needs of individuals for information, entertainment [14]. The researchers discovered a strong link between consumers' perceived benefits and their acceptance of this type of advertising [8]. Similarly, recent studies [14, 17, 29–33] make the assumption that perceived benefits are highly relevant in forming attitudes toward mobile advertising. People are more likely to accept mobile advertising if it is proven to save time and money, provide users with useful information, and facilitate an entertaining experience [34]. As a result, the following hypothesis is advanced, **H5:** Mobile advertising's perceived utility significantly influences attitude toward mobile advertising; **H6:** Mobile advertising's perceived utility significantly influences acceptance of mobile advertising mediated by attitude toward mobile advertising.

2.4 Personal Relevance of Mobile Advertising

The impact of this variable is determined by the value that consumers will receive. When assessing the overall merits of mobile advertising as a communication method, consumers tend to consider their own circumstances [30, 35, 36]. According to the researchers, personally relevant offerings explain that a person's purchase decision can be influenced by location-based mobile services that are available at any time. Such synchronicity had a positive effect on his mind [8]. The next hypothesis proposed is as follows, based on the existing explanations: **H7:** Personal relevance influences attitudes toward mobile advertising; **H8:** Personal relevance influences acceptance of mobile advertising mediated by attitudes toward mobile advertising.

2.5 Research Conceptual Framework

This study proposes a research paradigm (Fig. 1) based on the theoretical concepts and hypothesis development described above.
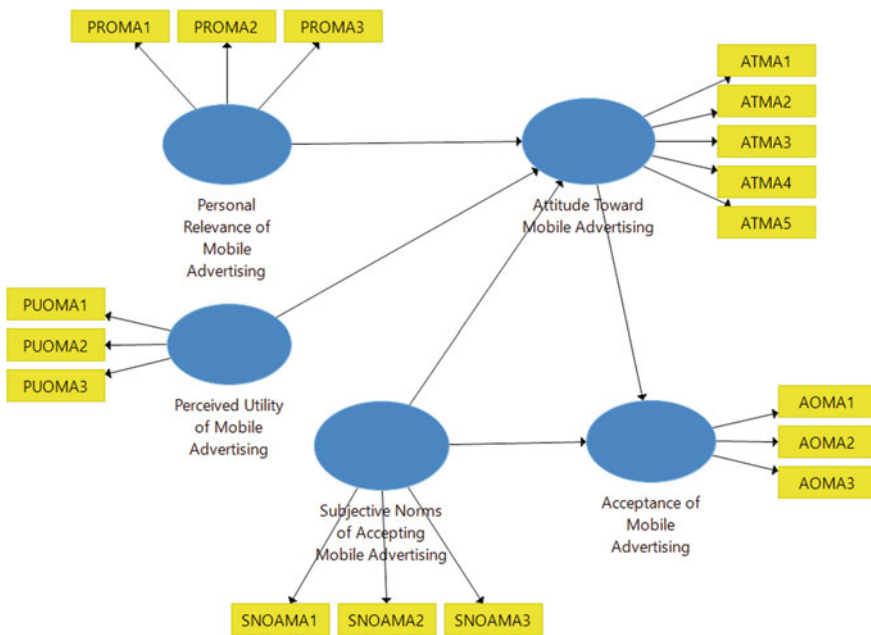
Fig. 1 Research conceptual framework

3 Methods

This quantitative study used a survey method to collect data, with questionnaires distributed at random online. Each variable was represented by an indicator in the questionnaire. In this study, indicators were measured using a Likert scale with a scale of 1 (strongly disagree) to 5 (strongly agree). Acceptance of mobile advertising consists of three items: accepting mobile advertising as a means of communication about COVID-19; being willing to receive information about COVID-19 through mobile advertising; and reading all messages about COVID-19 through mobile advertising) [7–9]. There are five items in the attitude towards mobile advertising variable [7, 9, 37]. Additionally, the variable perceived utility of mobile advertising consists of three items [7, 8]. There are three subjective norms of accepting mobile advertising [7, 9]. The personal relevance variable in mobile advertising is made up of three items [7, 8].

With an unknown population size, the sample size was calculated by multiplying the number of indicators by 5 (the smallest sample size) to 10 (the largest sample size) [38–42]. In this study, the sample size was determined to be up to 170 samples with inclusion criteria, namely generation Z in Jabodetabek who had seen public service advertisements regarding COVID-19 information via smartphones, both submitted by the government and the private sector. Individuals born after 1995 comprise this generation [43]. This study analyzes data using SEM-PLS modeling with SmartPLS. Cronbach's alpha (CA) and composite reliability (CR) values > 0.7 are used in the reliability test, while outer loading (OL) values > 0.7 and average variance extracted (AVE) values > 0.5 are used in the validity test [44–46]. The model's fit was evaluated using the saturated root mean square (SRMR) 0.01 and the normal fit index (NFI), both of which must be close to 1 [47, 48]. This study uses R2 results to determine the coefficient of determination (0.5 = weak; 0.5 = moderate; > 0.75 = strong). The next analysis is the hypothesis testing analysis, which is based on p-values where p is 0.05 [22, 49–52].

4 Results and Discussion

4.1 Profile of the Participants

In this study, 170 participants from the Z generation who had seen advertisements for COVID-19 via mobile were 94 men (55.29%) and 76 women (44.71%). The participants were spread across the Jabodetabek sub-region, with 48 (28.24%) in Jakarta, 28 (16.47%) in Bogor, 24 (14.12%) in Tangerang, and 39 (22.94%) in Bekasi. In terms of COVID-19 advertisements, participants saw them on smartphones running the Android operating system (137 participants, 80.59%) and iOS (33 participants, 19.41%).

4.2 PLS-Algorithm and Coefficient of Determination

Acceptance of mobile advertising, CA = 0.759, CR = 0.862; attitude toward mobile advertising, CA = 0.847, CR = 0.891; perceived utility of mobile advertising, CA = 0.785, CR = 0.875; personal relevance of mobile advertising, CA = 0.734, CR = 0.849; subjective norms of accepted mobile advertising, CA = 0.769, CR = 0.867. In addition, the validity test in this study looks at the results of OL items with values > 0.7 and average variance extracted (AVE) items with values > 0.5. On the acceptance of mobile advertising (AOMA) variables, attitude towards mobile advertising (ATMA), personal relevance of mobile advertising (PROMA), perceived utility of mobile advertising (PUOMA), and subjective norms of accepted mobile advertising (SNOAMA), each OL shows a value > 0.7, (AOMA1 = 0.778; AOMA2 = 0819; AOMA3 = 0.865; ATMA1 = 0.763; ATMA2 = 0.799; ATMA3 = 0.818; ATMA4 = 0.796; ATMA5 = 0.761; PROMA1 = 0.703; PROMA2 = 0.877; PROMA3 = 0.838; PUOMA1 = 0.878; PUOMA2 = 0.819; PUOMA3 = 0.810; SNOAMA1 = 0.880; SNOAMA2 = 0.814; SNOAMA3 = 0.786). Based on these results, it can be concluded that the items and variables in this study are valid. In this study, the coefficient of determination is 0.537 for acceptance of mobile advertising and 0.795 for attitude toward mobile advertising. According to these findings, the exogenous variables in the study contribute a total of 53.7% (moderate) to measuring the acceptance of mobile advertising. Furthermore, exogenous variables account for 79.5% (strong) of the total contribution when measuring attitudes toward mobile advertising in this study.

4.3 Hypothesis Test

This study examines the *P* value results when testing the hypothesis; if the *P* value is 0.05, the hypothesis is accepted, and vice versa. According to Table 1, four of the five hypotheses with direct effects are accepted and one is rejected. Furthermore, two of the three hypotheses with indirect effects were accepted, while the third was rejected.

According to this study, attitudes toward mobile advertising have a significant impact on mobile advertising acceptance. Attitude, also known as emotion, is explained as a person's psychological assessment of specific objects or behaviors [13] which can be expressed in positive or negative forms, such as like-dislike, harmful-beneficial, or pleasant-unpleasant [53–55]. In the context of mobile advertising, generation Z has a favorable attitude toward accepting COVID-19 advertisements via mobile advertising. Mobile advertising will benefit from cognitive and affective responses, which will play a significant role in its adoption [12]. The ease with which advertisements can be accessed via smartphones and other mobile devices increases advertising acceptance [56]. This emphasizes that generation Z has a behavior that is both literate in information technology and spontaneous, preferring

Table 1 Hypothesis test

Path	Standard deviation	P-Value	Remark
ATMA to AOMA	0.050	0.000	H1 accepted
SNOAMA to AOMA	0.055	0.005	H2 accepted
SNOAMA to ATMA	0.040	0.372	H3 rejected
SNOAMA mediated by ATMA to AOMA	0.026	0.377	H4 rejected
PUOMA to ATMA	0.083	0.000	H5 accepted
PUOMA mediated by ATMA to AOMA	0.053	0.000	H6 accepted
PROMA to ATMA	0.085	0.000	H7 accepted
PROMA mediated by ATMA to AOMA	0.066	0.000	H8 accepted

to experiment when making decisions [57, 58]. Several studies have also demonstrated the connection and similarity of concepts, where mobile advertising users' attitudes shape their decision to accept mobile advertising [12, 16, 19].

Subjective norms either directly or indirectly influence acceptance of mobile advertising and attitudes toward mobile advertising. Many people have explained how subjective norms influence decision-making [13, 14, 23, 59]. In this study, however, generation Z decides to accept mobile advertising, such as COVID-19 advertisements, for simpler reasons, such as the importance of the information conveyed and the pleasure of using and enjoying every existing mobile advertisement. Personal use and benefit are more powerful motivators than social norms such as family or friend influence. Other perspectives on social norms that can exert pressure on users [25–27], are not supported in this case. Generation Z prefers to experiment with new things for fun and is not easily influenced or even pressured to accept mobile advertising. Acceptance of mobile advertising will be more likely if it allows individuals (potential adopters) to meet their needs for information, entertainment, and social acceptance [14]. This supports the findings of this study, which found that the perceived utility of mobile advertising influences attitudes and actions to accept mobile advertising, either directly or indirectly. Other studies have found that users are more willing to receive mobile advertising if it is proven to provide a variety of benefits such as saving time and money, providing valuable information, and facilitating an entertaining experience [29, 30, 34].

As previously stated, Generation Z is a group that is on the verge of accepting and employing technology, particularly mobile devices such as smartphones. Furthermore, this generation is known for using informative and entertaining applications such as YouTube, TikTok, Instagram, and others. As a result, it is not surprising that this generation is optimistic in the face of these media. This also explains why information about COVID-19 conveyed through mobile advertising can form positive attitudes and acceptance because mobile advertising users from generation Z perceive personal relevance. These findings are consistent with previous research,

which shows that consumers' perceptions of the personal relevance of mobile advertising are positively correlated with their attitude toward it, which can influence purchasing decisions for its use [8, 30, 35, 36, 60].

5 Conclusion

According to the findings of this study, generation Z, as mobile advertising users, considers the reasons for the benefit and pleasure of using mobile advertising. This group cannot be influenced by existing subjective norms in terms of acceptance of mobile advertising, particularly COVID-19. This is due to the ability of this generation to determine the benefits of information, when to see it, and how to behave when receiving advertising information in the form of mobile advertising. As a result, despite the fact that information on COVID-19 is delivered in large quantities in the form of advertisements, generation Z views advertisements delivered through mobile advertising as having benefits and can form a feeling of pleasure from seeing them. This pleasure is focused on the ad's appearance, the information content conveyed, the effect of the ad's serving, and so on. Regardless of what was produced, the sample size of the Z generation used in this study was limited to one generation. Furthermore, the research variables used do not include moderator variables such as attitudes toward advertising avoidance, which can provide additional insights that can increasingly provide a more interesting understanding of mobile advertising acceptance behavior in specific generations.

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The Impact of Digitalization on Human Resource Management: Challenges and Strategies

Abdul Jalil and **Dessy Isfianadewi**

Abstract This initial study aims to examine digitalization's impact on human resource management and the challenges and strategies to deal with it. This study uses qualitative methods. Data and information for discussion are collected through literature studies. The study results show that digitalization has positively impacted HRM and new challenges and strategies to deal with the digitalization era.

Keywords Digitalization · Human resource management challenges · Human resource management strategy

1 Introduction

The development of digital technology in the Industry 4.0 era has produced significant changes and affected various aspects of human life. Digital technologies that have emerged in this era, such as the Internet of Things (IoT) and big data, have affected the world of work and changed the era from analog to entirely digital through digitization. The development of digital technology in the Industrial 4.0 era is a phenomenon that cannot be avoided, and is a challenge for humans to use it wisely and effectively.

A. Jalil · D. Isfianadewi (✉)

Department of Management, Faculty of Business and Economics, Universitas Islam Indonesia, Yogyakarta, Indonesia
e-mail: dessy.isfianadewi@uii.ac.id

In general, digitization has provided several benefits, such as a more extensive market reach for MSME players, accelerating business processes, increasing operational efficiency, and providing a better experience for customers [1–3]. In addition, digitalization also has a transformational impact on organizations, where the concept of digital transformation is a process of moving to a customer-centric digital business supported by leadership and technology that empowers employees [4].

One of the sectors affected by digitalization in an organization is human resource management (HRM). Human Resource Management (HRM) is an essential aspect of organizational management. HRM relates to how the organization employs, manages, and develops human resources. However, along with technological developments, digitalization also affects HRM. Therefore, the development of digital technology for human resource management now demands that employees have skills in digital technology [5, 6].

COVID-19 is one of the factors that has contributed to accelerating the development of digitalization in various sectors, including HRM. In this context, HRM is faced with multiple challenges and strategies in dealing with the impact of digitalization on HRM. Therefore, this study will discuss the problems that arise as a result of the digitalization of human resource management, as follows:

1. What is the impact of digitalization on HRM?
2. What are the challenges faced by HRM in the Digitalization Era?
3. What is the HRM strategy in dealing with the Digitalization Era?

This study aims to understand more about the digitalization process's impact on human resource management and the challenges and strategies to deal with them.

The method used in this study is qualitative. Study data and information were obtained through the digitization and human resource management literature.

The study's results will provide complete insight into the impact of digitalization on human resource management and how to deal with the challenges and strategies that can be implemented by human resource management in dealing with the current digital era.

2 Literature Review

2.1 Digitalization

Digitalization uses digital technology to change a business model and provide new value-generating opportunities with a transformational impact on organizations [1]. Indicators of the digitization process variables are planning, organizing, implementing, monitoring, and evaluating [2]. According to Convergence Theory, the development of digital technology has led to convergence between traditional media and new media.

Meanwhile, according to digital technology, digitization is using electronic devices and software to process, store and transmit information in digital or binary form (0 and 1). Digital technology allows data and information to be accessed, sent, stored, modified, and used in various ways that were impossible with previous analog technology [7].

General impacts of digitalization on society [8]:

1. Paralysis through analysis: Easy access to the Internet and the large amount of analytical material that can be found on web searches can make a person confused and lose their way of making decisions.
2. Digital ethics that need attention: In using digital technology, good ethics are required to avoid problems or unwanted actions.
3. Business automation: Digitization allows business to be carried out automatically, saving time and costs.
4. Improving public health status: Digitalization can improve public health status, especially in the Indonesian region.
5. Negative impacts such as hoaxes: Inappropriate use of digitalization can have negative consequences, such as the number of scams circulating.

The success of digitization can be measured through an indicator that refers to metrics for the level of use of digital technology in a country, region, or organization, such as [8, 9]:

1. Number of internet users and internet penetration rate
2. Number of smartphone and tablet users
3. Internet speed and broadband access
4. Use of social media and other online activities
5. Level of e-commerce and digital payments
6. Use of digital technology in business and government.

2.2 Challenges and Strategies

Human resource management is the process through which optimal fit is achieved among the employee, job organization, and environment so that employees reach their desired level of satisfaction and performance and the organization meets its goals [9, 10]. Human resource management is the withdrawal, selection, development, maintenance, and use of human resources to achieve both individual and organizational goals [11–13]. When reaching the goal, it is essential to pay attention to HR management principles, such as humanity, democracy, The Right Man in The Right Place, Equal Pay for Equal Work, Unity of Direction and Command, efficiency, and effectiveness [14–16].

Meanwhile, companies' HR management functions are labor procurement, employee and career development, performance appraisal, compensation, occupational safety, and health [17, 18]. For HR to develop optimally, it is necessary to apply techniques and methods in HR management as follows: training, coaching, mentoring, job rotation, and self-reflection [19, 20].

The challenges faced by human resource management in the digital era are the complexity of HR phenomena, data challenges from HR operations, justice and legal constraints, and employee reactions to artificial intelligence management [21–23]. HR management also needs to include the concept of HR sustainability [24]. Management HR is also required to change the role of HRM not only as an administrative expert but also as a strategic partner, champion employee, and agent of change [25]

When facing the challenge, HR management must implement several strategies, such as increasing creativity and changing a fixed mindset to a growth mindset, so that they are ready to adapt and revolutionize themselves against rapid technological developments so that superior, creative, and innovative HR will be created as well as adaptive [26]. Making changes in program policies and strategies for human resource development [27]. Presenting a new approach to human resource management based on digital technology [24].

3   Preposition

3.1   The Impact of Digitalization on HRM

Digitalization uses digital technology to change a business model and provide new value-generating opportunities with a transformational impact on organizations [1]. Digital technology allows data and information to be accessed, sent, stored, modified, and used in various ways that were impossible with previous analog technology [7].

Proposition 1: Digitalization has a positive impact on HRM.

3.2   The Impact of Digitalization on HRM Challenges

Technological changes have driven changes in various aspects, including the human resource management process. This change will be accompanied by new challenges for HRM so that they can continue to contribute to the organization.

Proposition 2: Digitalization has a positive impact on HRM challenges.
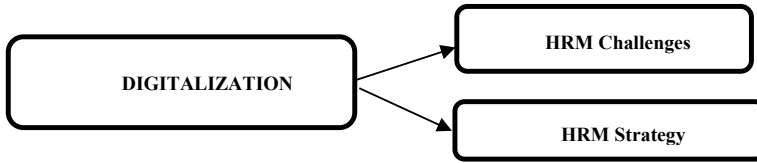
Fig. 1 Proposed research model

3.3 Impact of Digitalization on HRM Strategy

In responding to the challenges of change in the digital era, HRM must have good planning and strategies to respond to these challenges (Fig. 1).

Proposition 3: Digitalization has a positive impact on HRM strategy.

4 Discussion

Digitalization has significantly impacted all aspects of human life, such as people's behavior, the education system, business, and government. It is no exception that human resource management (HRM) has experienced extraordinary impacts, such as the presence of applications related to the recruitment process. Thus Proposition 1, which states that digitalization affects human resource management, is accepted. The results of this study are also in line with research conducted by [1–6].

The impact of digitization on HRM has resulted in changes in HRM processes. Changes that occur in HRM are generally in a positive direction. Therefore, the development of digitalization has posed challenges for HRM, such as the complexity of HR phenomena, data challenges from HR operations, justice and legal constraints, and employee reactions to artificial intelligence management, the need to incorporate the concept of HR sustainability and demands to change the role of HRM no longer not only as an administrative expert but also as a strategic partner, champion employee and agent of change. Thus, Proposition 2, which states that there are HRM challenges in the digitalization era, is accepted. The results of this study are in line with the research that has been conducted by [21–25].

To answer these challenges, HRM must carry out several appropriate strategies, including increasing creativity and changing a fixed mindset to a growth mindset, so that they are ready to adapt and revolutionize themselves against rapid technological developments so that superior, creative, and innovative HR will be created., as well as adaptive. Make changes in program policies and strategies for human resource development. We are presenting a new approach to human resource management based on digital technology. Thus, Proposition 3, which states that HRM has a strategy for dealing with the digitalization era, is accepted. The results of this study are in line with research conducted by [24, 26, 27].

In addition to answering all research propositions, the results of this study also provide implications for practitioners and researchers in the field of human resource management regarding the impacts caused by the era of globalization, along with the challenges and strategies for dealing with it.

5   Conclusion

Digitalization has significantly impacted human resource management, including changes in the HRM process from conventional to digital technology. This change has posed a challenge for HRM to take advantage of and adapt to technological advances so that HRM can positively contribute to stakeholders. To answer these challenges, HRM can carry out several appropriate strategies so that technological advances can benefit the development of HRM in the future.

The results of this study also provide implications for practitioners and researchers in the field of human resource management regarding the impacts caused by the era of globalization, along with the challenges and strategies for dealing with it.

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Dynamic Model of the Effect of Electronic Money on Economic Growth in ASEAN-3

Dian Zulfa and Sofyan Syahnur

Abstract In recent years, the use of e-money in 3 ASEAN countries such as Malaysia, Indonesia, and Thailand have increased. This study investigates whether the increasing of the use of electronic money, both in nominal and volume, affect economic growth in three ASEAN countries by employing the panel Error Correction Model (PECM) with panel data during the 2018Q1–2022Q1. The results show that, in short-run, the nominal of e-money transactions has no effect on economic growth. In the long run, an increase in the nominal of e-money transactions worsen economic growth. Meanwhile, an increase in volume of transaction can expand economic growth in the short and long run. This result is in line with the monetary theory which explain that an increase in the volume of e-money transactions will give large benefits to the economy. Therefore, the increasing facilities of e-money card readers and socializing electronic money to the public, especially people who live outside big cities, become an important thing to maintain the sustainable economic growth.

Keywords E-money · Economic growth · 3 ASEAN countries · Panel ECM

1 Introduction

The main point of this research is to investigate the effect of electronic money (hereafter e-money) on economic growth by applying a dynamic model in three ASEAN countries, namely Malaysia, Indonesia, and Thailand. Specifically, does e-money give a significant role to give benefits or losses to the economic growth in three ASEAN countries. These countries are Southeast Asian countries that are classified as developing countries with an enormous intensity of using e-money. This is a strong reason of this study to examine the impact of e-money on the economic growth of these three countries. In addition, based on previous researches, there are different findings, methods, research objects, and data used regarding this issue.

D. Zulfa · S. Syahnur (✉)
Universitas Syiah Kuala, Banda Aceh, Indonesia
e-mail: kabari_sofyan@usk.ac.id

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Moreover, there is no analysis yet in investigating the effect of e-money in terms of transaction value and transaction volume on the economic growth. This study aims to examine this issue by providing evidence based on a dynamic model with a Panel Error Correction Model (henceforth PECM) to examine the effect of the volume and value of electronic money transactions on economic growth in three ASEAN countries.

Economic growth has become important for assessing economic activities such as the productivity of goods and services, measuring people's purchasing power, and the economic progress of a country. Therefore, economic growth is a major concern when discussing the economy in aggregate. Economic activity has a close relationship with money as an intermediary medium. Therefore, investigating money is also an important point in order to assess an economy from the monetary side. Nowadays, money is not only in the form of paper and coins but also in the form of cards and electronics. Different forms of money used in economic activities will affect people's behaviour. In a modern economy, money plays a very important role to facilitate the payment transaction process, so money in any form will certainly play a role in influencing the economy [1]. In recent years, particularly in 3 ASEAN countries, the use of non-cash money such as e-money is increasingly in demand, as represented by the value of transactions that continues to increase every year. Sasongko et al. [2] has distributed questionnaires to analyse the factors that influence users' decisions to use e-money, namely the perceived benefits, satisfaction, and consumer trust in e-money. Schumpeter's growth theory emphasizes that smooth payment facilities will affect economic growth. For this reason, innovation is needed not only for the benefit of production activities but also innovation in financial intermediaries or media.

Innovations in financial intermediaries continue to occur. Some of the results of innovation in financial intermediaries already exist, one of which is the application of the use of e-money [3]. The provision of e-money is inseparable from the support of Central Bank as the monetary authority that will provide the best products according to the needs of the public. In addition, the presence of e-money is promoted by more advanced technology in the banking world, so e-money has the opportunity to continue to grow and expand. The use of e-money continues to increase, and the existence of e-money can quickly diminish the use of cash money [4]. However, e-money is not able to take over cash completely. Therefore, the two will exist simultaneously for a long time [1].

In several ASEAN countries, especially Indonesia, Malaysia and Thailand, the growth in e-money transactions increase every year. In Indonesia, nominal e-money transactions continue to increase from tens to hundreds of percent every year. Even when the pandemic Covid-19 hit, nominal e-money transactions continued to experience positive growth although it tended to be lower than the previous period. The volume of e-money transactions in Malaysia is quite high, which exceeds the volume of internet banking transactions [5]. This is because e-money is mostly used for small transactions, while internet banking is usually intended for those who want to make large transactions. Since the early 1990s, Thailand's central bank has been trying to develop an electronic payment system in the hope of reducing the dependency ratio on cash and checks [6]. The widespread use of e-money means that people

are able to absorb innovations from technological developments and this indirectly explains why e-money has been accepted as the latest non-cash payment tool [7]. So far, e-money has facilitated a more efficient way of payment for both consumers and merchants and made transactions simpler. Thus, it is not surprising that the use of e-money continues to increase every year.

The existence of e-money is able to survive in the midst of intense competition between debit/ATM and credit cards. However, e-money has facilitated the smooth running of economic activities [8, 9]. Given the increase in e-money transactions in recent years, it is imperative for policymakers to assess the effects of e-money on the country's economy. This is because paying for transactions with e-money has impacted economic activities. This is no exception for developing countries such as Indonesia, Malaysia, and Thailand where the nominal level and volume of transactions continue to increase every year.

2   Literature Review

Several previous studies related to e-money and economic growth are reviewed. Different payment methods lead to different consumer spending behaviour [10]. The use of e-money leads to an increase in consumer spending because transactions cost less [11]. The level of consumer confidence further encourages consumption and brings economic growth. Research that trying to examine financial inclusion and innovation has been conducted by [12] which states that unequal financial accessibility will make economic growth negative. In contrast to research by [3], it can be examined that financial inclusion can increase economic growth. Nguyen and Nguyen [13] using the GMM method found that financial inclusion has a positive effect on the economy in both developed and developing countries. Another study conducted by [14] with 10 European Union countries as the object of study using the GMM method found that a more efficient banking sector can make economic growth faster.

Chukwunulu [15] conducted research with the final conclusion that financial innovation has high predictive power and a positive impact on economic growth. Research by [16] found that the cashless policy has a positive impact on the Nigerian economy. This is evident from the increase in employment, reduced crime against cash, and attracting foreign investors. More in-depth research on electronic money economic growth was conducted by several researchers such as [17] who found the results that all e-money products have a beneficial effect on economic growth. Previously, the average level of trust in non-physical money among Nigerians was minimal. Now people have responded to financial innovation quite well and started to accept e-money as a new means of payment. Hong [1] found that e-money has very little effect on GDP and money supply. Marshall and Coke [18] evaluated whether e-money has a relationship with the real economy in Jamaica using ARDL and found a long-run relationship and in the long run e-money has a positive relationship with

GDP. Research from [4] using the VECM method examining the application of e-money in 5 European Union countries found that the effect of the use of e-money on the economy can only be studied in the long run.

3 Methodology

This study employs a quantitative approach to investigate the effect of e-money use in 3 ASEAN countries on economic growth, namely Indonesia, Malaysia, and Thailand during 2018Q1–2022Q1. This study specify that the nominal and volume of e-money transactions are independent variables and economic growth is the dependent variable. The data used in this study is panel data collected from the publications of Central Bank of Indonesia, the State Bank of Malaysia, and Bank of Thailand. The independent variables of this study, namely nominal transactions and transaction volume, were converted into a logarithmic form in order to obtain the elasticity of each variable used in dynamic model. In addition, it is expected that the results of data processing can provide the best results in which each data from the variables used has been formed in a simpler form.

E-money is closely related to money. Theoretically, the equilibrium exists when the amount of money in circulation or money supply (MS) must be equal to the amount of money demanded (MD). Equilibrium occurs and will form the LM Curve so that it can be observed how the relationship between money and economic growth. The money equilibrium is MS = MD. Where, MD is determined by income (Y) and interest rate (r) or $MD = f(Y, r)$ or $MD = f(mY - nr)$. Income has a positive relationship with MD and interest rate has a negative relationship with MD. To illustrate this relationship, thus, $MS = mY - nr$, and $Y = MS/m + nr/m$. So, Y is a function of ($Nominal\ transaction\ of\ e-money,\ volume\ of\ transaction\ of\ e-money$)+ nr.

Through this equation, this study only considers the nominal transaction and transaction volume of e-money in the dynamic model, and it neglect the interest rate. The dynamic model provides information on the behavior of variables in the short and long term. It employs the Panel Error Correction Model (PECM) approach. Thus, stationary tests using Augmented Dickey-Fuller (ADF) and cointegration tests using residual-based test are required. After these two tests were conducted, the short-run and long-run PECM results can proceed. The short-term and long-term models are shown as follows.

$$\Delta EG_{it} = \gamma_0 + \gamma_1 \Delta log NT_{it} + \gamma_2 \Delta log VT_{it} + \gamma_3 log NT_{it-1}$$
$$+ \gamma_4 log VT_{it-1} + \gamma_5 (log NT_{it-1} + log VT_{it-1} - EG_{it-1}) + e_{it} \quad (1)$$

$$EG_{it} = \lambda_0 + \lambda_1 log NT_{it} + \lambda_2 log VT_{it} + e_{it} \quad (2)$$

where EG indicates economic growth for each country i in year t; NT and VT are independent variables in the form of volume and nominal e-money transactions in country i in year t. While e is the error term.

4 Result and Discussion

4.1 Classical Assumption Test Result

The panel data regression model must meet the requirements of the classical assumption test. Classical assumption testing on panel data regression only focuses on data normality test and multicollinearity test. The Jarque–Bera test results show that the data is not normally distributed as indicated by the probability value that is < 0.05, which is 0.000000. Although the data has been transformed into natural logarithm form, the normality test results still show that the data is not normally distributed. This abnormal data can be caused by the large difference in the residual value of the data from the nominal transaction and transaction volume variables from each country. From the data it is clear that the volume and nominal transactions of electronic money from Indonesia have quite large numbers when compared to the other two countries. So that the distribution of data, mean, mode, and median have a much different value when the data of the three countries are combined and cause the data not to be normally distributed. Then, this study uses the Pair-Wise Correlation Matrix method to detect multicollinearity. The multicollinearity test results inform the correlation coefficient value between independent variables that is < 0.85. The multicollinearity test results of this study can be concluded that there is no multicollinearity problem among the independent variables.

4.2 Error Correction Model

The dynamic model applied is the PECM which can be used to analyse the long-run and short-run effects of regressants on regressors. The dynamic model also needs to be examined if there is cointegration, because the behaviour of economic variables may be different if studied in different time periods. In addition, there are economic variables which influence and they may not be visible in the short term. However, in the long term, there may be a possibility of influence. For this reason, a dynamic model provides better explanations regarding the passage of time when compared to a static model. PECM dynamic model begins with a data stationarity test. In using PECM, the data used must be stationary at the same level of first difference. Table 1 displays the results of the data stationarity test, where all variables are stationary at the first difference level. It means that there is high possibility of all variables to

meet the long-term equilibrium and there is a strong relationship between the short-term estimate coefficients and the long-term estimate coefficients in achieving the long-term equilibrium.

After the stationarity test, this study starts with the cointegration test by testing the stationarity of the residuals of the long-run equation or well-known as the residual-based test method using the ADF test. The residuals are stationary at the level can be represented by the probability of stationarity test under 0.05. This indicates that there is a cointegration or long-term relationship between all variables. Therefore, the analysis of the short-term and long-term can be conducted as a dynamic model. Table 2 shows the short-term results.

The important thing regarding the short-run estimation results is the probability value and regression coefficient of the Error Correction Term (ECT). The ECT must be significant and the regression coefficient must be negative. The results of this study have met these requirements, where the probability of ECT is smaller than α (5%) and the coefficient has − 0.6368. It can be said that the ECM model used in this study is valid as a dynamic model because all variables will be corrected and lead to equilibrium every 2.5 quarters or 7.5 months. Table 3 shows the results of estimation coefficients for the long-term equilibrium.

Table 1 The results of data stationarity test using ADF

Variable	Level		1st Difference		Conclusion
	Individual intercept	Individual intercept and trend	Individual intercept	Individual intercept and trend	
EG	6.2917 (0.3913)	2.1453 (0.9059)	17.5501 (0.0072)***	11.6799 (0.0695)*	I (1)
LogNT	3.6265 (0.7271)	7.80677 (0.2526)	21.2157 (0.0017)***	14.9418 (0.0207)**	I (1)
LogVT	5.9289 (0.4312)	9.4545 (0.1496)	20.7105 (0.0021)***	15.7318 (0.0153)	I (1)

***, **, * Implies that the variable is statistically significant at 1, 5, and 10% confidence levels respectively

Table 2 Short-term estimation results

Variable	Coefficient	Std. Error	t-Statistic	Prob
C	− 1.5871	5.4414	− 0.2916	0.7720
ΔlogNT	1.9492	3.3246	0.5862	0.5608
ΔlogVT	5.8670	2.3140	2.5353	0.0150**
logVT(−1)	− 0.0617	0.1977	− 0.3121	0.7565
logNT(−1)	0.1428	0.5728	0.2493	0.8043
ECT(−1)	− 0.6368	0.1394	− 4.5677	0.0000***

***, ** Implies that the variable is statistically significant at 1 and 10% confidence levels, respectively

Table 3 Long-term estimation results

Variable	Coefficient	Std. Error	t-Statistic	Probability
C	8.1548	5.4929	1.4846	0.1442
logNT	− 1.0105	0.5799	− 1.7424	0.0878[*]
logVT	0.4534	0.2015	2.2496	0.0291[**]

[**], [*] Implies that the variable is statistically significant at 5 and 10% confidence levels respectively

The short-term and long-term estimate coefficients show the different results. In the short term, only one variable is significant to affect economic growth, namely the volume of e-money transactions, with a positive relationship direction. Meanwhile, the nominal transaction is not significant. In contrast to the long term, both variables have a significant effect on economic growth. However, there is a difference in the direction of the effect, where the nominal transaction has a negative effect and the transaction volume has a positive effect.

4.3 Discussion

According to the results of using dynamic model (PECM), in the long term, nominal e-money transactions negatively affect economic growth. This negative relationship can be caused by the behavior of nominal transactions that increase and it can make economic growth move the opposite direction. The reason is that, in reality, E-money can facilitate its users easily in conducting various transactions of goods and services. The smoothness of the payment system creates e-money users more impulsive in spending goods and services. Thus, there will be an increase in demand for goods and services. Increased demand certainly will have an impact on price increases and lead to a certain inflation level if not offset by the increased production of goods and services. Research conducted by [19] proved that e-money has a positive effect on inflation. Inflation that tends to be high will make the purchasing power of goods and services decrease because the value of money (real M/P) is getting lower. Moreover, the goods and services that can be obtained at a certain price will decrease, so in the end the impact on aggregate demand will decrease generally. A decline in aggregate demand will lead to a decline in economic growth. It can be directly concluded that in three ASEAN countries such as Malaysia, Indonesia, and Thailand, the use of e-money can have a negative effect on the economy if people's demand for goods and services is not matched by an equivalent level of production. Meanwhile, in the short term, the amount of transaction does not affect the economy. It can be interpreted that any number of e-money transactions does not have any effect on the economy in the short term. The effect, however, will be denoted in the long run.

The volume of e-money transactions in both the short and long term has a positive effect on economic growth. In the short term, the influence exerted by the volume of e-money transactions on economic growth is greater than in the long term. This can be seen in the estimate coefficient in the short term which reaches 5.8670. It means that an increase in the volume of transactions in the short term by 1 percent can increase economic growth by 5.86%. Transaction volume is the number of times a transaction is made using e-money in a certain period. A large volume of transactions indicates that there is a desire to make large transactions and the desire is realized. A large volume of transactions has to be supported by the existence of a high income of the community which is also high. The more often people from these three ASEAN countries use e-money as a means of payment, it will provide opportunities for economic growth to increase through its transaction volume. The results of this study are in line with research conducted by [20] which highlights that payment innovation can increase transaction volume and expand economic growth. Therefore, the use of e-money, which is one of the results of innovation in the financial sector, especially in the payment system, can stimulate the economic growth to increase through the increasing real Gross Domestic Product (GDP) in the three ASEAN countries.

5   Conclusion and Recommendations

E-money has started to be widely used in transactions, especially in Indonesia, Malaysia, and Thailand. The PECM approach applied as a dynamic model proves to be suitable model for this study. This is strengthened by all data which are stationary at 1st difference, cointegrated condition, and the negative and significant ECT value. Based on the estimation coefficient results, it is found that in the short-term nominal e-money transactions have no effect on economic growth. While in the long run, an increase in the nominal e-money transactions generates economic growth in contracted direction, which can be caused by an imbalance between the demand and supply of goods and services. Meanwhile, the increasing volume of transactions can stimulate economic growth to expand both in the short and long term. The more frequent transactions are carried out, the greater contribution to economic growth can be achieved. According to the research results, several recommendations can be suggested, namely: (1) the policy of using e-money needs to continue to be considered by the Central Bank so that the existence of e-money can provide benefits for economic growth; (2) There is an increase in accessibility to payments using e-money. It is expected that more and more places of goods and services transactions provide the enough facility of using e-money reader machines. The limited network available is one of the barriers to the use of e-money. For this reason, e-money issuers can expand the network by entering into cooperation or commercial agreements with certain places such as restaurants, retail companies, and even public transportation to support cashless policies.

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The Importance of Feedforward Neural Network in Developing Small Ruminant Breed Lineage Prediction System

Mohammad Farizshah Ismail Kamil, Nor Azliana Akmal Jamaludin, and Mohd Rizal Mohd Isa

Abstract Sheep are crucial to Malaysian Muslims, which accounts to 60% of the population. Yet there is not enough supply due to a high death rate brought on by diseases like Tetanus and Foot and Mouth Disease (FMD), among others. Objective of the study is to create a uniform data collection system that can be adopted across farms. The system will be developed using a standard web-development framework and will be utilizing the Feedforward Artificial Neural Network (FANN) to process the data. The outcome of the system will be based on accuracy, time consumption and reliability. The results of this study will be displayed in diagrams and user interface of the system. Although certain farms recorded their data digitally in separate database tables and Excel sheets, bulk of the data was recorded in one master sheet and one master table from a certain point in time. This means that there is movement in staffing where previous worker resigns and new worker is hired without any proper handover between the two which creates inconsistent data being recorded. History could not be established and data from old records could not be synced with newly recorded data as the values differ from each other. This paper focuses of sheep farms around Peninsular Malaysia. Future areas of research may include adopting our system on other types of farm animals. Analyzed data from our study will be integrated with our Feedforward Neural Network algorithm.

Keywords Deep learning · Artificial neural network · Foodborne disease · Sheep breeding · Sheep disease

M. F. I. Kamil (✉) · N. A. A. Jamaludin · M. R. M. Isa
Universiti Pertahanan Nasional Malaysia, 57000 Kuala Lumpur, Malaysia
e-mail: 3211519@alfateh.upnm.edu.my

1 Introduction

1.1 A Subsection Sample

In addition to cows and chickens, sheep are a significant source of food for humans. All people must always have access to a sufficient and secure food supply, as defined by the United Nations Committee on World Food Security [1]. Sheep are in short supply locally due to a high mortality rate brought on by fatal diseases such as Foot and Mouth Disease (FMD) [2], Tetanus [3], and others. This is despite their importance to Malaysian Muslims, who make up about 60% of the population [4]. The scope of our research study focuses on Malaysian ruminant farm. Animals with an inbred gene pool have lower disease resistance, fertility, prolificacy, vigor, and survival, which is known as inbreeding depression. Inbreeding lowers productivity and average observable features associated with reproductive potential [5]. When animals who are more closely connected than usual, such as siblings, parents, or sons to mothers, they are said to be inbred [6].

As was previously mentioned, domesticated ruminants including buffalo, cattle, goats, and sheep are susceptible to the extremely contagious viral disease known as FMD. Infected animals roaming around and coming into touch with vulnerable animals is the primary means of transmission. All their fluids and the air they breathe contain the virus. The typical FMD mortality rate is roughly 1%, however the average FMD morbidity rate is very near to 100% [7]. As a result, a sudden outbreak in an FMD-free country may result in insurmountable losses due to reduced productivity, both directly and indirectly [8].

Over time, outbreaks and isolated occurrences of foodborne disease have been linked to the intake of two common pathogens: viruses like the norovirus or hepatitis A or bacteria like Salmonella [9], Listeria, or *Escherichia coli* (*E. coli*) [10]. *E. coli* was initially discovered in 1982 after undercooked meat was found to be the cause of two outbreaks of gastrointestinal sickness. Since then, the bacteria have spread around the globe by way of water- and food-borne channels [11]. Shiga toxin-producing *E. coli* (STEC) is the most lethal of the more than 700 *E. coli* serotypes that have been identified so far [12].

According to a news article published by The Star newspaper on Friday, 20th May 2022, Malaysia is currently experiencing food price increases as a result of seller hoarding and the war between Russia and Ukraine. It is worth noting that Russia ranks second in the world in terms of agricultural land size. Because 60% of Malaysia's food is imported, any large-scale event in that region is bound to have an impact on the rest of the world. Malaysia relies on mutton imports at 88.8 percent and beef imports at 76.4%. Malaysia was also self-sufficient in poultry produce at one point [13]. In a news article published by Sinar Harian on Thursday, 2nd December 2020, the sheep and cow population in the state of Johor is declining due to diseases and a lack of farmland. However, meat demand remains high, with 4791 carcasses expected in 2020, up from 4308 in 2019 [14].

Table 1 Comparative analysis

Author	Research	Method	Time (min)
Agrawal	Used a camera to send pictures of a single sheep for comparison with hundreds of other pictures in order to determine the breed	Transfer learning model	27
Jwade	Used a variety of GoPro cameras to send videos of a single sheep for comparison with hundreds of other photographs in order to determine the breed	Transfer learning model	27
Salama	Compared sheep facial photographs to a database of hundreds of pictures in order to identify a sheep	Bayesian optimization	8

In Table 1, results from earlier investigations on sheep breed identification is compared. Although each approach was successful in its own experiment, data extraction needed two lengthy processes: database searching and image filtering. The goal of this research is to identify internal and external factors that influence sheep breed linage continuation, to investigate current practices for collecting and managing data knowledge on sheep breed and hereditary diseases, and to propose a sheep breed and disease data knowledge model based on the Feedforward Artificial Neural Network (FANN) deep learning method [15] while also reducing the time required to produce the desired results.

2 Literature Review

2.1 Sheep Breeding

The practice of raising and breeding sheep domestically is known as sheep breeding or sheep husbandry. Their main purposes of production are meat, milk, and wool. Breeds including Dorset, Malin (Malaysian Indigenous), and Merino are frequently raised. Due to their resistance to illnesses and capacity to tolerate harsh conditions, Malin and Dorset are preferred, with the latter being picked for the quality of its wool [16]. These breeds were also chosen because of their year-round production of lambs because to their non-seasonal reproductive feature [17, 18].

The primary goal of purebred sheep breeding is to supply the commercial sheep sector with excellent genetics (seed stock). This is done by breeding rams and ewes of the same breed [18]. Because lamb is raised on environmentally favorable feed like Napier grass, it is well known that it has 2.5–4.3 times less cholesterol than beef and creates more environmentally friendly goods. Thus, it is essential to preserve pure lineage among sheep breeds [19]. Breeders frequently choose animals with

higher Estimated Breeding Value (EBV) in terms of growth rate, meat, milk, or wool production [20]. Most breeders automatically log weight attributes to keep tabs on daily development. Breed-specific EBVs cannot be compared across breeds because they are breed-specific. Breeders must therefore decide upfront whether to implement a pure breeding or cross-breeding program at their farm [21]. In addition, a big and homogenous dataset may allow for better illness and breed lineage prediction thanks to good breeding techniques.

2.2 Sheep Disease

Hoof-and-mouth disease (HMD), often referred to as foot-and-mouth disease (FMD), is a viral infection that affects both domestic and wild bovid animals with cloven hooves [2]. The virus also causes blisters inside the mouth and on the feet that could break and cause lameness, as well as a high temperature that lasts for two to six days. Affected animals do not die from the disease, but it weakens them to the point where they are unable to produce meat and milk as they normally would [22]. Early FMD outbreaks were noted in the Philippines, Indonesia, and Malaysia, and the illness has been present throughout Southeast Asia for about 150 years. Except for Indonesia, serotype O is most prevalent in Southeast Asia, while serotypes A and Asia 1 have been associated with outbreaks in the bulk of the countries in the region [23]. To fight the spreading disease, the Chinese government released the EV-A71 vaccine in 2016 [24].

2.3 Foodborne Illness

Escherichia coli is a type of bacteria that can be found in the intestines of both humans and animals. Produce tainted with the bacteria is produced after entering an animal's system through water tainted with feces [25]. While some *E. coli* infected patients exhibit no symptoms at all, others have mild to severe intestinal and extraintestinal symptoms. Some of the symptoms include a fever, vomiting, stomach aches with watery diarrhea, and blood-colored feces, ranging from crimson streaks to obvious blood [26].

Salmonella, a bacteria found in the digestive tracts of both humans and animals, is similar to *E. coli*. Salmonella infections can occur when someone consumes undercooked meat that has been exposed to animal feces or comes into touch with infected animals when visiting farms or petting zoos. In 2018, 5146 outbreak cases were reported, and 33% of those cases were solely related to Salmonella [9]. Salmonella infections in people can cause vomiting, fever, diarrhea, and headaches [27]. Salmonella can cause dull, diarrheal sheep, and a considerable rise in flock death

rates [28]. Since 2008, According to reports, Salmonella enterica is the most prevalent serovar affecting sheep, and it causes diarrhea and miscarriage, which lowers farm output [29].

2.4 Deep Learning

A type of machine learning techniques known as "deep learning" uses many layers of artificial neural networks to extract more complex features from unstructured input. The algorithm divides data into layers, with each layer able to extract features before moving on to the next [30]. In big databases, the deep learning process employs nonlinear transformations and high-level model abstractions [31].

In its simplest form, artificial intelligence (AI) is a discipline that combines computer science with enormous datasets to address challenging issues. Systems with AI display intelligent behavior by analyzing their surroundings and responding independently to accomplish specific objectives [32]. It includes the fields of deep learning and machine learning, which are both applied to the creation of expert systems that classify or predict based on input data [33]. On the other hand, machine learning (ML), a subclass of artificial intelligence (AI), enables the programme to increase the accuracy of its predictions without being particularly created to do so. To predict new output values, machine learning algorithms use historical data as input [34]. To predict an output or response variable from an input or feature vector is one of machine learning's core objectives [35].

2.5 Factors Impacting Sheep Breeding

Sheep's seasonal reproduction is mostly governed by the photoperiod. It is believed that other environmental cues (including temperature, dietary intake, and social ties) can influence its impact. Therefore, protecting the ewe from summer heat encourages an earlier start to breeding activity [36].

Ajafar et al. [37], stated that season, photoperiod, age, diet, management, and the conduct of males as well as heredity are factors that have an impact on reproductive performance. Any animal's seasonal reproductive parameters can be further separated into intrinsic and extrinsic components. Extrinsic factors relate to an animal's surroundings, whereas intrinsic factors connect to its genetics. There are two categories of these non-genetic factors: those with quantitative impacts, such parity, dam weight, injury, and calving season, and those without detectable consequences, like illnesses.

A thorough web-based quantitative recording approach was developed after the qualitative investigation. The participants can record daily data in a variety of forms that match the terminologies they are familiar with. Data entry elements were designed according to the proposed model which includes Average Daily Gain

(ADG), Body Composition Score (BCS), Feed, Medicine and Sanitization. The required input for each sheep includes the name, tag number, weight, BCS and comments.

3 Method

For this study, qualitative research method was employed. In qualitative research, a range of empirical materials are investigated, such as case studies, personal experiences, introspective, life stories, interviews, observational, historical, interactive, and visual texts that show typical and disturbing events and meanings in people's lives [38].

3.1 Pre-survey

Prior to the study, a dataset of about 2715 records from a goat farm in Setiu, Terengganu, covering the months of November 2019 through March 2020, was purchased. The information came from a failed attempt to establish a web-based farm management system. The project was abandoned because of covid shutdown due to budgetary issues. The goal of this study is to continue efforts to close the gap between farmers and consumers.

3.2 Survey

During the brief Covid-lockdown relaxing period in December 2021, a survey was conducted in Yan, Kedah, and Dengkil, Selangor to gather more data to be added to the existing datasets. The survey's goal was to determine which farms—and for what purposes—are employing the same kind of recording techniques as the farm in Setiu. To provide a deeper knowledge of daily activities that are important, survey questions were created.

3.3 Experimental Analysis

Daily input is gathered using the suggested technique from participating farmers. Then, information is divided into breeding, fodder, medicine, and sanitization categories using the non-linear, non-sequential dataset as the source. Breeding is by far the most important piece of data because it tracks each sheep's daily weight gain and body composition score. Depending on the type of food consumed, such as fresh

grass, dry hay, pellets, or fermented corn, fodder or feed considerably influences daily increase in sheep. Only when a sheep is found to be ill is medicine given. Data on daily gain are affected by the health of the sheep. Cleaning the plots with EM (Effective Microorganism) spray is known as "sanitization".

Collaboration, workers, and climate are recognised as external factors that could impact each sheep's daily increase. Collaboration with academic institutions or governing authorities like Jabatan Veterinar, however voluntary, considerably improves farm handlers' knowledge. As university graduates from related fields, such as agriculture, apply their knowledge in managing the farm, their education level and experience of the workers also have an impact on production surrounding the farm. Daily gains are also impacted by climate variations because sheep often become ill and die from the cold during the rainy season.

4　Data Analysis

Survey answers from each farm are compared in Table 2. As can be seen, different farms operate with different goals in mind. Yet, they agree on certain aspects of farm management as illustrated by the answers given.

From the table above, 2 out of 3 farms confirmed that each of the internal and external factors involved in the proposed model is required to produce the desired result as illustrated in the Output column of the model.

5　Results

Given that it only accepts numerical input and can be trained using specific data, the suggested approach can be applied to other areas as well. However, the quantitative approach has drawbacks because farmers occasionally neglect to record the breed tag number or the day of mating. However, as herders can only retain what they see or hear for a little length of time, the value of the recorded data outweighs that of the knowledge they have learned.

6　Discussion

The majority of recent agricultural technological advancements have been concentrated on production and other areas of agriculture to improve modern automated agriculture, boost output, and decrease disease. Deep Learning (DL) was utilized for picture identification and data classification for this aim. These data increase the DL applications' accuracy, resulting in more accurate instruments. Even though some data indicate a 95% accuracy rate, reliability and robustness remain major problems.

Table 2 Frequency analysis

Questions	UBAY	Rukambu	DPP
Does a farm need to be registered?	Yes, with Jabatan Veterinar	Yes, with Jabatan Veterinar	Yes, with Jabatan Veterinar
What are the main ruminant breeds in this farm?	Boer	Boer, Saanen, Shami	Black Belly, Santa Ines
How big is the farm?	20 acres	3 acres	1 acre
What is the total ruminant population of the farm at the time of the interview?	11,000	655	200
Are ruminants sold by this farm?	Yes	No	Yes
Please elaborate	This farm sells 3000 carcasses each year	This farm focuses on breeding/husbandry to achieve 2000 ruminant population before starting to sell	This farm trades ruminants from and to other farms. Animals are kept here for only a few months
What are the products sold by the farm right now?	Ruminant carcass	Chicken carcass	Live ruminant
What is the education level of farm workers here?	University graduates, SPM holders	University graduates, SPM holders	SPM holders
Are daily activity being recorded by this farm?	Yes	Yes	No
What are the recording methods used?	Book, online form	Book, Excel sheets, online form	None
Is pure breeding practiced here?	Yes	Yes	No
Are animals here separated by breed?	Yes	Yes	Yes
Please elaborate	All animals on this farm are of the same breed. But if any new animal from different breed is introduced here, it will be separated from the rest	Saanen goats are not cross bred to maintain their milk quality. Other main and lesser breeds are crossed with a Shami buck. Our plan is to have Shami as sole breed here	Sheep are only kept for a short while, but they are still separated into different plots according to their breed

Table 2 (continued)

Questions	UBAY	Rukambu	DPP
What are the types of feed given to the animals here?	Napier Silage	Bokashi, Fresh Napier, Napier Hay, Pellets, Silage	Fresh Napier, Pellets
Does this farm practice sanitization?	Yes	Yes	No
Are the animals given regular medication?	Yes	Yes	Yes
Please elaborate	On regular intervals, personnel from Jabatan Veterinar will visit the farm to check whether the farm administered recommended medication to each animal. Besides medicine, each plot is provided with salt blocks for the animals to lick	On regular intervals, personnel from Jabatan Veterinar will visit the farm to check whether the farm administered recommended medication to each animal. Besides medicine, each plot is provided with salt blocks for the animals to lick	On regular intervals, personnel from Jabatan Veterinar will visit the farm to check whether the farm administered recommended medication to each animal. Besides medicine, each plot is provided with salt blocks for the animals to lick
Please elaborate general health of animals in this farm	In general, animals here are healthy since they are given enough care, food and medicine. Only natural deaths occur here	In general, animals here are healthy since they are given enough care, food and medicine. Only natural deaths occur here	In general, animals here are healthy since they are given enough care, food and medicine. Only natural deaths occur here
Were there any outbreaks experienced here?	So far, there has never been any outbreaks since UBAY took over management	So far, there has never been any outbreaks since 2016	So far, there has never been any outbreaks since 2016
What happens to sick animals?	Normally, sick animals will be quarantined in a separate plot. They will be given medicine until they are healthy. For cases where they are too sick be to be treated, they will be slaughtered immediately	Normally, sick animals will be quarantined in a separate plot. They will be given medicine until they are healthy. For cases where they are too sick be to be treated, they will be slaughtered immediately	Normally, sick animals will be quarantined in a separate plot. They will be given medicine until they are healthy. For cases where they are too sick be to be treated, they will be slaughtered immediately
Is ruminant health affected by weather?	Yes	Yes	Yes
Please elaborate	If it rains, goats/sheep will have runny noses. If left unattended, kids will die of suffocation. Therefore, animals are kept in groups so their body heat can regulate each other's temperature	If it rains, goats/sheep will have runny noses. If left unattended, kids will die of suffocation. Therefore, animals are kept in groups so their body heat can regulate each other's temperature	If it rains, goats/sheep will have runny noses. If left unattended, kids will die of suffocation. Therefore, animals are kept in groups so their body heat can regulate each other's temperature

7 Conclusion

In this paper, we suggested a framework for identifying and forecasting sheep breed lineage and inherited disorders using deep learning techniques. When we looked at other studies that had similar goals, we discovered that most of the study was on image recognition, which calls for the use of cameras and other electronic devices. To better understand how farms are managed by farmers in rural and urban areas, we also conducted exploratory interviews with a few farms. By comparing our results from each farm, we found that each farm engages in a similar set of activities that may help us achieve our goal of identifying sheep breed lineage through unsupervised datasets without the usage of complex technological apparatus. These results are crucial for developing a straightforward procedure that every farm can use to improve the quality of their produce.

8 Limitation and Future Studies

The study is limited only on sheep farms in Malaysia, with focus on sheep breeding (husbandry) and disease, to improve quality of farm produce. Future areas of research may include adopting our method on other types of farm animals.

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Consumer Motivation to Visit a New Coffee Shop: Empirical Study on Generation Y and Z Motivation

Winardi Triasa Putra and **Ratna Roostika**

Abstract The coffee shop business is currently on the rise, supported by people's culture, especially generations Y and Z. Generations Y and Z are generations that are very responsive to information and tend to like new things, including culinary matters, they are motivated to find new coffee shops and that can provide satisfaction that can encourage intention to visit again as well as positive word-of-mouth. This study aims to see whether the motivation of generations Y and Z both intrinsically and extrinsically can influence the satisfaction of visiting a new coffee shop and see whether satisfied visitors have the intention to visit again and share positive word-of-mouth to people. Around those asking for recommendations. The research was conducted in Yogyakarta by distributing online questionnaires through the Google form with the target respondents from generations Y and Z or from the age range of 17–41 years.

Keywords Motivation · Satisfaction · Revisit intention · Word-of-mouth

1 Introduction

Various kinds of offers by coffee shops are making consumers increasingly interested in visiting such place to work, especially for the atmosphere, the beauty of the natural surroundings, speed of serving, good architecture, and the taste of the coffee the shops offer. This shift in societal culture has resulted in a significant raise of the coffee shop business. Generation Y and Generation Z are generations that are very responsive to information and tend to like new things, including enjoying culinary delights in coffee shops, they are motivated to look for new and different coffee shops that can provide satisfaction. Motivation is a state from a person that encourages the individual's desire to carry out certain act to meet their goals. Motivation in a person's purchasing decisions is divided into two types, namely intrinsic motivation

W. T. Putra · R. Roostika (✉)
Management Department, Universitas Islam Indonesia, Yogyakarta, Indonesia
e-mail: ratna.roostika@uii.ac.id

or motivation that arises because of motives that arise from within the consumer. This intrinsic factor can come from consumer interest, consumer positive attitudes, and consumer needs. Extrinsic motivation is motivation that arises because of external stimuli, for example, purchasing power, prestige, and existence. In the culinary sector itself, research that considers extrinsic and intrinsic variables is still limited [14]. There are many reasons among people in spending their time to visit a coffee shop. Understanding the motivation behind someone's reasons in visiting a coffee shop is important for managers so that they can better meet the needs and desires of customers. Understanding visitor motivation is also considered as one of the key strategies to gain customer satisfaction and competitive advantage [8].

Several studies have revealed that consumers who have the intention to revisit are related to their loyalty and satisfaction [18]. Other research reveals that the positive impression offered by restaurants can lead to consumers' intention to visit [5]. When the level of satisfaction has been reached, consumers tend to recommend their experiences by word of mouth (WOM). With a positive WOM, the interest of new potential customers to visit the coffee shop will increase. Livin et al (2018) states that word-of-mouth can be defined as informal communication between consumers regarding goods or services offered in the market. Word-of-mouth is becoming increasingly important in business because it can be an important source of information for consumers when they are ready to purchase the products/services. Word-of-mouth is also considered to have a strong influence on consumer behavior.

2   Hypothesis Development

Influence of intrinsic and extrinsic motivation to seek variation on satisfaction

Consumers have consumption goals when making purchase. Consumers tend to pay more attention to goods or services that match their orientation to achieve consumption goals [4]. Conversely, consumers will only ignore products or services that they think are not relevant or not in accordance with their shopping orientation. Products or services that are in accordance with consumers orientation will be preferred and will receive more positive assessments [6]. As stated by More [16] Consumers are often viewed as logical decision-makers. Commonly, consumer concerned more with functional features and advantages of the products or services. Not only logical, based on the view among experiential marketers, customers also considered as rational and emotional people, where they place enjoyable experiences as important part of decision making [16]. Consumers have various motivations or reasons for visiting coffee shops, so it is very important to understand their visiting motivations. Understanding consumer motivation can help coffee shop managers to provide services that best meet what consumers are looking for. If consumers are satisfied, this satisfaction needs to be studied further, from which service aspects make them satisfied [8]. In order for consumers to be satisfied, of course the coffee shop must create something

different or unique, both in terms of products and services so that consumers remain loyal. This study then builds the first hypothesis, as follows:

H1a: Intrinsic motivation to seek variety has a positive effect on satisfaction.
H1b: Extrinsic motivation to seek variety has a positive effect on satisfaction.

The effect of satisfaction on customer's intention to return

The intention to buy again or visit again can be an indicator that after enjoying coffee shop services, visitors feel positive about the shop service offerings [11]. Consumers who are already loyalists and frequently visit the cafe, usually they will show positive behavior, such as willing to pay more, not demanding too much compared to new consumers [3]. The more satisfied the consumers feel by their experiences at the cafe, the greater their desire to return [7]. Hwang and Hyun [10] specifically identified that the more consumers are satisfied with the quality of the food, the variety of support services, the friendliness of the staff and the attractive interior design, the tendency to return to eat at the same coffee shop is increasing. Next, we proposed the second hypothesis:

H2: Satisfaction has a positive effect on the intention to return.

The effect of satisfaction on word of mouth

With a variety of backgrounds and consumer motivations, satisfaction is not easy to obtain. When consumers are happy with the coffee shops services, their subsequent behavior tends to be positive [12]. Happy and loyal customers will voluntarily recommend their experiences to their friends or relatives. Currently the role and influence of word-of-mouth is getting bigger due to the impact of the electronic communication [15]. A study by Berger and Schwartz [2] also shows that attractive products/services will receive word of mouth immediately. For the third hypothesis we proposed (Fig. 1):

H3: Satisfaction has a positive effect on word-of-mouth.
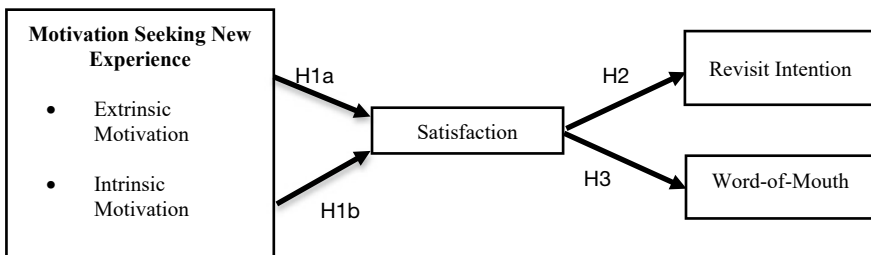
Fig. 1 Research framework

3   Research Methods

The method used in this study was a quantitative method to find information on the correlation between variables in the model to be tested using certain statistical methods. This study used a questionnaire using a 7-level Likert scale to gain insight into the role of motivation for seeking variety in explaining internal and external customer responses. The objects of this research were Y and Z generations who had visited or often visited coffee shops, lived in Yogyakarta and were between 17 and 41 years old, with a minimum sample size of 100 respondents. Sampling was carried out by non-probability sampling and purposive sampling technique. Data collection was conducted by online questionnaire through Google Form. The tool used to analyze the data is the SmartPLS 4.0 software.

4   Result and Discussions

The method to collect data in this study was by distributing questionnaires online using the Google form. The results of the questionnaire distribution obtained the number of respondents as many as 259 people.

A total of 44.5% of respondents were male and 55.6% were female respondents. Most respondents (47.5%) were aged between 29 and 41 years, 46.3% aged between 20 and 28 years, and 6.2% aged less than 20 years. As many as 71.8% of respondents had diploma or undergraduate degree, 14.3% of respondents had master's degree, 13.5% of respondents were high school graduates/equivalent, and 0.4% of respondents from other education. Around 48.3% of the respondents had an average monthly spending between Rp 2,000,000–Rp 5,000,000, then as many as 24.7% had expenses between Rp 5,000,000–Rp 10,000,000, 20.5% of respondents had expenses less than Rp 2,000,000, and about 6.6% had an average monthly expenditure of more than Rp 10,000,000. The distribution of work for the most respondents was private employees with 55.2%, then those who worked as entrepreneurs were 20.8%, students/students were 14.7%, and as civil servants/military/police were 4.6%, which was equal to the number of who had not worked/housewives.

4.1   Outer Moder Evaluation

Construct Validation Test

Convergent Validity

There are 6 indicators that have an outer loading value below 0.6. Consequently, these indicators must be removed from the calculation in stages starting with the indicator that has the smallest outer loading value. Based on the recalculation, from

the initial 20 indicators, there are now 14 indicators left. Of the 14 indicators, all of them have an outer loading value above 0.6 so that all indicators can be declared valid as a measure of their latent variables.

Furthermore, in the validity test, based on the AVE value, all latent variables in the study already had an AVE value > 0.5, with value for motivation around 0.804, satisfaction 0.668, intention to return 0.804, and word of mouth 0.673, thus all variables, if assessed from the AVE value, can be declared valid.

Discriminant Validity

The cross-loading value of each indicator on the intended latent variable is already greater when compared to indicators on other latent variables. Likewise, the Fornell-Larcker Criterion value generated by the correlation of each construct is already greater than the correlation between other constructs. So it can be concluded that the model in this study is valid because it has a good discriminant validity value.

Reliability Test

The results of the reliability test in all variables had composite reliability and Cronbach's alpha values above 0.7 and the variance extracted was greater than 0.5. So it can be said that the construct in this study is reliable.

4.2 Inner Moder Evaluation

Coefficient of Determination R^2

Based on the results of the R-Square test, it was known that the satisfaction variable had a value of 0.372, the return visit variable was 0.482, and the word-of-mouth variable was 0.366. This shows that the variables of satisfaction, intention to return, and word of mouth are moderate because their values are close to 0.33.

Path Coefficient and Signification Test

The testing showed that all variables have significant path coefficient values with all values above 0.6. Furthermore, the results of the t-statistic calculation showed that the relationship between variables had a t-statistic value > 1.96. This indicates a significant relationship.

Q^2 Predictive Relevance

The three endogenous variables in this study had a Q-Square value > 0, thus indicates that the model in this study has good predictive relevance.

Goodness of Fit Test

Based on the results of the calculation of Goodness of Fit, a value of 0.550 was obtained so that it could be stated that this research model had a large (Goodness of

fit) GoF index. This indicates that the GoF index number in this study is greater than 0.36, so it can be concluded that the model used is appropriate (Fig. 2).

Hypothesis Testing

The hypothesis testing could be concluded as followed (Table 1):

1. Motivation in seeking variation both intrinsically and extrinsically can have a significant and positive influence on satisfaction, seen from the *P* Value < 0.05, H1a and H1b in this study it can be stated that it is supported,
2. Satisfaction can have a positive and significant effect on intention to return (*P* Value < 0.05) H2 research can be stated as supported,
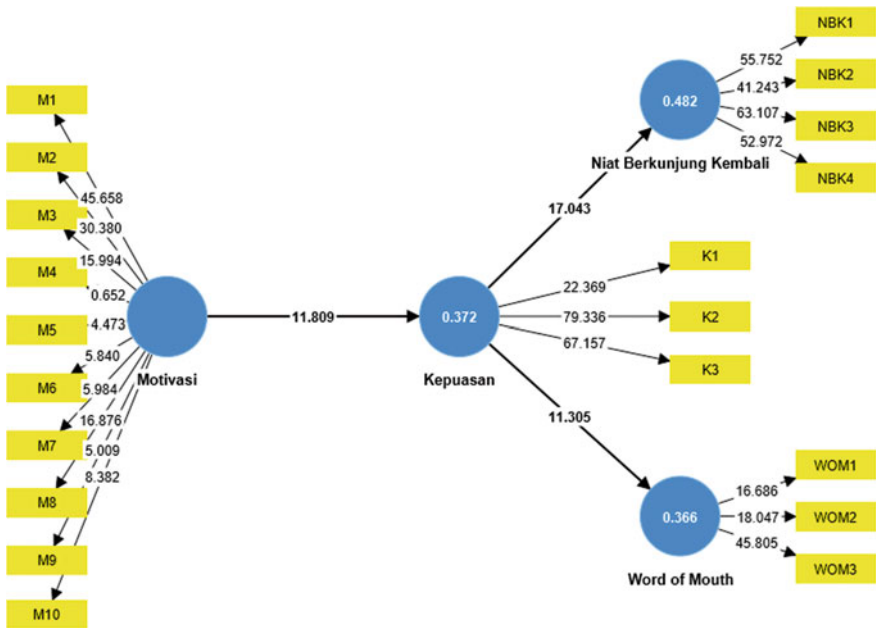
Fig. 2 PLS Final result

Table 1 Hypothesis test results

	Original sample (O)	T Statistics ((|O/ STDEV|)	*P* values	
Satisfaction → intention to return	0.694	17.043	0.000	Accepted
Satisfaction → word-of-mouth	0.605	11.305	0.000	Accepted
Motivation → satisfaction	0.621	11.809	0.000	Accepted

3. The variable Satisfaction also has a positive and significant effect on word of mouth (*P* Value < 0.05) so that H3 can be declared supported.

4.3 Discussion

The PLS SEM analysis showed that hypothesis one (H1) is supported. This is shown through the sample value of 0.621 from the hypothesis test which proposes the influence of motivation on satisfaction. The relationship between motivation and satisfaction is positively significant, indicated by the t-statistic value of 11,891 which means that the value is greater than the t-table value (1.96). Furthermore, the *p*-value is 0.000, means that the value is less than 0.05. Therefore, Hypothesis 1 which states that both intrinsic and extrinsic motivation affect satisfaction is accepted. From these positive and significant result, it can be interpreted that the higher the motivation of Y and Z generations in seeking for a new cafe, the higher their satisfaction if the cafe meets their expectations.

This research is in accordance with the Theory of Reasoned Action (TRA), where a person's behavior can change according to a person's behavioral intentions. Furthermore, behavioral intentions are also strongly influenced by external situations such as culture, norms and common's attitude towards the environment. Ajzen and Fishbein in [13] stated that according to TRA, a person's behavior can be predicted through his/her interest in particular products or service. This study supports Lee's et al. [14] previous study also who found that a person's intrinsic and extrinsic motivation can affect satisfaction with new restaurant services they have visited. It can also be said, for Y and Z generations in Indonesia who like to eat or drink at Coffee shops, the higher their motivation to try and visit new cafés, if the products and services meet their expectations, then the more satisfied they are.

Hypothesis two proposed that Satisfaction has a positive and significant impact on young consumers' intention to revisit new coffee shops. The smart PLS analysis has shown the original value of 0.694. This value is positive, which means that the more visitor satisfied, the higher the interest in visiting the new coffee shops. The t-statistic shows a value greater than 1.96, and the value after bootstrapping is 17,031. The *P*-value also shows a value of 0.000 which means that the effect of satisfaction on visiting intentions is significant. By accepting hypothesis 2 (H2), it can be interpreted that for generations Y and Z in visiting new coffee shops, they are more likely interested in visiting the same cafe if they feel satisfied during their visit.

This research on the motivation to visit a new coffee shop is in accordance with the findings of previous research by Byun and Jang [3] and Han and Hyun [8]. In this study, it was found that there was an effect of satisfaction on the intention to return to the destination. This research also strengthens the theory of planned behavior where according to psychological theory, there is a phenomenon of individuals consistency on similar behavior when someone finds satisfaction. This theory also shows that willingness control and non-willingness control can also be applied to explain individual

behavior [17]. According to the theory of planned behavior, individual behaviour and repeated behavior can be a driving force for a person's actual behavior [1]. Intention to return to a destination/location can be defined as a person's desire or readiness to make repeated visits to the same destination [19].

The result of the hypothesis test for the third hypothesis shows that there is also a significant positive effect on the relationship between satisfaction and word-of-mouth. Smart PLS analysis shows that there is an original sample value of 0.605. The significance level shows a value of 11.295 which means that it has a t-statistic value > 1.96, and also has a *p*-value of 0.000 which means it is less than 0.05. From the results of the data analysis, it can be concluded that the positive effect of satisfaction on word-of-mouth can be supported.

Litvin et al. [15] in their previous study found that word-of-mouth is an important source at the point of purchase position as the main source of information for consumers making purchase decisions. Word-of-mouth is also identified as having a strong influence on consumer actions. Word-of-mouth is defined as informal communication that occurs between consumers in considering the products or services offered. When word-of-mouth is positive, potential consumers will have a higher interest in visiting the coffee shop. This research also supports previous research by Karnowati et al. [9], where satisfaction can positively influence consumer behavior, which is manifested through a willingness to recommend to others, either friends or family.

5   Conclusion

Based on the analysis and discussions, the consumers motivation to visit a coffee shop that is new can be concluded that both intrinsic and extrinsic motivation have a positive and significant impact on consumers' satisfaction. This means that the more someone has a tendency to be motivated to try new things, the more satisfied they will be when they find a new coffee shop. Both intrinsic and extrinsic motivation have significant and positive effect on consumer's satisfaction. The results among generations Y and Z as respondents target also support on previous findings where the more satisfied the visitors in visiting a new coffee shop, the more they are interested in visiting the coffee shop again.

The effect of satisfaction on the intention to recommend through word-of-mouth also shows finding as predicted. The more satisfied, the more Y and Z generations are interested in recommending their experiences to others. This needs to be a concern for coffee shop managers, regarding the impact of understanding motivation and satisfaction, because it can help them how to manage coffee shops to attract potential customers. This research has limitations where the variety of target respondents being studied is limited for Y and Z generations. In addition, this research was conducted in one city location where different place might have different characters among generation Y and Z. The diversity of respondents' backgrounds will be able to improve the validity and reliability of the findings.

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Using Machine Learning: Consumer Attitudes Toward the New Facebook Currency

Samer Yaghi and Mohammed Salem

Abstract As digital currencies continue to take center stage in the world's financial system, IT behemoths are more interested than ever in how they can alter established payment methods. Facebook, a popular social media network, developed its own cryptocurrency called Libra as one of these initiatives with the goal of revolutionizing how people exchange and hold value online. This study uses cutting-edge machine learning techniques to assess a dataset of user emotions in order to examine consumer attitudes around the launch of this new Facebook money. A survey-based methodology was used to collect information from a simple random sample of Palestinian consumers (302 responses). The results of this study suggested that, in some situations, consumers have favorable attitudes about the new Facebook currency, which we covered in more depth throughout this paper. Policymakers, financial institutions, and technology businesses can learn important lessons from this study's findings about consumer attitudes about digital currencies and their potential effects on conventional financial systems. Understanding the elements that influence consumer attitudes of a digital currency within the context of a well-known social media site like Facebook may help to build successful implementation methods, fix issues, and promote universal adoption.

Keywords Consumer attitudes · New Facebook currency · Palestine

1 Introduction

Digital currencies have rapidly increased in recent years, posing a threat to established payment systems and changing the way people exchange goods and services and hold value. In keeping with this pattern, major technology companies have started

S. Yaghi · M. Salem (✉)
University College of Applied Sciences, Gaza, Palestine
e-mail: mzsalem@ucas.edu.ps

S. Yaghi
e-mail: syaghi@ucas.edu.ps

investigating how digital currencies may completely transform the banking sector [1, 2]. One of the biggest social media platforms in the world, Facebook, has joined this movement by launching its own digital currency, called Libra, with the goal of facilitating quick, safe, and effective financial transactions among its enormous user base [3].

The launch of the new Facebook currency marks a significant advancement in the field of virtual money since it makes advantage of the platform's wide user base and engagement to possibly spur widespread adoption. Facebook, which has millions of active users globally, has a significant impact on how consumers behave and what they desire. Understanding consumer attitudes of this new Facebook currency is vital because it might have significant effects on the development of digital currencies and their inclusion into established financial institutions [4, 5].

Consumer attitudes toward digital currencies have been studied in the past [3], with an emphasis on elements like usability, security, and trust. But the particular setting of a well-known social media site like Facebook gives this investigation a special dimension. The incorporation of a digital currency into the Facebook ecosystem creates a fresh dynamic that may affect how users see it, how quickly they embrace it, and how widely they accept it.

This study uses machine learning to evaluate a large dataset of user emotions to dive into the subtleties of consumer attitudes toward the new Facebook currency. This study tries to find patterns, trends, and insights within the massive amount of user-generated information available on social media sites, including Facebook itself, by utilizing the capabilities of natural language processing and sentiment analysis algorithms. With the use of this method, it is possible to examine consumer attitudes in their whole across a range of demographic, regional, and socioeconomic contexts, giving rise to a more nuanced knowledge of the elements affecting user acceptability and adoption.

By examining consumer attitudes regarding the new Facebook currency and illuminating the underlying forces that create these beliefs, this research seeks to close a gap in the body of knowledge. This study hopes to add to the ongoing discussion on the future of digital currencies and their possible influence on established financial systems. Policymakers, financial institutions, and technology firms may use the knowledge acquired from this research to develop measures that will address consumer concerns, increase adoption rates, and guarantee a seamless transition to a future dominated by digital currencies.

2 Theoretical Background

2.1 New Facebook Currency

Consumer interest and curiosity in the Facebook currency have increased significantly. Given Facebook's enormous user base and global reach, many see it as a potentially disruptive force in the world of digital finance. With the currency, users may conduct transactions and engage in financial activities inside the comfortable boundaries of the social media platform, taking a big step toward building a more seamless and integrated digital economy [2, 3]. The advantages that this new currency may bring to consumers, such quicker and more efficient transactions, lower costs, and more accessibility to financial services, are intriguing. Additionally, the incorporation of the Facebook currency has the potential to blur the lines between social media interaction and financial transactions, opening up possibilities for cutting-edge services and applications that make use of the platform's enormous user database. Overall, the study emphasizes the importance of consumer sentiments in determining the acceptance and success of the new Facebook currency in the future, offering insightful information to companies, decision-makers, and stakeholders in the financial technology industry [1, 3].

2.2 Consumer Attitudes

Consumer attitudes is considered an important variable [6–8]. Using machine learning techniques [9, 10], research on consumer perceptions of the new Facebook currency reveals a rich tapestry of opinions and feelings. The creation of a digital currency within the Facebook ecosystem is supported by a subset of the customers polled [3]. According to these people, the currency has the potential to be a game-changing innovation that will revolutionize online commerce. They value the efficiency and simplicity that come with a digital currency that is coupled with a well-liked social networking site. It is thought to be a big plus to be able to conduct financial transactions, send and receive payments, and make purchases all within the Facebook interface. Additionally, these customers are intrigued by the concept of a universal digital currency that could cross international borders, making cross-border transactions easier and encouraging financial inclusion. They picture a time when those with restricted access to conventional banking systems may use the Facebook currency as a bridge to financial services. Their perspective is that the new Facebook currency offers a potential chance to improve the simplicity, openness, and inclusiveness of financial transactions in the digital era [2–4].

An another segment of customers, on the other hand, has skepticism and caution as their guiding principles when it comes to the new Facebook currency. These people express legitimate worries about the privacy and security ramifications of integrating a digital currency into a social media site known for data leaks and

user privacy disputes. They are concerned that the introduction of a currency into Facebook's ecosystem may result in heightened security measures and the possible exploitation of user data for specialized marketing campaigns or other uses [3]. Given Facebook's enormous user base and influence, there are additional worries about the concentration of power and the potential for monopolistic practices. Decentralization principles that are inherent in cryptocurrencies like Bitcoin, according to critics, might be undermined by the advent of a centralized digital currency. Additionally, concerns are raised about how the introduction of a new digital currency might affect conventional financial systems and the potential regulatory issues that could result. These users stress the need for strong security safeguards, open governance, and governmental oversight to allay their worries and guarantee the responsible use of the new Facebook currency [1–3].

3   Methodology

3.1   Participants

The methodology of the study includes gathering information from 302 respondents who responded to a survey about consumer attitudes toward the new Facebook currency by using machine learning. The survey asked about the demographics of the participants, including their age, work status, level of education, and monthly income. The study included seven items about consumer attitudes toward the new Facebook currency. On a 5-point Likert scale from strongly agree to strongly disagree, participants were then asked to rate their agreement with these statements. After gathering the data, data clustering techniques were used to examine it (Fig. 1).

3.2   Procedures

The major method of data collection for the study's analysis using data clustering of consumer attitudes toward the new Facebook currency was a questionnaire using a Google form. Email, Facebook, and WhatsApp were all used to extensively circulate the link to the Google form. Due to local language constraints, the original questionnaire was correctly translated into Arabic. After that, it was reviewed and pilot tested by an Arabic native speaker to make sure it was accurate.
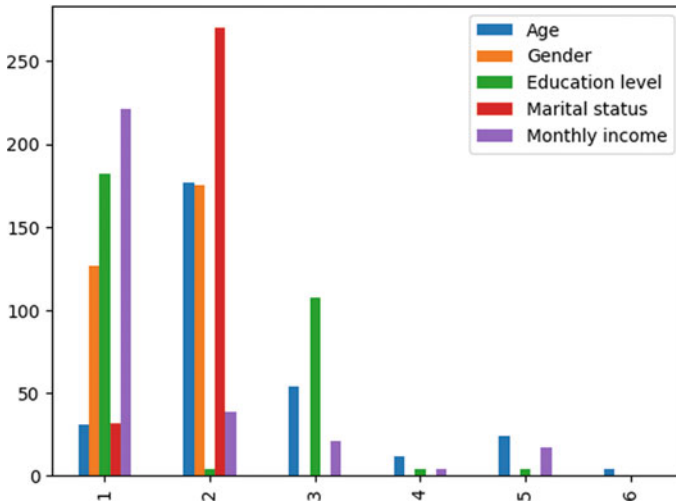
Fig. 1 Respondents' demographics

3.3 Measures

A questionnaire with a 5-point Likert scale was used for the evaluation. It was made up of two separate parts. Seven items from Baidoun et al. [3], Quamara and Singh [11], Kimmerl [12], Ye and Zhao [13], Abudalfa and Salem [14] are used in the first part to evaluate consumer attitudes toward the new Facebook currency. The second part discusses the demographic variables.

3.4 Experiment Setup

The purpose of the current study is to employ data clustering to create groups of consumers based on survey responses. To cluster the data, we use the K-means method [9]. Python programming was used to conduct each test within the Google Colab environment. The following is a list of the packages used in the experiment:

- Numpy and Pandas are used to manipulate data.
- Scikit Learn is used to implement K-Means clustering.
- A software for graphing and data visualization is called Matplotlib.
- A dendrogram is used by Scipy to represent hierarchical grouping, while Seaborn is used to build graphs.

4   Experiment Results

Cluster analysis was used to group customer responses and look at how they felt. To establish the optimal number of clusters, we used the Elbow evaluation metric. We computed the Calinski Harabasz Score for each cluster size (K). K is an integer with a range of 2–9. Given that the maximum score is two, Fig. 2 shows that two clusters are the ideal number. The responses they provided led to the creation of two consumer groups. We also used the Sihouette Score [9], as shown in Fig. 3, to support our research. This statistic is widely used to assess the effectiveness of data clustering.

In order to visualize the results of the cluster analysis, we used principal component analysis (PCA) to convert the data into two dimensions [10]. This approach provides findings that are competitive when measured against other equivalent equipment. The K-means technique was then applied to the two-dimensional data [9]. Figure 4 displays the two clusters (groups) that resulted from data clustering. The first cluster has 99 samples. However, the second has 203 samples.

We used additional data clustering techniques for a more thorough investigation of consumer attitudes toward the new Facebook currency. As seen in Fig. 5, we used a hierarchical clustering Dendrogram to represent all links between customer responses. This graph shows two distinct groupings.

As a result, we have been inspired to investigate the two groups further by looking at each cluster independently. We examined each cluster using a variety of techniques. One of these techniques focuses on examining the effects of the demographic components on the cluster analysis. The results of data clustering are not influenced by
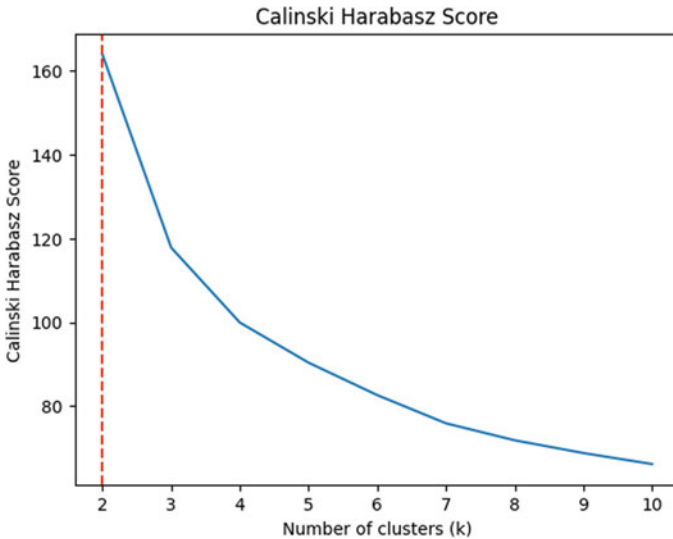
Fig. 2 Elbow evaluation measure with Calinski Harabasz Score
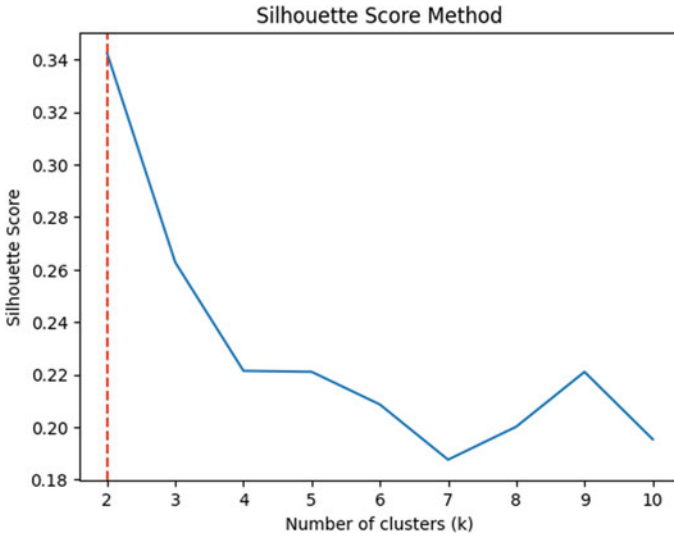
Fig. 3 Elbow evaluation measure with Silhouette Score Method
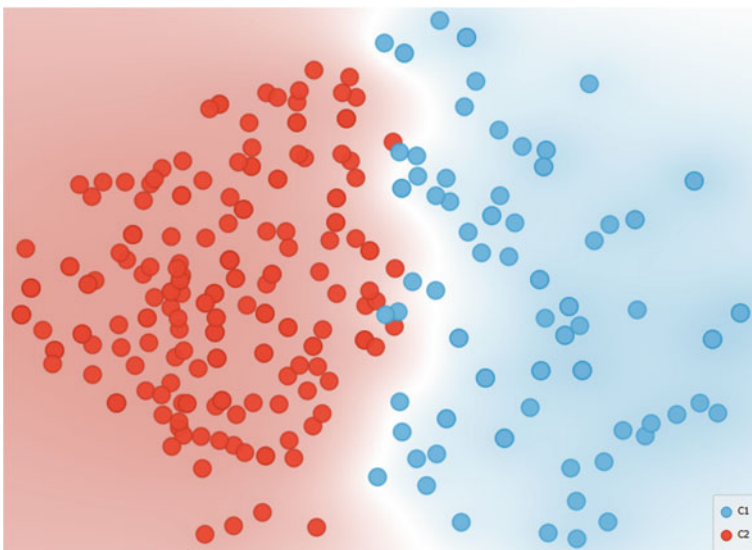
Fig. 4 Results of applying K-means with MDS multi-dimensional scaling

demographic variables, as seen in Figs. 6 and 7. The consistency of the distribution with the complete dataset explains this.

Furthermore, we assessed each group using violin plots. Each figure shows the distribution of survey respondents' answers. Figures 8 and 9 illustrate the analysis
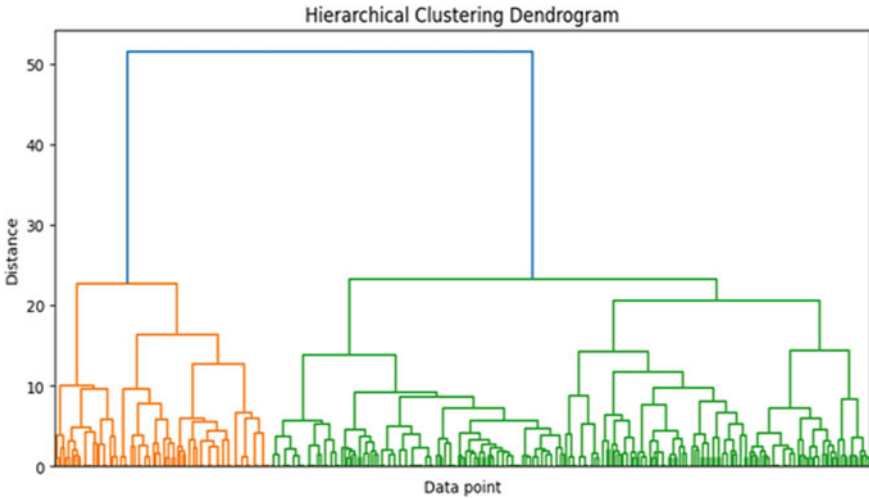
Fig. 5 Hierarchal clustering dendrogram
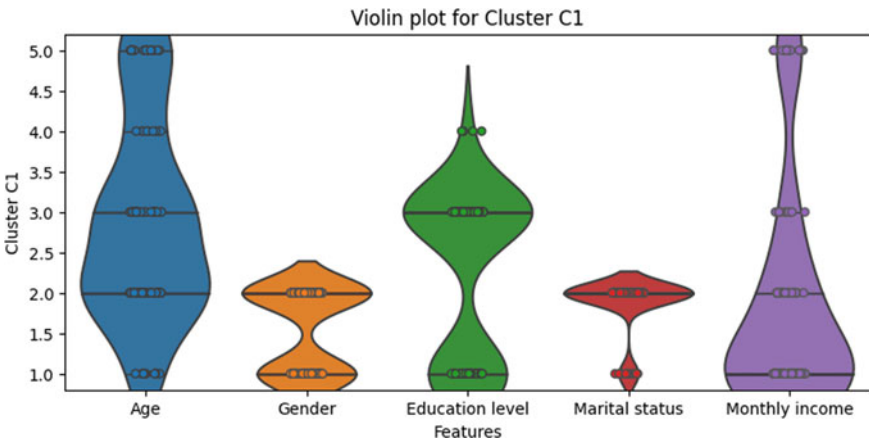
Fig. 6 Cluster 1 analysis with selected variables

of the first and second groups, respectively. The findings indicate that the first group C1, comprising 32.8% of the sample, have a negative attitudes toward new Facebook currency (Fig. 8). The second group C2, in contrast, has a positive attitudes toward new Facebook currency, with a proportion of 67.2% (Fig. 9).
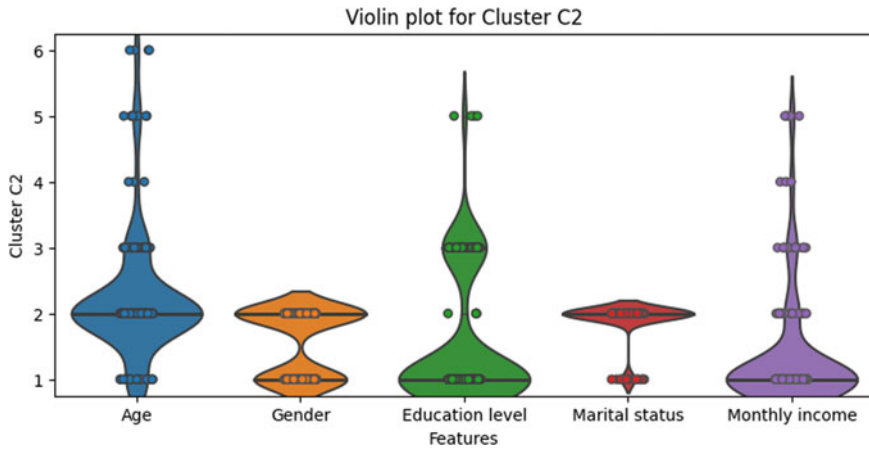
Fig. 7 Cluster 2 analysis with selected variables

Fig. 8 Violin plot the first cluster

5   Discussion

5.1   *Discussion of Findings*

Interesting findings were obtained from the research of consumer attitudes toward the new Facebook currency using machine learning techniques. The sentiment analysis of social media data gave researchers a thorough insight of how the general public feels about this virtual currency. The results of the sentiment research show that customer perceptions of the new Facebook money are complex. Some people were enthusiastic and upbeat about the convenience and potential advantages of using a digital currency supported by a reputable organization like Facebook, while others
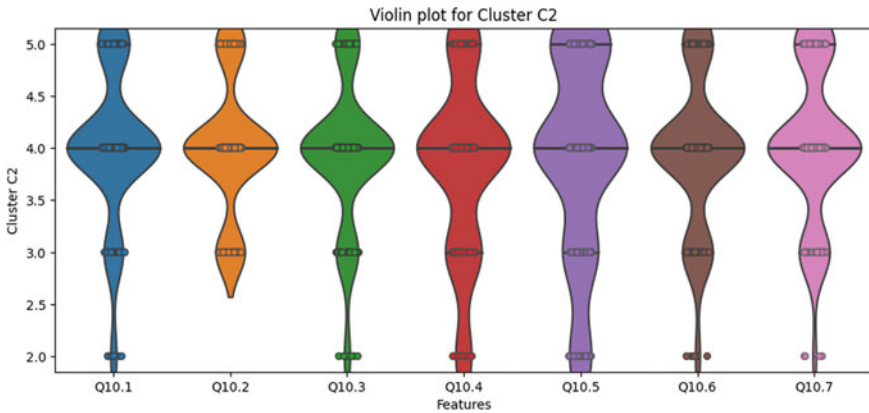
Fig. 9 Violin plot the second cluster

showed skepticism and mistrust. This ambivalence points to a wary and conflicted consumer attitude.

The research of social media discussions revealed a number of important themes and issues with the new Facebook money. Consumers voiced serious concerns about privacy and data security, particularly in light of Facebook's history of user data misuse scandals. Consumers were also concerned about the possibility of monopolistic control over the banking industry because of Facebook's sizable user base and effect on the market. Concerns were also expressed about what seemed to be a lack of regulatory control and transparency in relation to the new currency. Customers had concerns and reservations about the Facebook currency's durability and long-term survival since they didn't know how it would be governed and governed. In contrast, some people were excited about the prospect of seamlessly integrating digital currency into their daily lives to increase accessibility and efficiency of transactions. They viewed the introduction of the new Facebook currency as a chance to simplify financial transactions and lessen reliance on conventional banking infrastructure.

The research's conclusions have a number of ramifications. They first emphasize the significance of attending to customer worries about privacy, data security, and regulatory monitoring. To allay customer concerns and earn confidence, Facebook must place a high priority on openness and implement strong security measures. Second, advertising campaigns for the new Facebook currency should emphasize the advantages and practicality it provides, emphasizing its ability to improve financial transactions and cater to users' changing demands. Consumer concern may be reduced by emphasizing user ownership over their data and offering clear information on the governance and regulatory components of the currency. The study also highlights the importance of sentiment analysis and machine learning in determining how consumers feel about new technologies and virtual currencies. A more thorough and nuanced knowledge of customer sentiment is made possible by the application

of machine learning algorithms to social media data, enabling businesses to make wise decisions based on user input.

As a conclusion, the research of consumer attitudes toward the new Facebook currency using machine learning techniques offers insightful information about the general population. The results show conflicting perspectives, including worries about data security, privacy, regulatory supervision, and monopolistic power. For Facebook to be successful in obtaining customer confidence and currency adoption, it will be essential to address these issues and properly communicate the advantages of the currency.

5.2   Limitations and Further Research

There are some drawbacks to this machine learning-based study on consumer attitudes toward the new Facebook currency. The study's primary source of data is survey information gathered from a narrow sample of participants, which may not be entirely representative of the broad consumer community. The results could not accurately reflect the thoughts and attitudes of those who do not use Facebook or who were not surveyed due to selection bias. The research is also time-limited and might not account for future changes in consumer opinions when the Facebook currency changes or in response to outside events. Additionally, even though machine learning techniques have been used to analyze the data, their accuracy and interpretability are constrained by their very nature. The algorithms utilized could introduce biases or miss subtle nuances in consumer opinions, which could have an impact on the conclusions drawn from the research. It is crucial to recognize that machine learning models may not fully reflect the complexity of human beliefs and actions since they are dependent on data patterns.

There are various directions for additional study given the intricacy and dynamic nature of consumer attitudes toward the new Facebook currency. First of all, qualitative research techniques like focus groups and interviews can offer deeper insights into customers' underlying motives, anxieties, and decision-making processes in relation to the Facebook currency. This can aid in revealing more complex viewpoints and in-depth investigation of the variables affecting customer sentiments. Additionally, as the Facebook currency is more widely used and integrated into the social media platform, longitudinal studies can monitor changes in consumer attitudes over time. This can offer insightful information on how the currency will eventually affect customer perceptions and behavior. Future studies can also explore the influence of cultural and demographic variables on consumer sentiments regarding the Facebook currency. Understanding how views fluctuate across locations, age groups, and socioeconomic statuses can offer insightful information for customizing strategies and tackling particular issues in various customer segments. Last but not least, comparative studies that look at consumer perceptions of other digital currencies or other financial technologies can give a more comprehensive view on the acceptance and adoption of the Facebook money. This can aid in placing the data into

context and identifying certain elements affecting consumer attitudes toward the new Facebook currency. In order to help businesses, decision-makers, and stakeholders develop strategies and make decisions regarding the adoption and implementation of the currency, it is necessary to address these limitations and to conduct additional research in these areas. By doing so, a more thorough understanding of consumer attitudes toward the new Facebook currency can be created.

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The Divided Perspectives of Moonlighting and the GIG Workforce

F. C. A. Annie Stephen and G. Arockia Stalin

Abstract During the Covid-19 pandemic, the practice of "moonlighting" or working other jobs to supplement income has grown in popularity and extent. Due to issues including conflicts of interest, poor job performance, or misusing an employer's resources, the majority of businesses in India do not permit their employees to hold down supplementary employment. Moonlighting is the term used to describe the practice of working a second job for extra money outside of regular business hours. The work-from-home (WFH) concept is credited with popularizing moonlighting among white-collar workers in India. It has also raised questions about corporate compliance. Many businesses would rather not allow employees to work multiple jobs, but a few firms, like Swiggy, are formally permitting employees to moonlight under certain circumstances. We discover that people take several jobs as a means of dealing with their family's financial issues or rising financial commitments as well as to meet non-financial priorities in contemporary life. Primary data have been gathered using the reliability-tested questionnaire as the instrument to test the significance. The method used to select samples from the population is convenient sampling. The article's final conclusion is that employees are free to work a second job in their spare time, but not for personal gain. Finally, the quantity and forms of moonlighting may depend on the individuals' financial and non-financial motivations as well as the overall number of hours they spend at their second job.

Keywords Moonlighting · Monetary and Non-monetary factors

1 Introduction

Moonlighting has now become an interesting topic in the world of work. Moonlighting is a term used to describe the second (or more) job that professionals have in addition to their primary job. Moonlighting has become quite popular in recent years

F. C. A. Annie Stephen · G. Arockia Stalin (✉)
Department of Professional Accouting and Finance, Kristu Jayanti College, Bengaluru, India
e-mail: arockiastalin@kristujayanti.com

due to the rise of online marketing, work-from-home options, and small business opportunities available to anyone with an idea and some hustle. The food delivery app Swiggy recently added a new policy that accepted moonlighting. Employees at Swiggy are permitted to work a second job under certain circumstances, such as not interfering with production or being in a conflict of interest with the company. Employees of IT companies who moonlight are not subject to any laws. Employees of a plant are not allowed to hold dual employment under Indian labour rules. Employees in the IT sector are not covered by workers, nevertheless. Over the past several weeks, disputes over "two-timing" and "cheating" have erupted in the Indian technology outsourcing sector as businesses deal with a rising tendency of employees "moonlighting" or taking on second jobs.

The Good and Bad of Moonlighting

While many prestigious companies are opposed to employee moonlighting, some support it. Employees of Swiggy are now permitted, under some restrictions, to moonlight on other projects after the end of the workday. Nova Benefits encourages moonlighting and gives employees the freedom to explore new opportunities and follow their passions or interests beyond work hours. C. P. Gurnani, the CEO of Tech Mahindra, said he could think about permitting moonlighting. He agreed that workers should be able to accept overtime pay, but they should be upfront about it. However, some businesses forbid the practise of moonlighting. Rishad Premji, the CEO of Wipro, recently referred to moonlighting as cheating and sacked 300 employees after learning they worked for rival companies. IBM has sent a warning to employees about side jobs. Moonlighting, according to TCS, is unethical and goes against corporate values and ethos. Employees at Infosys have been cautioned not to moonlight. However, with prior consent from HR and industry officials, it has permitted employees to engage in gig labour outside of regular business hours.

Legality of Moonlighting

Whether moonlighting should be considered criminal or a paradigm change in the gig economy is still up for intense debate. Dual employment is not discussed in detail in Indian law. Does not specifically define or address dual employment. A person is not permitted to accept an offer from a rival under Section 27 of the Indian Contract Act of 1872. On the other hand, Section 27 of the Indian Contract Act, 1872 forbids the addition of a non-compete clause. Therefore, dual employment would be against the terms of the employment contract's non-compete clause. Dual employment is prohibited by the Factories Act of 1948.

2   Literature Review

A study by Dr. A. Shaji George, A. S. Hovan George (2022) titled "A Review of Moonlighting in the IT Sector and its Impact" attempted to study the moonlighting practices in the IT Sector. The compliance levels of employees have a significant

effect on moonlighting. The study also revealed that the job satisfaction levels of the employees had a significant impact on the employees' attitude towards moonlighting. The workers chose additional jobs to acquire new skills for transitioning to other jobs with satisfying remunerations.

Uthra Ramanujam, Dr. S. Nafeesa (2020), this study focuses on employee Intention and Moonlighting among Private School Teachers in Kanchipuram District. The study found that the economic needs of the individuals play a leading role in shaping the moonlighting intentions of teachers. The customization of the working styles and hours make it easy to pursue a secondary job. Augmenting one's income is the main reason for moonlighting aspirations among employees. Over passage of time, moonlighting has become a rising trend.

This study analyses the Moonlighting Intentions of Middle Level Employees of Selected IT Companies (2017)—Ashwini et al. studied the drivers of multiple jobs and the association with the demographic profile of the workers. It was found that financial problems or the increased financial commitments led to moonlighting among the workforce. It was found that pecuniary and non- pecuniary motives and the hours spent in the second job could be the deciding factor of moonlighting.

To study on causes and consequences of moonlighting by Employees in automobile industry at Oragadam, Chennai (2020) by Priyanka V., Sajana K. P. explored the impact of moonlighting in the Auto mobile industry. The results revealed that the standard of living of the workforce improved with moonlighting practices.

A Review of Moonlighting in the IT Sector and its Impact (2022) by Dr. A. Shaji George and A. S. Hovan George led to the finding that the pervasiveness of moonlighting can be attributed to flexible working hours and also the work-from-home options mostly offered by IT companies. The concern for economic well-being and professional advancement usually motivates the employees to take up multiple jobs and resort to moonlighting. The study also compared the relationship among workers' core job and the secondary job. It was found that the employees gave prominence to the secondary jobs that were taken up as they chose the additional jobs based on their interest and liking.

Rising Moonlighting of IT/ITES Professionals in India (2019) by Seema studied the factors influencing moonlighting practices among individuals and it was found that people felt insecure with their jobs due to rising job cuts and therefore resorted to skill diversification and skill enhancement. People chose to moonlight not out of personal interest but ore so from the point of additional income.

In a study made by Puja Khatri and Khushboo in the year (2014), the researcher examined the moonlighting practices of SME Employees in Delhi-NCR and attempted to study the attrition rate of workforce. The study concludes that the commitment levels of the labour are very low. The lower commitment levels led to moonlighting practices.

A study by Aruna (2012), HRD in SME: investigates the level of knowledge and skills of the workers employed in moonlighting. It was found that the employees who were skilled were averse to the practice of moonlighting while the unskilled workers had a tendency to moonlighting. He main cause for the practice was to generate additional funds and meet financial commitments.

In a study on 'Multiple Jobholding' by Emily et.al in the year 2020, elucidates certain reasons for people to be engaged in 2 or more jobs. They classify them into-push reasons where the individuals are pushed to do so due to their circumstances and conditions or pull reasons where the individuals are pulled into satisfying their personal or professional objectives or goals.

Andrew, Atherton et al., in 2016 studied about the decision to moonlight and how having a second job varies amongst the self-employed and the working class and it shows that people with higher housing and other costs are more likely to take up a correspondent job and the self-employed are likelier than the working class to engage in moonlighting.

Stephen, Beckley and Milliken in 2017 studied the changing nature of careers, identities and work culture in the ne twenty-first century which suggest that the nature of work and behavior at work has changed globally over the last 4 decades quite rapidly especially for the middle class and those engaged in bureaucratic employment find the need to take a second job and resort to other means to fulfill their personal and professional goals.

Bouwhis et al. in 2018 distinguished groups and studied the wellbeing of these groups who had second jobs. There were 4 groups and it was found that the vulnerable groups were taxed mentally and physically due to the daunting workload but succumb to the same due to commitments and circumstances.

Angela Bruns and Natasha Pilkauskas in a study about multiple job holdings among women and low income mothers brought to light the harsh reality of women and working mother engaged in moonlighting due to poor financial backgrounds and low job quality which results in poor mental health individually.

Green J in 2013 studied ways to deal with employees engaged in moonlighting and those individuals juggling between many jobs. Post the pandemic, with rise in WFH jobs, moonlighting has been on the rise and according to the study, the practice should slowly be normalized and companies should set out clear moonlighting terms and policies set in place that will be a win for both the employee and the company as well.

According to a study on working multiple jobs over a day/s or a week by Marucci-Wellman, H. R., Lombardi, D. A., & Willetts, J. L. in 2016 point out that most of these individuals find a supplementary job to secure an additional source of income or to pursue a particular talent or skill or for furthering entrepreneurial opportunities optimally.

In a study by Robert Shishko and Bernard Rostker (1976) study the economics of multiple job holding. Most individuals work on a second job to earn an additional source of income and there is a tradeoff between the want to earn more than what a single job can pay and the fact that working extra hours is a foregone leisure. They concluded that people engaged in moonlighting are trying to satisfy a family or dependents and have no choice other than working 2 or more jobs.

3 Objectives of the Study

The major objective of the study is to analyse the factors affecting moonlighting behaviour.

1. to examine the monetary benefits of the moonlighting benaviour.
2. to evaluate the non-monetary benefits of the moonlighting benaviour.

4 Conceptual Framework of the Study
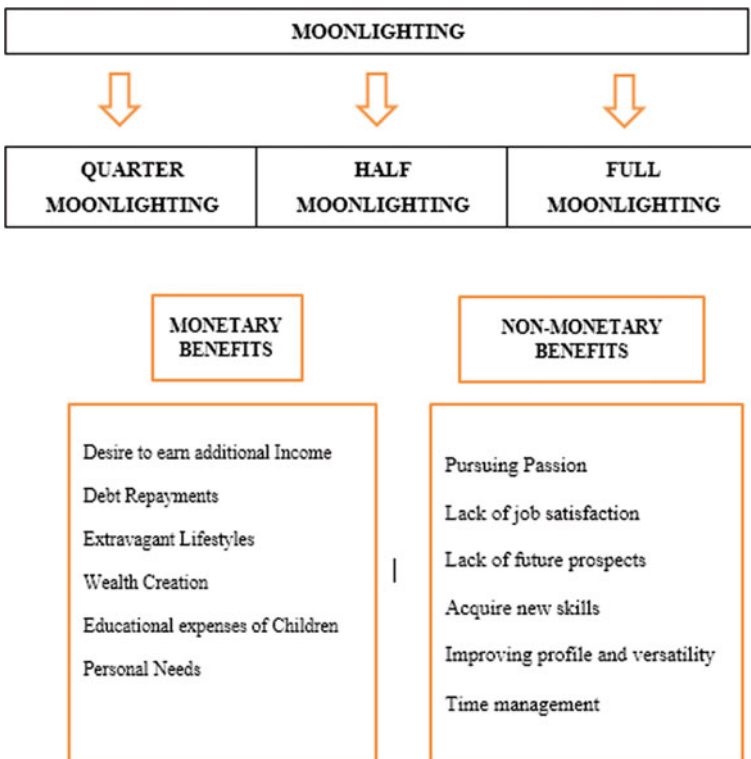
5   Methods

The researcher used an empirical approach for this investigation. The drivers of moonlighting among middle level IT personnel have been examined using primary and secondary data. The reliability (cronbach's alpha) tested questionnaire was used to gather primary data. Additionally, the population was selected for the sample size using practical sampling approaches. Although there were 126 total respondents, only 117 were pertinent. Additionally, the secondary data was gathered from the past literatures by reviewing about 35 academic and popular research articles as well as journals, magazines, publications, etc., on the side. The IT sector in and around Chennai serves as the sample area. The researcher has pinpointed a number of characteristics that influence employees to take up side jobs or moonlighting. The criteria are divided into two categories: financial rewards and non-financial advantages. The author has developed the conclusions after testing the idea.

The author has developed a hypothesis and used a questionnaire to test its importance. The following is the hypothesis put forth for this study:

A. Hypothesis I: Ho: There is no association between the type of second job (moon-lighting) and annual income, marital status, and number of members in the family.
B. Hypothesis II: Ho: There is no association between the number of hours spent in the second job and motives for moonlighting.

6   Tools for the Analysis

Tool used for this study is:

- Reliability analysis.
- Descriptive Statistics.
- Cross-Correlation Analysis.
- ANOVA.
- Regression Analysis.

7   Results and Discussion

The primary and secondary data from this study are used to pinpoint the drivers who are also working other jobs. The survey is used to gather primary data. The total reliability score is favourable for moving forward and it aids in determining the connection between the IT personnel' demographic profile and their decision to moonlight in the current situation. The analysis below allows the author to determine the level of moonlighting as well as the factors that influence it and how it relates to certain employees.

Table 1 Reliability test for all the variables

Reliability statistics			
Case processing summary			
		N	%
Cases	Valid	60	100.0
	Excluded[a]	0	0.0
	Total	60	100.0
[a]Listwise deletion based on all variables in the procedure			

Reliability statistics	
Cronbach's Alpha	No. of items
0.824	26

Scale statistics			
Mean	Variance	Std. deviation	No. of items
26.8333333	121.820	11.03722949	26

Source Computed Using SPSS 16

Analysis

Cronbach's alpha values are provided in Table 1 for this case study in order to assess the data's dependability. A metric used to assess the consistency of the data is Cronbach's alpha. When the Cronbach's alpha value was close to 1, it indicated that the data was trustworthy. Cronbach's alpha values for the various constructs in this study range from 0.784 to 0.884. These Cronbach's alpha scores show that each construct has a high degree of reliability. The entire questionnaire's reliability estimate is 0.824, indicating the high dependability of the data that were gathered for this study. All of the variables in this study are trustworthy, as shown by Table 1 description of the variables that have Cronbach's alpha correlation coefficients over 0.6, and all respondents who have been identified as respondents can be tracked for moonlighting elements.

Table 2 shows the sixty of the surveys sent to IT staff members were completed, and those sixty results were analysed. 37 (%) of the 60 respondents were women, and 23% were men. The majority of respondents have master's degrees, while the remaining respondents have PhDs and bachelor's degrees. Most of them have less than five years of experience. 73% of those surveyed were married, 27% were single, and 2% had another marital status.

Each variable's mean scores fall between 1.9 and 2.267 (Employee Engagement to Moonlighting Factors). It indicates that respondents almost concur that each of these factors exists in the workplace environment. The value of standard deviation varies from 0.8456, 0.8309, 1.1454, 0.6763, 0.4103, 1.2649, 1.0393, 0.7524, 1.0146, 1.075, 1.0332, 1.1061 and 1.1061 respectively.

Table 2 Descriptive statistics

Descriptive statistics

	Age	Level of employment	Level of Income annually	Marital Status	Do you have children	Q1	Q2	Q3	Q4	Q4	Q5	Q6	Q7
Mean	1.883	2.233	1.9	1.317	2.033	2.4	2.267	2.1	2.233	2.117	2.017	2.217	2.117
Std. deviation	0.8456	0.8309	1.1454	0.6763	0.4103	1.2649	1.0393	0.7524	1.0146	1.075	1.0332	1.1061	1.1061
Variance	0.715	0.69	1.312	0.457	0.168	1.6	1.08	0.566	1.029	1.156	1.068	1.223	1.223
Minimum	1	1	1	1	1	1	1	1	1	1	1	1	1
Maximum	4	3	4	3	3	4	4	4	4	4	4	4	4

Source Computed using Eviews 9

Interpretation

The link between variables is shown via Pearson correlation. The correlation coefficients between the constructs in this investigation are described in Table 3. The results of the study indicate that moonlighting has a highly significant positive link with moonlighting factors (0.946), while moonlighting has a highly significant negative relationship with IT employees ($-0.634**$). Therefore, it may be said that the higher the employee performance and involvement, the higher the moonlighting aspects.

Interpretation

The findings of a two-way analysis of variance (ANOVA) in Table 4 indicate that there is no significant difference between the number of hours spent at the second job and the reasons for moonlighting. The p value is lower than this. As a result, it can be said that H0 is accepted and that no other hypothesis has to be made.

The authors have determined the primary factors that influence moonlighting and their relationship to the demographics of a specific employee and the degree to which they moonlight.

Interpretation

The findings of the regression analysis for hypotheses 1 and 2—moonlighting factors and workplace—are displayed in Table 5. R2 is equal to 0.027, which indicates that the Independent Variable (Workplace) accounts for 2.7% of the variation in the Dependent Variable (Moonlighting Factors). F is 1.126, 0.885, and 0.665, and an ANOVA with a P-value of 0.022 shows that the model is significantly significant. While the coefficient table's t and p-values reveal a strong association between moonlighting factors and other factors ($t = -1.811; P = 0.000$), which supports the aforementioned hypothesis. The coefficient for work overload has a value of -0.259, showing a negative correlation.

The results of the regression analysis indicate that, except from the number of family members, there is no relationship between the type of second employment (moonlighting) and annual income, marital status, or other factors. Therefore, the R-square value is higher than the corrected R-square value, indicating that there is a relationship between the size of the family and the type of second employment. Unbiased sample t test to determine the relationship between the factors and the demographics of IT employees.

8 Conclusion

The number of family members is a significant driver, according to the authors, who have discovered a variety of factors that influence employees' decision to moonlight. The study also found substantial differences between single and married workers' intentions to moonlight. Like employment experience, intention to moonlight is

Table 3 Cross-correlation analysis

Correlations

		Age	Job Level	Income	Marital status	Family members	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Age	PC	1	− 0.081	0.075	− 0.053	− 0.086	− 0.209	− 0.21	0.045	− 0.00	− 0.003	− 0.11	− 0.04	− 0.09
	Sig.		0.537	0.568	0.688	0.512	0.109	0.099	0.731	0.956	0.979	0.385	0.733	0.475
Job Level	PC	− 0.081	1	− 0.634**	− 0.224	− 0.123	− 0.155	0.064	0.07	0.015	0.026	0.074	− 0.093	0.007
	Sig.	0.537		0	0.085	0.351	0.238	0.626	0.593	0.911	0.844	0.572	0.481	0.959
Income	PC	0.075	− 0.634**	1	0.304*	0.007	0.005	0.065	0.051	− 0.009	0.12	0.016	0.191	− 0.111
	Sig.	0.568	0		0.018	0.956	0.972	0.619	0.698	0.947	0.362	0.905	0.143	0.398
Marital status	PC	− 0.053	− 0.224	0.304*	1	0.206	0.186	0.143	0.037	0.162	− 0.122	− 0.105	− 0.048	0.108
	Sig.	0.688	0.085	0.018		0.115	0.154	0.275	0.781	0.216	0.355	0.426	0.716	0.41
Family members	PC	− 0.086	− 0.123	0.007	0.206	1	0.007	0.376**	0.154	0.225	− 0.009	0.039	0.021	0.103
	Sig.	0.512	0.351	0.956	0.115		0.96	0.003	0.241	0.084	0.946	0.769	0.872	0.432
Q1	PC	− 0.209	− 0.155	0.005	0.186	0.007	1	0.098	− 0.096	− 0.034	0.347**	− 0.316*	− 0.208	0.099
	Sig.	0.109	0.238	0.972	0.154	0.96		0.456	0.465	0.795	0.007	0.014	0.11	0.45
Q2	PC	− 0.215	0.064	0.065	0.143	0.376**	0.098	1	0.464**	0.615**	0.305*	0.343**	0.465**	0.518**
	Sig.	0.099	0.626	0.619	0.275	0.003	0.456		0	0	0.018	0.007	0	0
Q3	PC	0.045	0.07	0.051	0.037	0.154	− 0.096	0.464**	1	0.480**	0.551**	0.608**	0.564**	0.434**

(continued)

Table 3 (continued)

Correlations

		Age	Job Level	Income	Marital status	Family members	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
	Sig.	0.731	0.593	0.698	0.781	0.241	0.465	0	0	0	0	0	0	0.001
Q4	PC	−0.007	0.015	−0.009	0.162	0.225	−0.034	0.615**	0.480**	1	0.208	0.303*	0.468**	0.459**
	Sig.	0.956	0.911	0.947	0.216	0.084	0.795	0	0		0.111	0.018	0	0
Q5	PC	−0.003	0.026	0.12	−0.122	−0.009	−0.347**	0.305*	0.551**	0.208	1	0.761**	0.563**	0.188
	Sig.	0.979	0.844	0.362	0.355	0.946	0.007	0.018	0	0.111		0	0	0.15
Q6	PC	−0.114	0.074	0.016	−0.105	0.039	−0.316*	0.343**	0.608**	0.303*	0.761**	1	0.605**	0.384**
	Sig.	0.385	0.572	0.905	0.426	0.769	0.014	0.007	0	0.018	0		0	0.002
Q7	PC	−0.045	−0.093	0.191	−0.048	0.021	−0.208	0.465**	0.564**	0.468**	0.563**	0.605**	1	0.408**
	Sig.	0.733	0.481	0.143	0.716	0.872	0.11	0	0	0	0	0		0.001
Q8	PC	−0.094	0.007	−0.111	0.108	0.103	0.099	0.518**	0.434**	0.459**	0.188	0.384**	0.408**	1
	Sig.	0.475	0.959	0.398	0.41	0.432	0.45	0	0.001	0	0.15	0.002	0.001	

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

Source Computed Using Eviews 9

Table 4 Anova analysis

ANOVA[a]						
Age and factors		X^2	df	Mean square	F	Sig.
1	Re	7.108	9	0.79	1.126	0.363[b]
	Rl	35.075	50	0.701		
	Total	42.183	59			
ANOVA[a]						
LOE and factors		X^2	df	Mean square	F	Sig.
2	Re	5.596	9	0.622	0.885	0.545[b]
	Rl	35.138	50	0.703		
	Total	40.733	59			
ANOVA[a]						
LOI and factors		X^2	df	Mean square	F	Sig.
3	Re	8.279	9	0.92	0.665	0.736[b]
	Rl	69.121	50	1.382		
	Total	77.4	59			

Source Computed using SPSS 16
a and b uses to indicate pairwise comparison

significantly influenced by it. Given that the motivations for moonlighting depend on the employee's demographic profile, it is recommended that significant consideration be given to it. To encourage experienced employees to stay with the company, businesses must rethink their HR programmes such that they treat freshers and experienced employees differently. The size of an employee's family should also be taken into account while deciding on HR policy. This study has made some employers more mindful of the motives of employees who moonlight. The study provides more opportunity to analyse variables that will make moonlighting phenomena worse.

Table 5 Regression analysis

Coefficients							
Regression model		A1		B1		t	Sig.
		B	Std. Error	Beta			
Age and factors	C	2.450	0.709	0.000		3.454	0.001
	Q1	− 0.157	0.098	− 0.234		1.595	0.117
	Q2	− 0.251	0.16	− 0.308		1.564	0.124
	Q3	0.288	0.211	0.256		1.365	0.178
	Q4	0.111	0.149	0.133		0.743	0.461
	Q5	0.111	0.173	0.141		0.643	0.523
	Q6	− 0.322	0.187	− 0.393		− 1.723	0.091
	Q7	− 0.015	0.143	− 0.019		− 0.103	0.919
	Q8	0.040	0.128	0.052		0.312	0.757

Coefficients							
Regression model		A1		B1		t	Sig.
		B	Std. error	Beta			
LOE and factors	C	3.406	0.71	0.000		4.797	0.000
	Q1	− 0.157	0.098	− 0.238		− 1.593	0.117
	Q2	0.243	0.161	0.304		1.514	0.136
	Q3	0.183	0.211	0.166		0.868	0.390
	Q4	− 0.031	0.149	− 0.037		− 0.205	0.838
	Q5	− 0.117	0.173	− 0.152		− 0.68	0.500
	Q6	0.126	0.187	0.157		0.676	0.502
	Q7	− 0.259	0.143	− 0.345		− 1.811	0.076
	Q8	− 0.035	0.128	− 0.047		− 0.275	0.784

Coefficients							
Regression model		A1		B1		t	Sig.
		B	Std. error	Beta			
LOI and factors	C	1.482	0.996	0.000		1.488	0.143
	Q1	0.063	0.138	0.069		0.454	0.652
	Q2	0.098	0.225	0.089		0.434	0.666
	Q3	0.012	0.296	0.008		0.041	0.967
	Q4	− 0.109	0.209	− 0.096		− 0.522	0.604
	Q5	0.133	0.242	0.125		0.549	0.586
	Q6	− 0.203	0.262	− 0.183		− 0.774	0.442
	Q7	0.344	0.201	0.333		1.717	0.092
	Q8	− 0.221	0.18	− 0.214		− 1.23	0.224

Source Computed using SPSS 16

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Bouncing Back from the Pandemic: Assessing the Implications of Covid 19 on Luxury Brands

Ghada M. Abaido and **Zakariya Chabani**

Abstract In today's world, luxury brands like Chanel and Louis Vuitton symbolize social status and prestige. Even though the Covid 19 pandemic had a significant negative impact on the luxury brand market, these brands showed resilience and ability to adapt to the new normal. In this paper, we discuss the pandemic's impact on luxury brands during and post pandemic. Additionally, we focus on the online marketing efforts and the shift in consumer buying habits in countries like the United States, Germany, and China. Results were generated using a qualitative approach to analyze secondary data from reliable sources, ensuring credibility and minimizing biases. Findings indicate that the pandemic significantly affected luxury consumers' purchasing motivations and has posed numerous obstacles mainly; disrupted supply chains, diminished demand, and a transition towards online sales. A key implication also revealed a growing trend towards sustainability in consumer behavior during and post pandemic. Luxury brands have re-evaluated the impact of these unprecedented factors on their e-commerce strategies. These insights provide valuable information for industry professionals and consumers alike.

Keywords Luxury brands · Sustainable branding · Covid 19 · Consumer behavior

G. M. Abaido
Faculty of Communication, Arts and Sciences, Canadian University Dubai, Dubai, UAE
e-mail: Ghada.abaido@cud.ac.ae

Z. Chabani (✉)
Faculty of Management, Canadian University Dubai, Dubai, UAE
e-mail: zakariya.chabani@cud.ac.ae

1   Introduction

Over the years, the luxury market has undergone a significant transformation, growing into a multi-billion-dollar industry with considerable socio-political and economic influence. Today's luxury brands are defined by their exclusivity, selectiveness, and the emotional and creative value they offer customers, a notable departure from the traditional emphasis on exceptional quality and exclusivity within a product category. A 2019 study by McKinsey & Company discovered that nearly half of luxury shoppers (45%), tend to favor brands that create a strong emotional connection with them. This finding highlights the changing preferences of consumers in the luxury market [1].

The COVID-19 pandemic has had widespread repercussions across all sectors, with the luxury market experiencing declining sales due to the economic downturn and changing consumer habits [2]. Iconic brands such as Gucci, Louis Vuitton, and Prada saw some of the most substantial sales declines in their history, leading to store closures, staff reductions, and operational changes. Other luxury brands like Chanel and Hermès also experienced falling revenues. A 2020 survey by McKinsey & Company found that two-thirds of luxury shoppers (67%), consider a brand's environmental and social impact when deciding what to buy [3]. In response to these challenges, many brands have turned their attention to sustainability, streamlining inventory and adopting environmentally responsible practices to remain competitive.

As the world starts to recover from the pandemic and restrictions are lifted, luxury brands need to adapt to the evolving landscape and changing consumer behaviors. It is essential for them to implement innovative, non-traditional strategies to regain momentum and maintain their allure for loyal customers. A central component of these new strategies is a focus on sustainability, as environmentally responsible practices and transparent supply chains become increasingly important to discerning consumers [4]. Embracing this shift in approach is essential for luxury brands to fully recover and overcome the challenges imposed by the pandemic, forging a path towards a resilient and an eco-friendly future.

The purpose of this paper is to evaluate (1) the impact, (2) challenges, and (3) remedial approaches for luxury brands in the post-pandemic era.

This paper is organized as follows: Sect. 2 reviews existing literature on luxury market trends. Section 3 explains the research methodology applied, including data collection and analysis. In Sect. 4, we explore Covid-19's impact on luxury brands, while Sect. 5 discusses main findings and recommendations for future research. Section 6 summarizes key points and implications for the future of the luxury industry.

2   Literature Review

The COVID-19 pandemic has significantly accelerated the adoption of digital channels and e-commerce in various sectors, including the luxury industry. Several studies document this shift as luxury brands face the challenge of maintaining their exclusive brand image while transitioning to online platforms [5–7]. With physical stores closing temporarily or permanently, luxury brands had no choice but to quickly adapt to the digital sphere to keep customer engagement alive and maintain stable revenue [8, 9].

Research by Kim and Ko highlights the need for luxury brands to invest in digital infrastructure, such as website development, online marketing, and social media strategies, to strengthen their e-commerce capabilities [10]. Scholz and Smith further emphasize the importance of incorporating virtual and augmented reality technologies to replicate in-store experiences and uphold the high-touch customer experiences that luxury brands are known for [11]. Moreover they suggest implementing digital age experience marketing as a way to make customer relations more sustainable in the context of Industry 4.0 [12].

While the digital transformation presents new opportunities, it also brings challenges for luxury brands. Pantano et al. for instance, argue that the online environment heightens the risk of counterfeiting and brand dilution [2]. As a result, luxury brands have turned to adopt innovative strategies to protect their brand image and deliver a seamless omnichannel experience [13].

Moreover, to maintain brand exclusivity and allure in the digital age, luxury brands must implement a strategic approach to customer relationship management (CRM) and online engagement [14]. They should also leverage user-generated content (UGC) and influencer marketing to forge authentic connections with consumers while still preserving their exclusive image. By adapting to the digital era and embracing new technologies, luxury brands can successfully navigate the complex landscape of e-commerce and continue to thrive in the post-pandemic world [15].

3   Methodology

In this article, we used a qualitative approach to explore secondary data collected from reliable websites and reports. By doing so, we were able to identify patterns and trends that helped us better identify the current issues facing the luxury market.

Moreover, our analysis explored a comprehensive and realistic approach. By doing so, we were able to emphasize various factors impacting the issue and revealing key insights. This approach not only improved our study's quality but also encouraged further investigation and discussion for future research in this area. This paper contributes to the existing body of knowledge and serves as a helpful resource for those interested in gaining a clearer grasp of the subject's nuances.

4   How Covid-19 Affected the Luxury Brands

4.1   Supply Chain Disruption

The COVID-19 pandemic has had a profound effect on the global supply chain, posing numerous challenges for luxury brands in sourcing raw materials and manufacturing their products [16]. These disruptions have been felt across various industries, including fashion, where the pandemic has led to raw material shortages and reduced output [17].

A survey conducted by Enable and published in Supply Chain Quarterly revealed that 83% of distributors experienced supply chain disruptions due to the pandemic [18]. Another survey by EY, involving 200 senior-level supply chain executives in late 2020 and 2022, found that only 2% of companies were fully prepared for the pandemic. This survey also showed that 57% of companies faced serious disruptions, with 72% reporting negative effects, 17% of which were significantly negative and 55% mostly negative [19]. These findings underscore the challenges businesses faced during the pandemic and emphasize the need for improved preparedness measures in the future.

Travel restrictions imposed to combat the pandemic have further impacted luxury brands, as many rely on materials sourced from countries around the world that have experienced lockdowns and travel restrictions [20]. Consequently, this has led to shipment delays for raw materials and increased transportation costs. The closure of factories and production facilities has also been a major challenge for luxury brands. Numerous factories have had to shut down temporarily due to government regulations or concerns over employee safety, resulting in significant delays in production and delivery timings. These delays have affected sales, as frustrated customers may turn to other brands that can provide products more promptly [21, 22].

4.2   Reduced Demand

The Covid-19 pandemic has sent shockwaves throughout the global economy, impacting various industries and sectors. Among those hardest hits identified is the luxury industry. This highly competitive and demanding industry requires substantial financial resources to maintain the high standards expected by its customers [23]. The pandemic has brought about unprecedented financial strain, making it challenging for luxury brands to stay afloat and sustain their operations.

To survive in this ever-changing economic landscape, luxury brands have been forced to adopt vertical integration, particularly in production and distribution. This approach allows luxury brands to exert greater control over their supply chain and manage costs more effectively. However, implementing this strategy can be costly and necessitates significant investments in technology, infrastructure, and human resources.

Unlike wholesale and retail businesses, which possess the ability and flexibility to employ attractive discounts and commercial policies to counter the financial toll of the pandemic, the luxury industry operates on a different business model. Relying heavily on exclusivity and a high-end image, aggressive discount policies are not an option for luxury brands. Consequently, the luxury industry is more vulnerable to the financial impact of the pandemic.

From a regional perspective, the luxury market has suffered significant losses due to the pandemic. For example, sales in China dropped by an estimated 67 billion USD, while losses in the USA reached 52 billion USD [24]. The pandemic's influence on the luxury market has been extensive, with all luxury goods sectors affected in 2020. However, certain sectors within the luxury market experienced more severe losses than others. Personal luxury goods (-25%), luxury cars (-10%), and luxury hospitality (-65%) were among the sectors that suffered the most.

4.3 Store Closures

The closure of brick-and-mortar stores has been one of the most significant challenges faced by the luxury products industry during the COVID-19 pandemic [25]. For example, Louis Vuitton had to temporarily shut down several of its stores due to lockdown measures. Similarly, Burberry experienced store closures and reported a 27% decline in sales during the first quarter of 2020 [26].

A primary challenge associated with the closure of physical stores is the loss of revenue. For instance, Neiman Marcus, a luxury department store chain, filed for bankruptcy in May 2020 due to the substantial impact of store closures on its financial health [27]. Additionally, Italian luxury brand Salvatore Ferragamo reported a 30% decline in revenue during the first half of 2020, due to lockdown measures and temporary store closures [28]. These closures have significantly affected the bottom line, with some luxury brands experiencing a considerable drop in sales [29]. While online sales have increased during the pandemic, they have not been able to fully replace the in-store experience for luxury consumers [30].

Another major challenge faced by luxury brands is the inability to provide a high-touch customer experience [31]. Physical stores are often designed to offer a unique and more personalized shopping experience that cannot be replicated online.

4.4 Shift to Online Sales

The COVID-19 pandemic has greatly impacted luxury brands, with the closure of physical stores prompting many to focus on online sales [32]. For example, during the pandemic, Tiffany & Co. expanded their digital presence and launched a new e-commerce platform to cater to their customers' needs [2]. Similarly, Gucci increased

its investment in digital marketing and e-commerce to maintain customer engagement and drive online sales during the lockdown periods [2].

To support online sales, luxury brands have also had to invest heavily in digital infrastructure. This includes technology platforms, logistics and supply chain capabilities, and marketing and advertising to drive online traffic [4]. These investments have increased costs for luxury brands and introduced new challenges to their business models.

In addition to lower profit margins and higher costs, luxury brands face the risk of diluting their brand image when they move online [10, 33]. Stores create a unique and exclusive atmosphere that helps reinforce the brand image and appeal to target customers [9].

Despite these challenges, many luxury brands have embraced online sales and invested in their digital capabilities [34]. For instance, luxury fashion retailer Farfetch reported a 74% increase in online sales during the second quarter of 2020, as it continued to invest in its digital platform and expand its global reach [35].

4.5 Changing Consumer Behavior

The COVID-19 pandemic has led to a global response that has drastically altered daily life for individuals worldwide. To curb the spread of the virus, global health organizations such as the World Health Organization (WHO) have collaborated with governing bodies in various countries and regions to implement strict social distancing policies. These policies have contributed to a decline in the consumption of luxury products. Additionally, the pandemic has led to a voluntary reduction in travel rates, both locally and internationally. By restricting movement and imposing lockdowns, the COVID-19 pandemic has caused a drop in sales in the luxury industry by limiting global travelers who often double as luxury consumers since travel is a pivotal aspect of the luxury industry [24].

As a result of the pandemic, luxury consumers' confidence in enjoying luxury products and services has taken a hit, as the fear of transmission increases [36]. Some luxury consumers fear contagion that may occur within luxury retail spaces, while others find it unnecessary to purchase luxury products such as leather goods, footwear, jewelry, and apparel because they are flashy pieces meant for show and, therefore, have little opportunity to use or wear them in a conspicuous public setting. Furthermore, many luxury consumers have opted to spend on more 'essential' needs instead of luxury products as the economy struggles and the outcomes of the pandemic were uncertain.

Before the COVID-19 pandemic, luxury brands were enjoying optimal consumption rates that were on a rapid upward trajectory. However, with the onset of the pandemic, ethical and ecological concerns emerged, and luxury consumers started to question the need for indulgence in the face of this fatal pandemic [36]. Many consumers have turned to the second-class luxury experience during these difficult times, whether out of financial need or a change in psychological and emotional

attachment. As a result, luxury consumers with high-end products have been seen to offer these goods for sale at lower prices during the pandemic, inadvertently setting in motion a trend that gives birth to a second-class luxury market. The second-hand luxury product market caters to consumers who, despite the financial strain of the COVID-19 pandemic, feel the need to maintain a semblance of the luxury experience.

The COVID-19 pandemic has also caused a dramatic shift towards 'experiential luxury,' which includes high-end exclusive cruises, restaurants, hotels, and resorts. This niche has been characterized by dynamic innovations in the recent past, making it one of the fastest-growing facets of the luxury industry [23].

4.6 The Sustainability Strategies Adopted by Luxury Brands During the Covid Pandemic

The COVID-19 pandemic has shed light on the importance of sustainability for luxury brands as they navigate an ever-changing landscape and adapt to new challenges. To stay ahead, these brands have prioritized environmentally responsible practices by focusing on sustainable sourcing and production methods, ensuring their products have minimal impact on the environment. Moreover, they are embracing circular economy practices such as upcycling and recycling to reduce waste and extend the life of their products. In doing so, luxury brands are actively demonstrating their commitment to environmental responsibility and setting a positive example for the broader industry.

Addressing immediate concerns brought on by the pandemic is just one aspect of luxury brands' focus on sustainability. They are also preparing for long-term success by enhancing transparency and traceability within their supply chains, giving consumers confidence in the ethical and sustainable nature of their products. Luxury brands are actively participating in industry-wide collaborations and initiatives that aim to promote sustainable practices across the sector. By responding to shifting consumer preferences and aligning their strategies with the global movement towards a more sustainable future, luxury brands are positioning themselves for continued success in a world where eco-friendly practices are increasingly valued by consumers and stakeholders alike. Integrating sustainability into their core business models ensures that luxury brands can not only survive but thrive in a post-pandemic world.

5   Discussion and Recommendations

The COVID-19 pandemic has left an indelible mark on the global luxury industry, giving rise to challenges such as supply chain disruptions, dwindling demand, store closures, a transition to online sales, and ever-changing consumer behavior. To help

luxury brands navigate these challenges and prosper in difficult times, we offer several recommendations.

First and foremost, luxury brands should diversify their supply chains, reducing their reliance on single sources. By investing in local and regional suppliers, and exploring alternative materials and manufacturing methods, they can build more resilient and flexible supply chains. Considering brick-and-mortar store closures, brands must also enhance their digital presence. This involves developing robust e-commerce platforms, virtual showrooms, and personalized online experiences, incorporating cutting-edge technologies like artificial intelligence, augmented reality, and machine learning.

To create a strong connection with their audience, luxury brands should tell their story effectively through digital channels, showcasing their unique value proposition, heritage, and craftsmanship. Social media, content marketing, and influencer partnerships can prove invaluable in reinforcing the brand image. Moreover, embracing sustainability and ethical practices in their operations—from sourcing raw materials to manufacturing and packaging—can resonate with environmentally conscious consumers and strengthen the brand image.

As consumers increasingly value experiences over material possessions, luxury brands should tap into experiential luxury, offering exclusive events, high-end hospitality, and personalized travel experiences to stay relevant and appealing. Building long-term relationships with customers is another priority, achieved by providing personalized services, loyalty programs, and exclusive benefits to encourage repeat purchases.

Luxury brands must stay in tune with shifting consumer preferences and trends, conducting regular market research and using data analytics to better understand their customers' needs and adjust strategies accordingly. Collaboration and innovation are key, with brands working alongside other industry players, including technology companies, startups, and even competitors, to explore new business models, joint ventures, strategic partnerships, and open innovation initiatives, ultimately staying ahead of the curve and capitalizing on emerging opportunities.

Enhancing workforce flexibility and resilience is essential, as luxury brands should invest in employee training, cross-functional teams, and remote work capabilities to ensure their workforce is adaptable and prepared for future disruptions. A skilled and agile workforce can help brands navigate uncertain market conditions and maintain operational efficiency.

Lastly, luxury brands should proactively develop contingency plans and risk management strategies to address potential future crises and disruptions. Anticipating potential challenges and preparing for worst-case scenarios can minimize the impact of such events on their operations, ensuring they maintain a competitive edge in the market.

The Middle East showcase solid growth rate globally, overall luxury goods industry growth is promising related to historic period. Middle East premium consumers are among the leading spenders on luxury goods, the tenth highest spenders in the world. According to Goldstein Research analysts, the demand for luxury and top-of-the -line products remain robust in the Gulf Cooperation Council

(GCC) region despite the economic slowdown [37]. In Middle East, Especially in GCC countries 70% of consumers claim to have increased their spending over luxury goods compared to 53% in more mature markets such as Europe, Japan, and United States. In the past few years, Middle East luxury goods industry has been through a period of expansion, as major companies have grown by extending reach of their brand distribution network and opening new stores in the region. According to the Goldstein report, the major driver in Middle East luxury goods market is high disposable income of people in the region. With countries such as United Arab Emirates and Saudi Arabia having the largest population and a considerable number of tourists, this significantly augmented the growth of luxury goods industry in the region. However, the long-term effects of Covid19 impact on the luxury industry are yet to be identified.

6   Conclusion

The COVID-19 pandemic has significantly affected the luxury sector, posing numerous obstacles that have disrupted supply chains, diminished demand, and forced a transition towards online sales. The shutting down of physical stores has resulted in revenue losses and complications in delivering the high-touch customer experiences that are crucial to luxury brands' value propositions.

To adapt to this changing environment, luxury brands have had to invest in digital infrastructure and strengthen their e-commerce capabilities. While this transformation has brought its own set of challenges, such as potential damage to brand image and increased expenses, maintaining a connection with customers during these extraordinary times has become essential for these brands.

The pandemic has also led to changes in consumer behavior, with a focus on essential needs and a rising interest in experiential luxury and pre-owned luxury markets. Luxury brands must keep adapting and innovating in response to these evolving consumer preferences, as well as finding ways to lessen the impacts of potential future disruptions.

The COVID-19 pandemic has highlighted the necessity for better preparedness measures and emphasized the importance of resilience and adaptability within the luxury industry. By comprehending and tackling the challenges that arose during this period, luxury brands can emerge stronger and become more capable of navigating future disruptions and uncertainties.

This study presents insights of how the COVID-19 pandemic has affected the luxury sector, but it does have some limitations that need to be considered in future research. The analysis provided mostly relies on existing literature and case studies and doesn't make use of quantitative data to fully gauge the pandemic's true impact on luxury brands. To develop a more comprehensive understanding of the long-term effects on the industry, it would be beneficial for future research to track the performance of luxury brands over time, encompassing both the duration of the pandemic and the period following it.

Moreover, the researchers suggest further studies to be conducted in this area to analyze the post impact assessment of Covid 19 on the Middle East region luxury market, its supply chains, the consumers behavior, and the challenges detected.

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Strategies for Managing Transition of Business Toward Post-pandemic Period in the Hospitality Industry

Almira Danniswara and **Anjar Priyono**

Abstract This research aims to analyze the business model transitional phases of the hospitality industry from the COVID-19 pandemic to the new normal period. Most existing research analyzes how companies do business model innovation from normal conditions to the COVID-19 pandemic times, but how companies transition from the pandemic period to normal periods has not received much attention. As a matter of fact, the new normal period after the COVID-19 pandemic will never be the same as the period before the pandemic. Case studies in three hospitality industry companies with an exploratory approach were applied to analyze the transitional phases of the business model toward the new normal. Empirical evidence had identified five phases business survival, fine-tuning and adjustment, market growth, business process redesign, and learning and business resilience. These five phases were not a rigid sequence but were iterative between one phase and another. Thus, managers were required to have the ability to decide whether a business model that was undergoing transition could continue to the next phase or iterate with the previous stage.

1 Introduction

Government policies to impose strict restrictions, even closing, in various non-essential industries simultaneously trigger demand and supply problems [1]. While demand in industries such as healthcare is surging, demand in industries such as restaurants, air transportation, and tourism is disappearing. Purchasing power and

A. Danniswara · A. Priyono (✉)
Department of Management, Universitas Islam Indonesia, Jl. Prawirokuat, Sleman, Yogyakarta 55283, Indonesia
e-mail: anjar.priyono@uii.ac.id

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household consumption are also affected [2]. Some industries that fall into this non-essential category are restaurants, air transportation, and tourism are disappearing and experiencing a dramatic decline in demand.

According to data from the Indonesian Hotel and Restaurant Association, as of April 1, 2020, 1139 hotels in Indonesia closed due to the COVID-19 pandemic. Meanwhile, hotels that are still open still need to be fully operating [3]. Companies affected by the pandemic require different approaches to pursue recovery [4], and companies in the hotel industry require different mechanisms from other companies in general [5].

When the pandemic is declared over, companies need to transition toward a new normal. Many of the new habits adopted by customers during the crisis are still being implemented; thus, some of the services offered by the company are still relevant in the new normal era. However, various practices must be adjusted so that companies can transform their business model [5]. One of the boosters for this adjustment is the loosening of social restrictions and the opening of access to various public facilities by customers. In other words, companies need to redesign new business models during the new normal.

This research analyzes how the hotel industry supports transitioning from the COVID-19 crisis to the new normal period. Previous research has discussed how to business model innovation from the normal period to adapt to the pandemic. However, the transition from the pandemic period to the normal condition has yet to be widely discussed, and that will be the focus of this research. The post-pandemic period will differ from the pre-pandemic period, the condition before COVID-19 emerged. One reason is the increasing digital literacy of customers and higher customer expectations for companies to adopt digital technology [6]. Based on the description above, the relevant problem formulations are: *How to hospitality industry manages transitional phases of the business model from the crisis due to the COVID-19 pandemic to the new normal period?*

This research contributed knowledge by analyzing how the process of changing business models in a disruptive situation towards a normal situation. A disruptive situation is a business environment that changes dramatically in the short term. Meanwhile, this research provided best practices for practitioners, which will guide hotel managers to make gradual changes.

The remainder of this paper is organized into four sections. In the next section, Literature Review, we provide a comprehensive overview of previous works relevant to the topic, which is divided into two sub-sections: Post-Pandemic Economy and Business Model Innovation during the COVID-19 Pandemic. In the third section, Research Method, we describe our case study approach, including the case study design, data collection, and analysis methods. In the Findings and Analysis section, we present the results of our case studies. Finally, in the Conclusion section, we summarize our findings and provide directions for future research.

2 Literature Review

2.1 Post-pandemic Economy

The ad hoc approach companies cope with crises caused by a pandemic will not be able to respond to post-pandemic challenges. The ad hoc approach is temporary, similar to aspirin for pain relief. Meanwhile, ad hoc needs to provide the groundwork to solve the problem [7].

The company's business model innovations during the pandemic have used digital technology. Digital technology is applied not only to support operational activities aimed at increasing efficiency but also to support strategic policies. The strategic policy implemented is to create service innovation [8].

Executives increasingly believe in what digital technology can do, and they are working to drive organizational change further by implementing digital transformation [9]. Under normal conditions, digital technology mainly aims at automation and routine decision-making [10]. However, during a pandemic, this strategy did not help the company to survive. The application of digital technology must help companies create, deliver, and capture value by reorganizing firms' resources [11]. For this reason, digital transformation is not only about how to embed digital technology into existing business processes. However, it is a comprehensive redesign of how firms should orchestrate their resources to deliver better customer values [12].

2.2 Business Model Innovation During the COVID-19 Pandemic

During the COVID-19 pandemic, the hospitality industry has adopted many digital technologies to pursue business model innovation. However, it should be emphasized that the transformation of the business model with the support of digital technology is not synonymous with technology acquisition. To implement a digital transformation, firms must also update their business processes, supply chain, expertise, and human capital knowledge [7].

During the adoption of digital technologies, there are several factors that determines customers experience including response time, friendliness, and convenience. From the perspective of customers, successful implementation of digital technologies can be used for creating atmosphere and expectations which subsequently determines wheter the products can meet the standards of customers [13].

The human factor is the most critical element in supporting the success of digital innovation business models. Digital technology is indeed easy to acquire; digital technology acquisitions only require funding. However, embedding digital technologies into the business process requires much effort, and the biggest challenge is the human factor. Human factors in this context are not just employees of the firm but also customers [9].

During the post-pandemic period, business model innovation supported with digital technologies undertaken during the COVID-19 pandemic has lost its relevance, at least to some degree. For this reason, the company must make another transition towards a new era by redesigning its business model. The importance of redesigning business models has been mentioned in the literature, significantly redesigning how organizations manage their human resources [14]. This opinion strengthens other researchers who state that digital technology is not everything in business model innovation [9]. Many companies only focus on how they get through the crisis and do not think much about returning to normal times after the pandemic [7]. The topic of transitioning business models from the pandemic to the post-COVID-19 pandemic era will be the focus of this research discussion.

3   Research Method: Case Study

3.1   Case Study Design

Multiple case study design has been recognized as an appropriate approach for exploratory research [15]. This approach involves investigating multiple cases in-depth to develop a more comprehensive understanding of a particular phenomenon. This method involves iterative data collection, analysis, and replication logic to identify patterns and establish causal relationships [16].

The subjects in this research consisted of three hotels selected with a theoretical sampling technique. The sample in the case study was chosen because of the potential of the subject to contribute to the knowledge to be developed. Therefore, in addition to the number of samples, subjects must have a certain composition so there are differences between subjects [17]. The differences between these subjects allow researchers to carry out replication logic, the basis for theory development [18].

3.2   Data Collection and Analysis

Data was collected through interviews, observation, and focus group discussions. Using multiple data sources and data collection techniques, researchers can perform data triangulation to maintain data validity [19]. Before collecting data in the field, the researchers conducted desk research to obtain general information about the subject to be investigated. An interview protocol with pre-prepared question items guided the researchers. The questions for this interview were developed based on previous studies. In other words, the items in the interview are a priori constructs to answer the research questions formulated at the beginning [16].

Data analysis was carried out in stages by conducting a within-case analysis, followed by a cross-case analysis. In within-case analysis, researchers attempt to

answer research questions in each hotel firm that is the object of research. After that, the researcher conducted a cross-case analysis. At this stage, the researcher compared the findings from one hotel to another, then looked for identical patterns [15]. The similarity of the pattern among the cases was the basis for the formation of the theory.

3.3   The Case Studies

This research used three hotels with different characters to facilitate researchers in carrying out replication logic as a basis for theory development [18]. All three hotels were located in the same area—i.e., in Kebumen, one of the regencies in Indonesia. The similarity of the locations of the three case studies made it easier for researchers to control the external environment because case study research can be analogous to experimental laboratory research [20].

Hotel Patra Syariah. Hotel Patra Syariah is a family-owned hotel established in 1990 with the concept of Javanese culture. Twelve employees, including four family members, support the firm's operations. This hotel has 18 bedrooms divided into five types of rooms: VIP, superior, moderate, standard, and economy. It has a meeting room for 50 people, security with CCTV, two prayer rooms, and a large fenced inside parking. The food and drinks served at this hotel also have traditional characteristics, although there is still a bit of a Western menu.

Hotel Mexolie. This hotel was built in 1851 by the Dutch East Indies Government and was used as a government office then. After the Second World War, the building later became the Plant-Based Coconut Oil Factory. Even though the building has a colonial architectural style, this hotel provides 84 rooms with state-of-the-art technology support. In addition to room facilities, this hotel has meeting room facilities that can accommodate 3000 people.

Hotel Grand Kolopaking. Hotel Grand Kolopaking was established in 2015 and is located in the city center with modern architecture and a modern service atmosphere. This location is strategic, shown by its location close to various local amenities such as a train station, city center, government offices, hospital, and other public facilities. Besides offering rooms, this hotel offers other facilities such as a restaurant, meeting room, city sightseeing, and convenient parking space.

4 Findings and Analysis

4.1 Business Model During COVID-19 Pandemic

The hospitality industry experienced a crisis during the COVID-19 pandemic due to restrictions on social interaction and decreased market purchasing power. Some strategies implemented include reducing the number of employees, increasing flexibility, and focusing on essential services to save costs. During the COVID-19 pandemic, Hotel Patra Syariah employees were temporarily laid off without pay to reduce operational costs. In addition, hotels are trying to offer more flexible services to the market. For example, the Hotel Patra Syariah restaurant serves guests staying at the hotel and offers catering services to external customers. All case study hotels focus on basic services such as health, safety, and hygiene protocols. The organizational structure was made more streamlined and only by basic operational needs. Entertainment services are reduced to save costs.

During the COVID-19 pandemic, the value expected by customers was different from normal times. During the COVID-19 pandemic, customers expected certain values from hotels, including health and cleanliness, avoiding physical contact, utilizing digital technology, the flexibility of ordering and cancellation, and offering competitive prices. During the COVID-19 pandemic, the value expected by customers was different from normal times. During the COVID-19 pandemic, customers expected certain values from hotels, including health and cleanliness, avoiding physical contact, utilizing digital technology, the flexibility of ordering and cancellation, and offering competitive prices. Customers expected order flexibility due to uncertain government regulations and uncertain transmission trends. Adopting digital technology was an alternative solution to adapt to these changes. Following were some digitalization strategies in the hospitality industry during the COVID-19 pandemic:

Digital Marketing. The case study firms could carry out the following strategies to support digital marketing:

- Relied its business model on digital technology, particularly optimizing the website and joining an online booking platform. For hotels in the early stages of mastering digital technology, utilizing an online booking platform was the best choice because adopting it did not require much effort.
- All three hotels under investigation employed social media accounts, but none utilized SEO to increase the company's visibility in search engines.
- Relied on social media and online advertising to support marketing activities. During the COVID-19 pandemic, the digital literacy of customers and society generally experienced a dramatic increase. As a result, marketing by utilizing digital technology can run more efficiently (Table 1).

Digital Operations. The case study firms could perform the following activities to pursue digital operations:

Table 1 Business model innovation supported with digital technologies

No.	Strategies	Digital business practices	Hotel Patra Syariah	Hotel Mexolie	Hotel Grand Kolopaking
1	Digital marketing	Website optimization	✕	✓	✓
		Online booking platform	✓	✓	✓
		Search engine optimization	✓	✓	✓
		Online advertising	✕	✓	✓
		Use of social media	✕	✓	✓
2	Digital operations	Check-in and check-out online	✕	✕	✕
		Digital room services	✕	✕	✓
		Digital payment: mobile banking, internet banking, and e-wallet	✓	✓	✓
		The use of Internet of Things (IoT)	✕	✕	✕
3	Digital talent	Employee training	✓	✓	✓
		Technology dan asset digital acquisition	✕	✓	✓

Source:Authors' elaboration

- Online check-in and check-out services: the case study hotel adopted technology to check in and out independently without the support of hotel staff. This service was carried out using a touch screen computer screen in the hotel lobby or can also be done via a mobile phone (is there anyone who uses this facility?).
- Digital room services: the hotel provided services to customers using applications, ordering food and drinks online, and delivering ordered goods to rooms without physical contact.
- Digital payment: hotels encouraged customers to use platforms like credit cards, digital wallets, ATMs, or wire transfers to reduce physical contact between hotel staff and customers.
- Utilization of the Internet of Things (IoT): hotels implemented IoT to support operations such as using digital keys, temperature monitoring of hotel guests, sanitation equipment, and monitoring of hotel areas with cameras and sensors.

Digital Human Capital. These are several actions could be undertaken by the case study firms:

- Digital talent development: the hotel organized digital technology training to ensure that staffs have sufficient knowledge to support the organization's digitalization.
- Acquisition of technology and digital assets: hotels acquired digital technology to support digitization. Hotels procured various tools to support hotel operations.

4.2 Post-pandemic Business Model

After the COVID-19 pandemic started to subside, the three case study hotels attempted to recover demand and encourage business growth. If the hotel organization during the COVID-19 pandemic was designed to be as streamlined and efficient as possible, it would be redesigned during the post-pandemic period to encourage growth. Some staff was given new assignments unavailable during the COVID-19 pandemic, including the fitness center being reactivated, meeting packages for agencies being offered more aggressively, and health monitoring services being offered to guests.

Implementing the digitalization process has made hoteliers easier to develop and expand relationships and networks. The adoption of digital technology lasted not only during the COVID-19 pandemic but also until the transition from the pandemic to the post-pandemic era. The ease of using digital technology made people feel comfortable, so they would continue to use it. From this phenomenon, there was an increasingly better process and technological development that each hotel applies.

In addition, in line with the increasing digital literacy of potential guests, all services provided by the hotel were displayed on the website and social media. Therefore, the hotel's digital account operations staff played a significant role. Almost all guests searched through search engines before booking a room, including the information submitted on social media accounts and online booking platforms in compliance with health regulations.

In the stages of post-pandemic, the hospitality industry adopts business model innovation which shares many similarities with business model innovation in general. However, two main factors made the hotel industry's business model innovation unique during the post-pandemic period. First, the innovations carried out were a transition from a disruptive pandemic. Second, the company did not start a business model innovation from zero but initiated from a jumping start; During the pandemic, the company made many maneuvers to modify existing business models. Third, the business model innovations carried out are supported by digital technology. It was essential to emphasize that it took much work to clearly identify the boundaries between these stages. It can be said that each of these stages overlapped (Fig. 1). Brief descriptions of each stage are as follows:

Business Survival Phase. In this phase, the main goal of the business model was to avoid collapse. The company sought to maintain cash inflow so that the company's liquidity and operations were maintained. Various kinds of promotions were carried

Fig. 1 Phases of the business model transition from pandemic to post-pandemic. *Source* Authors' elaboration

out to attract hotel guests to be willing to visit, and simultaneously, cash outflow was minimized.

Fine Tuning and Adjustment Phase. This phase was implemented to maintain the existing conditions while waiting for the business environment to improve. Hotel management only carried out routine activities with little maneuvering while performing efficiency, improvements, or enhancements to the company's business model.

Market Growth Phase. In this phase, hotel companies sought to stimulate growth and expansion to expand market reach, increase customer numbers, and increase profits. Some strategies implemented were designing guest meeting packages, special family packages, tour packages, and club memberships for fitness centers.

Business Process Redesign. During this phase, the hospitality industry faced major structural changes in its business model. Digital technologies were being applied wider across organizations, not just in marketing.

Learning and Business Resilience Phase. In this phase, innovation in the hospitality industry was focused on learning from the past to create business resilience. Lessons learned from the experience of this pandemic aimed to prepare the hospitality industry to face the possibility of similar disruptive events in the future.

Some lessons learned from the pandemic that was maintained to create business resilience are income diversification through renting outdoor spaces for gatherings and weddings, selling hotel merchandise, or offering a catering business with take-away services. Some business processes were outsourced to reduce the burden of fixed costs, including the delivery service of goods and guest delivery services. In addition, hotel laundry facilities accepted services from external customers, such as health clinics and exclusive boarding houses.

5   Conclusion

This research aims to analyze how companies in the hospitality industry manage the transition from the COVID-19 pandemic to a post-pandemic period. Many companies have successfully transitioned from the normal period to the pandemic period. Still, only a few companies have prepared to transition from the pandemic to the post-pandemic. The research results showed that companies carry out five steps: business survival, fine-tuning and adjustment, market growth, business process redesign, and learning and business resilience.

Although the five phases form a sequence, the sequence is not rigid. However, between these phases was iterative; each stage can move forward or backward, depending on how the company innovates its business model. This iterative process happens because business model innovation is similar to experimentation that requires trial and error. For managers, this research has implications that managers must be able to decide whether the business model can continue to the next stage

or iterate with the previous stage. This research focused on the hotel industry so that the analysis could be carried out in-depth, although at the expense of narrow generalization. Future research can broaden the findings of this research by observing other types of service industries, such as healthcare, transportation, or entertainment industries.

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Measuring Financial Literacy Among Gen Ziers in Coimbatore City

M. Gowri, S. Gnana Sugirtham, V. Sindhu, M. V. Meena, and R. Mythily

Abstract Financial literacy comprises financial knowledge, attitudes, and behavior, and proficient individuals in this regard hold a significant position in the formal financial structure of their country. By making informed decisions and actively participating in the financial system, they contribute to economic activities and foster national development. Therefore, being financially literate is crucial. Accordingly, this study aims to assess the level of financial literacy among the Digital Natives population in Coimbatore City. As per the 2011 census, 375 million people, equivalent to approximately 27% of the Indian population, belong to GEN Ziers, born between 1997 and 2012. Given that this cohort will constitute a major part of the global workforce soon, measuring their financial literacy is imperative, especially as they are poised to play a leading role in the financial System. Thus, the study "Measuring Financial Literacy Among Gen Ziers in Coimbatore City" was undertaken. The results exhibited that Gen Ziers possessed Financial Knowledge and were confident in dealing with money matters. It was found that they exhibited Financial Attitude concerns with regard to Retirement Planning.

Keywords Financial literacy · Gen Ziers · Financial knowledge · Financial attitude · Financial behaviour

M. Gowri · S. Gnana Sugirtham (✉) · M. V. Meena
Department of Commerce, PSG College of Arts and Science, Coimbatore, India
e-mail: gnanasugirtham@psgcas.ac.in

M. Gowri
e-mail: gowri_m@psgcas.ac.in

V. Sindhu · R. Mythily
Department of Commerce, Sri Krishna Adithya College of Arts and Science, Coimbatore, India
e-mail: sindhuv@skacas.ac.in

R. Mythily
e-mail: mythilyr@skacas.ac.in

M. V. Meena
Research Scholar, PSG College of Arts and Science, Coimbatore, India

1   Introduction

Financial literacy is a critical aspect of human survival and well-being. According to the OECD, it encompasses the awareness, knowledge, skills, attitudes and behaviors required to make informed financial decisions and achieve financial well-being. Citizens of a nation with a high level of financial literacy tend to make wise financial decisions that contribute to the nation's financial health and economic development.

As per the RBI, financial literacy entails acquiring familiarity and understanding of financial market products, particularly their rewards and risks, to facilitate informed decision-making. Therefore, financial knowledge, attitudes, and behavior are fundamental to making informed financial decisions.

The Indian government and RBI have implemented several initiatives to promote financial inclusion, such as increasing the number of rural bank branches, deploying bank correspondents, and adopting CBS technology. The National Strategy for Financial Inclusion (2019–2024) aims to expand and maintain financial inclusion across the country through a collaborative effort involving all financial system participants. Research has shown that improving financial inclusion can have a significant impact, contributing to economic growth, reducing poverty and income inequality. Notably, most of the UN Sustainable Development Goals (SDGs) for 2030 highlight the importance of financial inclusion as a critical factor in achieving sustainable development by enhancing the well-being of underserved and disadvantaged populations.

It has become imperative that proper financial planning is essential for long term investments and future emergency needs. This is vital for all segments of the population. The Digital Natives are also called the Gen Ziers are those born between 1997 and 2012. The population of Gen Ziers has increased and attracted attention. The Gen Ziers were born into technology. The Gen Ziers excel at financial thinking, so they value conservative spending, stable jobs, and smart investing. Thus, this study has been undertaken to analyze the level of Financial Literacy among Digital Natives in Coimbatore city.

2   Related Works

Utami and Sitanggang [1] have studied the impact of financial literacy on investment decisions among Gen Z in Jakarta was examined. The researchers employed convenience sampling to collect data and employed structural equation modeling to analyze it. The results indicated that financial literacy had a significant influence on investment decisions among the Gen Z population. Pangestu and Karnadi [2] explored the impact of financial literacy on the savings decisions of Indonesian Gen Z individuals. The study involved 430 university students, whose financial literacy score and materialism level were measured. The findings underscored the need for policymakers to introduce financial education at the school level to enhance financial literacy among Gen Z individuals and promote better savings behavior. Dewi et al.

[3] conducted research to assess the level of financial literacy among the Millennial Generation and investigated the correlation between their financial knowledge, financial attitude, financial skills, and financial behavior. The study found a significant relationship between financial attitude and financial management behavior among the Millennials.

Vidya Sarat et al. [4] conducted a study to assess the level of financial literacy and the nature of financial behaviors among undergraduate and postgraduate students in Bangalore. The researchers collected data from 104 students who filled out questionnaires. The results showed a significant relationship between financial literacy and student characteristics. Goswami and Dhawan [5] analyzed the level of financial literacy among college students in Delhi. The researchers examined the influence of demographic factors such as gender, age group, field of study and annual household income on financial literacy. Ravichandran and Ragupathi [6] have shown the relationship between financial attitudes and behavior among college students. The study evaluated students' financial decision making and aimed to raise awareness of their spending habits and savings habits. Ambarkhane et al. [7] focused their study on developing a financial literacy index for college students in India. The authors wanted to identify the factors that contribute to financial literacy and develop a framework to measure the level of financial literacy among college students. The study used a sample of 300 students from various colleges and universities in Mumbai. The authors developed a financial literacy index to measure the level of financial literacy among college students in India. Özdemir [8], the study aimed to compile the studies on financial literacy, which has individual and social benefits. The research was designed as a literature-based review study. Relevant content can be edited to integrate it into educational levels. Financial literacy can be added to the curriculum of the relevant courses in line with the determined objectives. Shambare and Rugimbana [9], the study attempts to investigate the nature and extent of financial literacy in South Africa. A self-administered financial literacy scale was administered to a sample of 214 students from a large South African metropolitan university. The results indicate moderate levels of financial illiteracy; suggesting that even among the educated, there is a need to reinforce basic financial concepts. Shetty and Thomas [10], "A Study of Financial Literacy Amongst The College Students In Mumbai", this paper aims to study in detail the level of financial literacy amongst the students of Mumbai. Comparative Percentage analysis was used. The study revealed that the financial knowledge among student in Mumbai was poor as compared to the global standards. Kumar et al. [11], the authors introduced the application of Artificial Intelligence, Machine Learning, and Neural networks and present a draft for a mutual fund recommendation model for optimal investment decisions for individuals.

3   Objectives of the Study

- To Analyse the level of Financial Knowledge among Gen Ziers in Coimbatore City.
- To measure the Financial Attitude among the respondents.
- To Study the Finance Management skills possessed by Gen Ziers in Coimbatore City.
- To measure the level of Financial Literacy among Gen Ziers.

4   Novelty/Research Gap

- Based on the past literature, it is clear that research on financial literacy among the younger generation is low, normally they are ignored, since most of them would have not started earning.
- And further it is mis conceptualized as financial literacy has to be measured only among the earning population. This study would show a different arena.
- According to the Census 2011, Gen Ziers constitute 27% of the Indian population.
- These Indian Gen Ziers will form the major part of the global workforce in the near future. So, a study on finding their financial literacy becomes important.

5   Limitations of the Study

The study is conducted to investigate the level of Financial Literacy among the Gen Ziers in Coimbatore. Thus, the study is limited to Coimbatore City.

6   Results and Discussion

The study "Measuring Financial Literacy Among Gen Ziers in Coimbatore City" was carried out and the results of the study are summarized below from Table 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 and 15.

Table 1 Age group of respondents

S. No.	Age	Respondents	Percentage
1.	18–21 years	228	95
2.	22–25 years	12	5
	Total	240	100

Table 2 Gender of respondents

S. No.	Gender	Respondents	Percentage
1.	Female	139	57.9
2.	Male	101	42.1
	Total	240	100

It could be inferred from Table 1 that approximately, 5% of the respondents fall within the age range of 12–25 years, while the majority of the respondents, accounting for 95%, belong to the age group of 18–21 years.

Based on Table 2, it can be inferred that 57.9% or 139 of the respondents were female, while 42.1% or 101 respondents were male.

Table 3 indicates that the majority of the respondents, 60.4% (145 respondents), were Under Graduates. About 35% (84 respondents) of the participants had recently completed their Higher Secondary Examination, while only 3.7% (9 respondents) had completed their Post Graduate Degree.

Table 4 indicates that 43.8% of the respondents reported having an annual family income of less than Rs. 300,000, making them the majority in the sample. Additionally, 36.7% of the respondents reported having an annual family income between Rs. 300,001 to Rs. 600,000. Furthermore, it was found that a small percentage of respondents (9.2%) reported having an annual family income of over Rs. 900,001.

Based on Table 5, it can be concluded that 82.1% of the respondents (197) had no prior work experience, which encompasses full-time, part-time, internships, summer

Table 3 Educational qualification of respondents

S. No.	Educational qualification	Respondents	Percentage
1.	Secondary (10th standard)	0	0
2.	Higher secondary (12th standard)	84	35
3.	Undergraduate	145	60.4
4.	Post graduate	9	3.7
5.	Ph.D.	0	0
6.	Others	2	0.8
	Total	240	100

Table 4 Family's annual income of respondents

S. No.	Family's annual income	Respondents	Percentage
1.	Below Rs. 300,000	104	43.8
2.	Rs. 300,000 to Rs. 600,000	89	36.7
3.	Rs. 300,000 to Rs. 600,000	25	10.3
4.	Above Rs. 900,000	22	9.1
	Total	240	100

Table 5 Working experience of respondents

S. No.	Working experience	Respondents	Percentage
1.	None	197	82.1
2.	Less than 2 years	39	16.3
3.	2 years to less than 4 years	4	1.6
4.	4 years to less than 6 years	0	0
5.	Above 5 years	0	0
	Total	240	100

jobs, etc. Additionally, 16.2% of the respondents (39) had work experience of less than two years.

Based on the information presented in Table 6, it can be observed that the majority of respondents (83.8%) relied on allowances provided by their parents, grandparents, or guardians as their source of personal income. Additionally, 13.8% (33 respondents) of the participants stated that their personal income was derived from work.

According to Table 7, it was found that most respondents (72.9%) had not received any form of financial education. Only 27.5% (66 respondents) of the participants had attended a financial education course.

Table 8 indicates that the primary source of information for money matters among the respondents was from their parents/guardians or other adult relatives (rank 1). The internet was the second most relied upon source, with 48 respondents indicating it as their source of information (rank 2). Magazines ranked the lowest at 9th position, indicating it as the least sought-after source of information for money matters (Fig. 1).

From Table 9, it can be inferred that the majority of the respondents (61) discuss money-related issues on a daily basis. Additionally, it can also be observed that a

Table 6 Source of personal income of respondents

S. No.	Personal income	Respondents	Percentage
1.	Allowance given by parents	201	83.8
2.	Scholarship	6	2.5
3.	Work income	33	13.8
4.	Occasional informal jobs	0	0
	Total	240	100

Table 7 Respondents attending financial education course

S. No.	Financial education course	Respondents	Percentage
1.	Yes	174	72.9
2.	No	66	27.5
	Total	240	100

Table 8 The sources of information about money matters

S. No.	Sources of information about money matters	No.	Rank
1.	Parents/guardians or other adult relatives	148	1
2.	Friends	20	3
3.	Television or radio	3	7
4.	The internet	48	2
5.	Newspapers	5	5
6.	Magazines	0	9
7.	Teachers	9	4
8.	Informal public seminar or class	3	8
9.	Financial planner or counselor (professional)	4	6
	Total	240	
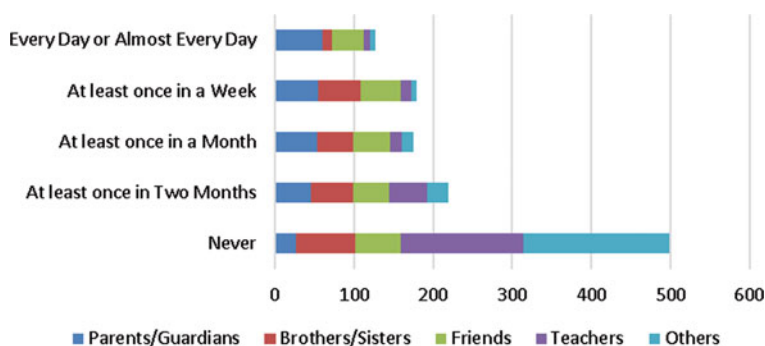
Fig. 1 Discussion of issues related to money

significant number of respondents (185) never discuss money-related issues with anyone, including unknown persons.

Based on Table 10, it could be inferred that a large proportion of the respondents were familiar with various financial products such as Pension Fund (209), Bank Loan (202), Credit Card (212), Current Account (215), Savings Account (226), Insurance (217), and Mobile Payment (219). However, it was also noted that a significant number of respondents had limited knowledge about Micro Finance Loan (153).

From Table 11, it can be inferred that a majority of respondents had confidence in their ability to perform various financial tasks. Specifically, 120 respondents were confident in filling out forms at a bank, 118 respondents were confident in tracking their account, and 114 respondents were confident in making a money transfer.

The weighted average score has been carried out in this study to know about the respondent's financial attitude towards the selected factors. Planning for retirement has been ranked with the highest score of 2.80 (1), planning and implementing regular investment program has been ranked with the score of 2.63 (2), and maintaining

Table 9 Discussion of issues related to money

Factors	Never	At least once in two month	At least once in a month	At least once in a week	Every day or almost every day
Parents/ guardians	27	44	53	55	61
Brothers/ sisters	74	54	46	53	13
Friends	57	44	47	52	40
Teachers	154	49	14	14	9
Others	185	28	15	6	6

Table 10 Knowledge of financial products among respondents

S. No.	Financial products	Respondents (yes)	Respondents (no)
1.	A pension fund	209	31
2.	An investment account, such as a unit trust	119	121
3.	A mortgage	171	69
4.	A bank loan secured on property	202	38
5.	An unsecured bank loan	159	81
6.	A credit card	212	28
7.	A current account	215	25
8.	A savings account	226	14
9.	A microfinance loan	87	153
10.	Insurance	217	23
11.	Stocks and shares	200	40
12.	Bonds	194	46
13.	Mobile phone payment account	219	21

Table 11 Confidence level of respondents in handling money

Factors	Not at all confident	Not very confident	Neutral	Confident
Making money transfer	24	26	76	114
Filling in forms at bank	15	37	68	120
Understanding bank statements	14	37	109	80
Understanding a sale contract	20	74	10	36
Keeping track of my account balance	21	27	74	118
Planning my spending with consideration	19	46	85	90

adequate coverage has been ranked with the score of 2.54 (3), maintaining adequate financial records has been ranked in the score of 2.46 (4), save regularly has been ranked in the score of 3.22 (5), spending less than your income has been ranked in the score of 2.27 (6) (Table 12).

Table 13 reveals that a large proportion of the respondents (91) have a regular savings habit. Additionally, 86 respondents reported that they regularly prepare a budget that includes their expenses and revenues. It was also identified that 15 respondents had borrowing habits when they experience money shortages.

It was inferred from Table 14 that the majority (62.9%) of the respondents required training in savings and investing strategies. It was found that (28.3%) required training in Banking practices.

Chi-Square Analysis

Null Hypothesis (H$_0$): There is no significant relationship between Financial Education and Financial Behavior.

Alternative Hypothesis (H$_1$): There is a significant relationship between Financial Education and Financial Behavior.

Level of significance = 5% or 0.05.

$$\text{Chi-square Value } X^2 = \sum (O - E)^2 / E = 4.24$$

Table 12 Financial attitudes exhibited by respondents

Factors	Very unimportant	Un important	Not sure	Important	Very important	Total	Weighted average score	Rank
Maintaining adequate financial records	48	9	22	89	72	592	2.46	4
Save regularly	33	19	15	66	107	525	2.18	5
Maintaining an adequate coverage	38	11	51	83	57	610	2.54	3
Planning and implementing regular investment program	38	18	47	93	44	633	2.63	2
Spending less than your income	36	14	30	60	100	546	2.27	6
Planning for retirement	37	37	57	61	48	674	2.80	1

Table 13 Financial behavior exhibited by the respondents

Factors	Totally disagree	Disagree	Not sure	Agree	Totally agree
I save regularly	28	21	43	91	57
I prepare regularly a budget with my expenses and revenues	21	36	61	86	36
I have difficulty in managing my money	22	65	61	69	23
I maintain financial records	19	45	79	73	24
I make my day-to-day financial decisions	22	30	63	78	47
I borrow during money shortages	51	51	68	55	15

Table 14 Financial management skills training needs

S. No.	Financial education course	Respondents	Percentage
1.	Banking practices	68	28.3
2.	Savings and investing strategies	151	62.9
3.	Leading practices	7	2.9
4.	Public and work-related benefits	14	5.8
	Total	240	100

$$\text{Degree of freedom} = (\text{Number of Columns} - 1) * (\text{Number of Rows} - 1)$$
$$= (2 - 1) * (6 - 1) = 5.$$

Table value for the **Degree of freedom 5 at 0.05 significant level = 11.07**.

From Table 15, it is inferred that the calculated chi-square value is 4.24 is greater than the chi-square table value 11.07. Hence the null hypothesis is rejected. The result shows that there is significant relationship between Financial Education and Financial Behavior.

7 Scope for Future Prospective

Financial Literacy among Kids, Entrepreneurs, Working Women, Unorganized Workers, Marginalized Groups etc. … shall be studied. These studies would help the policy makers to assure that the benefits reach the poorest of the poor and include all scales of the society in the formal financial system of the country. Innovation of new Financial products/Financial programmes to cater the growing needs of the

Table 15 Relationship between financial education and financial behavior

Financial education/financial behavior	Yes	No	Total
I save regularly	20	35	55
I prepare regularly a budget with my expenses and revenues	15	27	42
I have difficulty in managing my money	16	46	62
I maintain financial records	9	15	24
I make my day-to-day financial decisions	23	11	34
I borrow during money shortages	13	10	23
Total	96	144	240

participants of the formal/unorganized Financial System of the country based on their current Financial Ecosystem.

8   Conclusion

Financial Literacy is found vital to make rational Financial Decisions. These financial decisions are pivotal for one's Financial well-being. It is understood that adequate financial knowledge, Financial Attitude and Financial Behaviour is required to make this informed Financial Decisions. The study "MEASURING FINANCIAL LITERACY AMONG GEN ZIERS IN COIMBATORE CITY" has been carried out. The results of the study proved that the Digital Natives exhibited adequate Financial Knowledge, but they were reluctant to exhibit their Financial Behaviour and Finance Management Skills. Majority of them relied on Parents and other elders while making important Financial Decisions. They have expressed the need for training in developing their Financial Management Skills. General financial education can be included in the curriculum of degree programs. The importance of the subject can be conveyed to students by offering it as an optional subject in schools. Compliance and topic-related activities can be created for each level of education. Depending on the culture of the society, a program can be developed for all levels of financial literacy.

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Determinants of Corporate COVID-19 Narrative Reporting: Evidence from an Emerging Market

Mohsen Anwar Abdelghaffar Saleh [ID]**, Dejun Wu** [ID]**,**
Azza Tawab Abdelrahman Sayed, Farhan Hussian, Nora Atef,
Aml Ramadan Noman Galal, and Abdelkareem Mahmoud Mohamed

Abstract This paper contributes to the existing narrative reporting literature by examining the determinants of corporate COVID-19 narrative reporting in an emerging market, Egypt. The authors utilized manual content analysis to evaluate how companies listed on the Egyptian Stock Exchange (EGX) communicated their response to COVID-19 during the pandemic from 2020 to 2021. Additionally, the authors employed OLS regression analysis to investigate how firm characteristics and corporate governance mechanisms influenced corporate COVID-19 narrative reporting. The empirical analysis shows that large firms and firms with high profitability are more likely to corporate with COVID-19 narrative reporting. In addition, the study shows that board size, audit committee size and board independence are positively associated with corporate COVID-19 narrative reporting. Finally, the analysis indicates a statistically insignificant impact of industry type on corporate COVID-19 narrative reporting. Our results have a significant impact on academics, management, shareholders, governments, and regulators. The results of this study, for instance, may be used to create legislation for a suitable corporate governance framework, showing that good governance enhances disclosure practices in times of crisis.

Keywords COVID-19 narrative reporting · Firm characteristics · Corporate governance mechanisms · Egypt

M. A. A. Saleh (✉) · D. Wu
School of Accounting, Zhongnan University of Economics and Law, Wuhan, China
e-mail: mohsen333@aun.edu.eg

M. A. A. Saleh · A. T. A. Sayed · N. Atef · A. R. N. Galal · A. M. Mohamed
Department of Accounting, Assiut University, Assiut, Egypt

F. Hussian
Business School, Central South University, Changsha, China

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1   Introduction

In times of crisis, Annual reports take on much greater significance since they serve as managers' primary means of informing stakeholders about financial outcomes. The presentation of macroeconomic context and risk management disclosure, which may have an impact on forward-looking information, are the main points of emphasis. These instructions result in a shift in the annual reports' tone, which is anticipated to be more depressing. This shows that the accounting estimates published are greatly influenced by external variables rather than managers' ability [40].

Recent research on COVID-19 has mainly concentrated on three key topics in the financial context. Firstly, Hassan et al. [28] explored the future of financial reporting. Secondly, Nabity-Grover et al. [39] and Donthu and Gustafsson [17] looked into how COVID-19 was perceived theoretically in the financial markets, insurance and financial services institutions, as well as government entities and public sectors. Thirdly, Broadstock et al. [13] and Erdem [24] studied the response of finance to market conditions, such as stock returns. Additionally, Khatib et al. [33] conducted a study comparing financial performance before and after the onset of the Corona pandemic, while Broadstock et al. [13] examined the impact of ESG disclosure on financial performance during the Corona crisis.

We motivated to focus on the Egyptian setting in the current situation for several of different reasons. One reason is Egypt's a growing economy that as an emerging economy with a lot of avenues for foreign investment [22]. The various financial reporting environments in Egypt might have an impact on how initial disclosure standards are applied. Gray's [26] model predicts that accounting metrics and disclosures in Egypt would typically be more cautious and opaque. Egypt needs to increase funding, foster confidence, and take stakeholders' interests into account. The COVID-19 crisis and other changes in the Egyptian economy have likely had an impact on accounting disclosure practices. Egypt one of the nations impacted by the COVID-19 epidemic. Egypt thus offers a chance for new empirical research to acquire understanding of the COVID-19 crisis' effects on the level of transparency.

Stakeholders are eager to get more information on how the COVID-19 epidemic will affect company operations. Also, annual reports' narrative sections could be used by companies to impart this vital information to shareholders. Incorporating additional COVID-19 narrative content could help minimize the information asymmetry that exists between managers and shareholders. This reduction of information asymmetry could have positive financial consequences, such as a rise in institutional shareholding, firm value, and a decrease in the cost of equity capital, stock price volatility, and stock crash risk. It's worth noting that although developed nations possess a robust framework for COVID-19 reporting [25], developing countries do not. Therefore, it's important that companies operating in such countries include COVID-19 narrative content in their reports.

Our research in the field of corporate narrative reporting makes two important contributions. Firstly, we expand the existing body of knowledge on COVID-19 narrative reporting by conducting a manual content analysis to examine how Egyptian

companies are disclosing information about the pandemic. Our study is unique in that it is the only one to investigate the factors that influence corporate COVID-19 narrative reporting in Egypt. Secondly, we offer fresh insights into how corporate governance and characteristics of firms affect COVID-19 narrative reporting in the Egyptian context.

The remainder of the article is structured as follows: The research hypotheses are developed, and the literature is reviewed in Sect. 2, discusses the research method in Sect. 3. The empirical findings and robustness test are presented in Sect. 4. Section 5 concludes.

2 Relevant Literature and Hypotheses Development

2.1 Firm Characteristics and Corporate COVID-19 Narrative Reporting

Firm size: In agreement with agency theory, it would be expected that larger businesses will offer more information to satisfy the requirements of a variety of users. This can lessen information asymmetry and agency costs [45]. Larger organizations typically have the capital needed to pay the costs associated with producing more disclosures. The size of a firm and the amount of information it releases are significantly correlated, according to earlier research on corporate transparency [29, 36]. According to widespread observation and extant studies [8, 44], larger businesses often release more information. Beattie et al. [11] also discovered a positive correlation between the size of British companies and their level of reporting. According to Hope [31], there is a high demand for accounting information globally, and improving its quality is essential. Jensen and Meckling [32] propose that larger organizations have increased agency costs as they need substantial external funding to support their investments. In keeping with Watts and Zimmerman [46], larger businesses incur higher political expenses. Because of this, big businesses frequently offer more information to enhance stockholders confidence and cut costs. Based on the above theoretical analysis, the study assumes that:

H1. COVID-19 narrative reporting is likely to be influenced by firm size.

Profitability: Empirical researches examining voluntary reporting often uses profitability ratios as a common measure [14, 41]. These studies reveal that voluntary disclosure has a positive result for corporate performance. Meek et al. [37] found that companies that are operating well tend to share more information on a voluntary basis. In general, these studies presume that firms with performance exceeding a particular threshold will make disclosures while those with performance below the threshold will not, owing to the expenses associated with disclosure. As reported by Wang et al. [44], when a company's earnings are increasing, managers are motivated

to provide investors more information as a sign of quality. According to the above theoretical analysis, the study assumes that:

H2. COVID-19 narrative reporting is likely to be influenced by firm profitability.

Industry type: Although earlier research examined the connection between narrative reporting and industry type, its results were not conclusive. Others have identified a correlation between industry type and corporate reporting. In studies focusing on risk reporting, it has been shown that the way companies report on risks varies across different industry sectors [15, 36]. In response to the signaling theory, businesses operating in the same sector are likely to adopt comparable degrees of openness, and any departure from the norm may be interpreted as an effort to obfuscate bad news [6]. It is expected that various business types will influence risk reporting in interim reports, as different industries face specific challenges and constraints that impact their risk profiles. The complexity of value creation in each industry is likely to result in varying types and levels of risks [16]. According to the above theoretical analysis, the study assumes that:

H3. COVID-19 narrative reporting is likely to be influenced by Industry type.

2.2 Corporate Governance and Corporate COVID-19 Narrative Reporting

Board size: The board of members is essential to the governance structure of companies that are publicly listed. Several theories have been proposed to explain how the number of directors on a board influences the disclosure of corporate information [27, 38]. Along with agency and stakeholder theories, bigger boards may result in increased agency expenses and related difficulties. This is because larger boards can better reflect the desires of many stakeholders and competing interests throughout the decision-making process. Additionally, it may increase the cost of collaboration and communication, negatively affecting disclosure [3, 4]. Furthermore, resource dependency and human capital theories contend that productivity and efficiency are favorably correlated with levels of high human capital. As a result, a large board size gives more resources to do duties efficiently. Nevertheless, as more directors may contribute more knowledge, they may also make decisions that can strengthen the decision-making process and improve the standard of disclosure [19]. According to the above theoretical analysis, the study assumes that:

H4. COVID-19 narrative reporting is likely to be influenced by board size.

Audit committee size (AC): The audit committee directors are responsible for ensuring that businesses follow proper financial reporting standards, according to Al Lawati et al. [2]. Ho and Wang [30] revealed that these directors' expertise had a positive influence on voluntary reporting. According to Bedard and Johnstone

[12], larger audit committees with the necessary abilities and diverse viewpoints are better capable of successfully monitoring, resulting in increasing levels of disclosure. likewise, Raimo et al. [42] discovered that a larger audit committee size improves disclosure quality. Nonetheless, large committees may face challenges such as the free-rider problem and task dispersion, which can ultimately undermine disclosure level of quality [35, 36]. Based on the aforementioned theoretical analysis, our study assumes that:

H5. COVID-19 narrative reporting is likely to be influenced by Audit committee size.

Board independence: In line with theories of resource dependence and human capital, having independent directors on a board may provide a corporation access to important resources like knowledge, reputation, and networks, which can lead to better disclosure practises. Human Capital theory specifically posits that education, experience, and skills can enhance the quality of disclosures [10, 43]. According to both theories, independent directors improve the quality of disclosure [21]. In contrast, the findings of earlier empirical investigations on the relationship between board independence and transparency have been inconsistent. Some research have discovered a positive correlation, while others have shown a negative connection, and some research has not revealed a connection between the two factors [7, 18, 20]. Based on the above theoretical analysis, the study assumes that:

H6. COVID-19 narrative reporting is likely to be influenced by board independence.

3 Research Method

3.1 Sample and Data Collection

Our empirical study focuses on all companies that were listed on the Egyptian Stock Exchange (EGX) during the COVID-19 pandemic from 2020 to 2021. We specifically chose 2020 since it was the year when the pandemic was at its peak. Initially, we had 205 companies in our sample, but after removing firms with incomplete data, we ended up with a final sample of 200 firm observations. To gather data, we obtained annual reports from Mubasher website, and then manually analyzed the content to identify any information related to COVID-19. In addition, we collected governance data from CG reports and annual reports. To test our study hypotheses, we employ the regression models shown below. Table 1 shows the variables' measurements:

$$
\begin{aligned}
\text{COVID19\_DISC} = {} & \beta0 + \beta1(\text{FSIZE}) + \beta2(\text{ROA}) + \beta3(\text{IND}) \\
& + \beta4(\text{LEV}) + \beta5(\text{CASH}) + \beta6(\text{BIG4}) + \beta7(\text{LOSS}) \\
& + \beta8(\text{SOE}) + \text{Industry Dummies} + \text{Year Dummies} + \varepsilon i \quad (1)
\end{aligned}
$$

Table 1 Variables measurement

*COVID-19*_DISCLOSURE	A dummy variable "1" if the company in the sample mentions the COVID-19 at least once in annual report, "0" otherwise
Firm size (FSIZE)	Natural logarithm of total assets at the end of the period
Profitability (ROA)	Net income/total asset
Industry type (IND)	A dummy variable "1" if the company activity is industrial, "0" if the company is a service
Audit committee size (ACSIZE)	Number of audit committee members
Board size (BSIZE)	Number of board directors
Board independence (BIND)	Number of board independence
Audit quality (BIG4)	A dummy variable "1" if the firm is audited by Big4, "0" otherwise
LOSS	A dummy variable "1" if the net profit is negative and "0" otherwise
Leverage (LEV)	Total liabilities divided by total assets
Cash holding (CASH)	The company holds cash/total assets
SOE	A dummy variable that equals "1" if a firm is state-owned and "0" otherwise

$$
\begin{aligned}
\text{COVID19\_DISC} = {} & \beta 0 + \beta 1(\text{BSIZE}) + \beta 2(\text{ACSIZE}) + \beta 3(\text{BIND}) \\
& + \beta 4(\text{LEV}) + \beta 5(\text{CASH}) + \beta 6(\text{BIG4}) + \beta 7(\text{LOSS}) \\
& + \beta 8(\text{SOE}) + \text{Industry Dummies} + \text{Year Dummies} + \varepsilon i \quad (2)
\end{aligned}
$$

4 Empirical Results and Discussion

4.1 Descriptive Statistics

Table 2 presents various statistics related to COVID-19 disclosure, firm size, return on assets, industry type, board size, audit committee size, and board independence. The COVID-19 disclosure has an average value of 0.515, ranging from 0 to 1. The average firm size is 8.667, with a minimum of 5.060 and a maximum of 12.83. The average return on assets is 0.06, with a minimum of − 0.492 and a maximum of 0.879. The average industry type is 0.66, ranging from 0 to 1. The average board size is 9.685, with a minimum of 4 members and a maximum of 15 members. The audit committee size has an average of 3.32 members, ranging from 0 to 7 members. The average board independence is 1.18, ranging from 0 to 4.

Table 2 Descriptive statistics

Variable	Obs.	Mean	Std. dev.	Min	Max
COVID_DISC	200	0.515	0.501	0	1
FSIZE	200	8.667	1.34	5.06	12.83
ROA	200	0.06	0.161	− 0.492	0.879
IND	200	0.66	0.475	0	1
BSIZE	200	9.685	2.555	4	15
ACSIZE	200	3.32	2.064	0	7
BIND	200	1.18	1.198	0	4
LEV	200	0.402	0.272	0.003	0.98
CASH	200	0.107	0.15	0	0.746
BIG4	200	0.32	0.468	0	1
LOSS	200	0.5	0.501	0	1
SOE	200	0.205	0.405	0	1

4.2 Correlation Analysis

The correlation matrix presented in Table 3 indicates that COVID-19 disclosure is associated with certain firm characteristics such as firm size and return on assets, as well as various corporate governance aspects such as board size, audit committee size, and board independence. However, there is no apparent correlation between COVID-19 disclosure and industry type. Furthermore, our independent and control variables do not exhibit any significant correlation, implying that multicollinearity is not a concern in our study.

4.3 Regression Analyses

We use OLS regression analysis to examine the determinants of corporate COVID-19 narrative reporting. Table 4 (model 1) shows that firm size and profitability are significantly associated with corporate COVID-19 narrative reporting. The coefficient on firm size is positive and statistically significant at the 1% level. This results is consistent with the previous disclosure literature [5, 29]. We therefore accept H1. These findings are also consistent with agency and signalling theories, which show that larger firms tend to reveal more COVID-19 information in order to minimise the cost of agency and minimise information asymmetries. Also, the coefficient on profitability is positive and statistically significant at the 1% level. This results is consistent with the previous disclosure literature [23, 44]. So, We accept H2. The finding is also in line with agency theory expects that managers of companies with high profitability would tend to provide more COVID-19 information in annual reports, in order to justify their present performance to the shareholders. On the

Table 3 Correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) COVID_D	1.000											
(2) FSIZE	0.536***	1.000										
(3) ROA	0.154**	0.224***	1.000									
(4) IND	0.022	− 0.115	− 0.141**	1.000								
(5) BSIZE	0.720***	0.463***	0.018	− 0.002	1.000							
(6) ACSIZE	0.773***	0.421***	0.134**	− 0.047	0.491***	1.000						
(7) BIND	0.037	0.004	0.040	− 0.033	− 0.029	− 0.109	1.000					
(8) LEV	− 0.021	0.031	0.015	0.067	− 0.112	− 0.122*	− 0.042	1.000				
(9) CASH	− 0.073	− 0.050	0.181***	− 0.018	− 0.052	− 0.047	0.046	− 0.053	1.000			
(10) BIG4	0.258***	0.309***	0.102	− 0.051	0.211***	0.263***	0.022	0.267***	− 0.187***	1.000		
(11) LOSS	0.790***	0.428***	− 0.060	0.042	0.547***	0.602***	− 0.017	− 0.039	− 0.064	0.193***	1.000	
(12) SOE	0.022	− 0.003	0.090	− 0.002	0.024	− 0.061	0.286***	0.009	0.135**	− 0.242***	0.087	1.000

Standard errors in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

other hand, the results show that the association between industry type and corporate COVID-19 narrative reporting is insignificant. Therefore, we reject H3.

Table 4 (model 2) shows that board size, audit committee size and board independence are significantly associated with corporate COVID-19 narrative reporting. The coefficient on board size is positive and statistically significant at the 1% level. This implies that higher board size lead to higher COVID-19 narrative reporting. This findings is consistent with prior studies that consider various voluntary disclosure [3, 27, 34]. Contrary to previous studies [1, 38] the analysis shows that board size has no impact on disclosure. We, therefore, accept H4. Similarly, the coefficient on audit committee size is positive and statistically significant at the 1% level. This implies that higher audit committee size lead to higher COVID-19 narrative reporting. The study demonstrates that contrary to previous studies [2, 9], AC size has no effect on COVID-19 disclosure. Therefore, H5 is accepted. Also, the coefficient on board independence is positive and statistically significant at the 1% level. This implies that higher board independence lead to higher COVID-19 narrative reporting. This result is consistent with the previous disclosure literature [21]. We, therefore, accept H6 (Table 4).

4.4 Robustness Test

Furthermore, we conducted a robustness check to explore whether the factors influencing COVID-19 narrative reporting in an emerging market are consistent with our previous findings. To achieve this, we utilized alternative measures for COVID-19 narrative reporting by the number of COVID-19 related words disclosed in the company's annual report narratives. Additionally, as a robustness check, we used a two-stage least squares (2SLS) regression model to address possible endogeneity concerns caused by the reverse causality link between company characteristics, corporate governance, and COVID-19 narrative reporting. Table 5 presents the outcomes of the 2SLS regression method, which are in line with our primary conclusions. This implies that our model is dependable and unaffected by endogeneity concerns.

5 Conclusion

The focus of this article is to investigate the factors that contribute to COVID-19 narrative reporting by companies in Egypt. Our analysis shows that firm size and profitability significantly and positively impact corporate COVID-19 narrative reporting. In contrast, we did not find an impact of industry type on corporate COVID-19 narrative reporting. We also find that board size, audit committee size and board independence significantly and positively impact corporate COVID-19 narrative reporting. Firms with more governance power lead to more information

Table 4 Regression analysis: determinants of COVID-19 narrative reporting

Dependent variable: COVID_DISC	Model 1	Model 2
Firm characteristics		
FSIZE	0.067*** (3.83)	
ROA	0.522*** (3.94)	
IND	0.04 (0.94)	
Corporate governance		
BSIZE		0.055*** (8.15)
ACSIZE		0.086*** (9.48)
BIND		0.046*** (3.89)
LEV	− 0.029 (− 0.38)	0.133** (2.51)
CASH	− 0.123 (− 0.90)	− 0.055 (− 0.61)
BIG4	0.038 (0.78)	− 0.055* (− 1.65)
LOSS	0.719*** (15.83)	0.309*** (8.11)
SOE	− 0.052 (− 1.01)	− 0.029 (− 0.80)
Industry fixed effects?	No	Yes
Year fixed effects?	Yes	Yes
Constant	− 0.432*** (− 2.81)	− 0.647*** (− 9.04)
Obs.	200	200
F-statistics	50.456***	114.410***
R-squared	0.705	0.870

Standard errors in parentheses ***p<0.01, **p<0.05, *p<0.1

disclosed on COVID-19. Our results significantly impact academics, management, shareholders, governments, and regulators. The results of this study, for instance, may be used to create legislation for a suitable corporate governance framework, showing that greater governance enhances disclosure practices in times of crisis. It is important for policymakers to be conscious of the attributes of firms that impact their COVID-19 reporting. The government could benefit from providing comprehensive guidelines for COVID-19 disclosure practices. Corporate managers should strengthen their governance procedures to enhance the disclosure of COVID-19

Table 5 Robustness test

Dependent variable: COVID_DISC	2SLS Model 1	2SLS Model 2
FSIZE	0.18*** (4.40)	
ROA	0.929*** (3.01)	
IND	0.123 (1.24)	
BSIZE		0.107*** (6.18)
ACSIZE		0.211*** (8.98)
BIND		0.07** (2.31)
LEV	− 0.073 (− 0.41)	0.281** (2.06)
CASH	− 0.406 (− 1.27)	− 0.295 (− 1.26)
BIG4	0.094 (0.82)	− 0.088 (− 1.03)
LOSS	1.412*** (13.34)	0.554*** (5.62)
SOE	− 0.096 (− 0.80)	− 0.018 (− 0.19)
Firm fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Constant	− 1.151*** (− 3.22)	1.278*** (− 6.90)
Obs.	200	200
R-squared	0.643	0.804

Standard errors in parentheses ***p<0.01, **p<0.05, *p<0.1

in annual reports. This will enable shareholders to gain a better understanding of how companies are managing the current economic situation and encourage more narrative COVID-19 reporting. We limit our analysis the determinants of corporate COVID-19 narrative reporting. Our research presents a future research opportunity for scholars to explore various facets of COVID-19 disclosure, including examining the consequences of corporate COVID-19 narrative reporting. This entails investigating how corporate COVID-19 narrative reporting affects stock price volatility, cost of capital, firm value, and stock price crash risk.

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The Role of Cuban Laborers in Improving Healthcare: Case Study of a Public Hospital

Abdelkader Yahyaoui ⓘ**, Mouloudi Abdelghani** ⓘ**, and Muhamed M. Bishr** ⓘ

Abstract The study sought to find a comprehensive view of Cuban labor, starting from the stages of its development in Algeria, to know its impact on the quality of health services, as it represents a strong human element in the health service sector and its important place in achieving the welfare of societies and facing the challenges of the world. We identified the study population by selecting all the people who were found in the public hospital institution Reggane, including its employees and patients, where we drew a sample using the easy sample method that is not probability (intentional), where 110 samples were swallowed and the most important results were: The difference in the degree of contribution of Cuban workers to improving the quality of service from the point of view of hospital workers as well as service recipients (patients). There is a statistically significant effect of Cuban employment on the quality of health service in the Reggane Hospital Public Institution at the level of 1%.

Keywords Cuban labor's contribution · The quality · Health service · Algerian hospital institutions · Algerian–Cuban partnership

JEL Classification F66 · L15 · I18 · K32

A. Yahyaoui · M. Abdelghani
University Ahmed Draia, Adrar, Algeria
e-mail: abd.yahyaoui@univ-adrar.edu.dz

M. Abdelghani
e-mail: mouloudiabdelghani@univ-adrar.edu.dz

M. M. Bishr (✉)
Qatar University, Doha, Qatar
e-mail: blutfi@qu.edu.qa

The world is undergoing a series of flexible and dynamic changes that impose a set of coordinating, regulatory, and relational frameworks in order to maintain stability and economic, social, and other well-being. Whereas every individual in society strives to find a suitable job for him in order to improve his economic situation, get out of the shell of unemployment, and raise his standard of living, which sometimes forces him to leave his geographical framework in order to obtain work based on productive qualifications. Algeria is one of the countries interested in attracting many competencies and qualifications from various nationalities in its various sectors, owing to the existence of international relations and joint projects with some major countries in various fields of specialization.

Cuba is regarded as one of the most important countries with which Algeria has long and close relations, which were embodied in projects that brought Algeria and the Cuban side together, particularly in the services sector, which is regarded as the most important economic sector. The health service is one of the most visible of these services, and all countries around the world, including Algeria, strive to improve the quality of Health service because it is the foundation for preserving patients' lives. This is what drew Cuban medical workers, including doctors and paramedics, to Algeria.

Because of the differences in language, composition, and seriousness in work, Cuban labor brought about a clear change in the Algerian health sector from its beginnings to the present day in terms of method and quality of work. Based on the foregoing and our desire to learn more about this labor and its impact on Algerian hospital institutions and the level of quality of health services provided by them, we will attempt to shed light on Cuban labor and the changes it brought about in the field of health.

1   Study Problem

The problem of this study can be formulated in the following main question:

What is the extent of Cuban labor's contribution to improving the quality of Health service in Algerian hospital institutions in light of the Algerian–Cuban partnership and international relationship?

The following sub-questions fall under this problem:

(1)   What is Cuban labor and how important is it?
(2)   What is the level and reality of Algeria's health-care system, as well as its quality?
(3)   Is Cuban labor up to the standard that the Algerian patient expects?
(4)   What is the patient's opinion of Cuban labor as a health-care consumer?

2 Study Hypothesis

We propose the following hypotheses based on the problem presented and in order to discuss it using the four dimensions of evaluating Cuban employment:

(1) **H_{1*1}**: The reality of Cuban health workers in the hospital institution under study is high at a statistically significant level of 1%.
(2) **H_{1*2}**: The reality of the quality of health service in the hospital institution under study is high at a statistically significant level of 1%.
(3) **H_{1*3}**: There is a statistically significant relationship between the evaluation of Cuban employment and the quality of health service in the hospital institution under study, with a statistical significance at the level of 1%.
(4) **H_{1*4}**: There is a statistically significant effect of the evaluation of Cuban employment on the quality of health service in the hospital institution under study, with a statistical significance at the level of 1%.

3 Study Importance

The study is important for the following reasons:

- In addition to adding value to a very important subject, international relations as a mechanism for achieving common development, which is represented in our study on Cuban labor in the medical field in order to improve the quality of health services, this study will add to the knowledge enrichment of previous studies.
- The distinctive character of various Algerian hospital institutions is poor in terms of service quality, prompting us to investigate the research, contributions, and results of researchers interested in improving the quality of health services.
- There is a scarcity of theoretical and empirical research on Cuban labor and its role in improving health-care quality.
- The Arab countries' economic openness and encouragement to invest in the health field resulted in the establishment of many hospitals and the advancement of medical and specialized technology for use in hospitals.
- To improve hospital efficiency, an evaluation study of the Cuban workforce is required.

4 Study Limits

- Study sample: The study sample was limited to the hospital institution in Reggane district Adrar (southwest of Algeria).
- Time range: The study was conducted from January 17, 2022 to August 25, 2022.
- Spatial range: The study was conducted on the hospital institution in Reggane district Adrar, which is located in the southwest of Algeria.

- Subject range: Learn about the contributions of Cuban workers to improving the quality of Health service.

5 Study Approach

In order to form the theoretical framework for the study, the descriptive approach was used, which relied on books and research, as well as previous studies related to the subject. In terms of the analytical field framework, a case study was used with a questionnaire to analyze all of the data, as well as appropriate statistical methods.

6 Theoretical Literature on Cuban Employment and Its Role in Improving Service Quality

The conceptual and theoretical framework of Cuban labor in Algeria aims to provide a comprehensive view of Cuban labor, beginning with the stages of its development in Algeria and progressing to its significance as a strong human element in the health service sector. The quality of health services is also important in achieving societal well-being and confronting global challenges, as there is a growing interest in it as a result of technological advancement, which has begun to affect the level of satisfaction of service recipients.

6.1 Cuban Labor in Algeria

Cuba is regarded as one of the countries distinguished by its strength in the health sector and its impact on achieving total quality management, owing to the level of service provided by the Cuban workforce to peoples around the world who face a shortage of qualified medical personnel, and among these countries is Algeria, which attracts Cuban doctors to contribute to improving the quality of health services.

Cuban labor is a term that refers to a group of Cubans who left their homelands to work in other countries, and who have qualifications that allow them to perform a specific job with perfection and knowledge.

6.1.1 Cuban Labor Development Stages in Algeria

Cuba has played and continues to play an undeniable pivotal role in supporting the peoples of the world in the health sector, and Algeria, like the rest of the world, has been cooperating with it since 1963, with the participation of Cuban doctors in many humanitarian missions, and Havana used to provide this service free of charge, but

due to the post-Soviet economic crisis, it began requesting fees from rich countries in 2000 [5]. Among the countries that seek help from Cuban doctors are Ethiopia, Ghana, Yemen, Kuwait, Saudi Arabia, Qatar and Algeria.

Algeria and Cuba collaborate in several areas, the most important of which is health, as a result of their revolutionary relations. According to the President of the Republic's statement, the two countries' cooperation in the health sector dates back to 1963, in accordance with Article 91-9 of the Constitution. Leader Fidel Castro dispatched medical teams comprised of experts and medical workers to assist the newly independent Algeria in building its entire health system; these were the first foreign teams to assist Algeria [3].

Algeria increased its cooperation with Havana in the 1970s, and benefited from delegations of doctors and engineers to benefit from their expertise. The beginning of the 1980s was also known as the neglect and dispersion of Cuban workers as a result of the country's openness policy [8].

Cooperation between the two countries, particularly in the health sector, resulted in agreements and memorandums of understanding, including the transfer of ownership of ophthalmology hospitals by Havana for the benefit of the Algerian state. With the continuation of the management of Cuban medical teams of specialized hospitals in this field and the provision of free treatment to Algerian citizens in the same way as the management of Algerian public hospitals, in addition to notes related to maternal and child health urging the expansion of the experiment to several other states after its concentration only in Djelfa. A multidisciplinary Cuban medical team will be assigned to supervise tumor and cancer centers, particularly in the state of Ouargla [11].

On May 10, 2016, the Government of the People's Democratic Republic of Algeria and the Government of the Republic of Cuba signed the first decree in the field of health [7].

Concerning the second decree on pharmaceuticals signed in Havana on January 30, 2018, the partnership in the field of vaccines was strengthened between the Saidal complex, the Algerian Pasteur Institute, and a Cuban institution. In addition to developing expertise to aid in the production of other vaccines, the National Laboratory for Pharmaceutical Substances Control and its Cuban counterpart, Sicomad, have renewed partnership contracts to develop drug production.

It also signed new agreements to export oil in exchange for increasing its health-care exports to Algeria, a practice known as "oil in exchange for health-care services." The agreement runs from 2019 to 2021. Where Cuba pays for oil shipments by encouraging the dispatch of more medical missions to Cuba, including doctors, pharmacists, laboratory assistants, technicians, nurses, and drug manufacturing experts. According to sources close to the Cuban mission's head, Antonio Daismachado, their number will reach nearly 50,000 by 2020. They are spread across 14 states and various Algerian hospitals, particularly in the southern hospitals of Djelfa, El Oued, Ouargla, Tamanrasset, Bechar, and Adrar [10].

On Ramadan 13, 1441, corresponding to May 6, 2020, Presidential Decree No. 20-115 included the ratification of the agreement on modalities for putting into force health cooperation between the government of the People's Democratic Republic of Algeria and the government of the Republic of Cuba, signed on January 30, 2018, in Havana.

The agreement was signed by the President of the Republic, Abdelmadjid Tebboune, and was based on Article 91-9 of the constitution [17, p. 04]. Mr. Mokhtar Mohseblawi, Minister of Health, Population, and Hospital Reform, signed the agreement on behalf of President of the Republic Abdelmadjid Tebboune. As well as Mr. Roberto Morales Ojeda, Minister of Public Health in Cuba [17].

6.1.2   The Importance of Cuban Labor in Algeria

– The technological advancement that Havana has experienced by acquiring a medical system that fully believes in the adage (prevention is better than cure) [16].
– More money is being pumped into the Cuban treasury, as medical missions are one of the country's main sources of revenue ($63 billion in 2018) [5].
– Providing a decent living for Cuban doctors.
– Work to strengthen bilateral relations between Cuba and Algeria.
– Acquisition of local labor with a variety of experiences and skills from its Cuban counterpart.
– Covering the health-care deficit in Algeria.
– The Islamic religion was introduced as a result of this employment, thanks to Cubans' contact with Muslims and the conversion of many of them to Islam [6].

6.1.3   Advantages of Cuban Labor in Algeria

– Humanitarian policy aims to alleviate human suffering.
– Training and development of Cuban doctors and paramedics.
– Editing and developing medical health programs in Cuba.
– The advancement of the medical system enabled it to develop successful vaccines, as evidenced by the fact that Cuba is considered the first country to have a cure for meningitis, as well as contribute to the reduction of the spread of lung cancer and the possibility of amputating the limb of a diabetic foot patient. It also played a role in HIV treatment, as it was the first country to prevent infection and virus transmission from a sick mother to her fetus [12].
– Providing cars for use by the Cuban medical mission, including the costs of fuel, insurance, and maintenance, as well as covering the costs of water, electricity, and internet, as well as providing furnished apartments with all necessary amenities.
– Cuban workers are highly efficient as a result of a strict training system that emphasizes discipline and seriousness [15].
– It is eager to raise health indicators to new heights.

– Respect the Islamic religion's customs and traditions, and make it easier for them to coexist with the Algerian people.
– Low salaries for Cuban doctors in their home country, owing to a large surplus of Cuban doctors that Cuba does not require.
– Cuba is a gold mine for qualified, skilled, and experienced doctors [13].

6.2 Evaluation of the Algerian Health System and the Quality of Its Health Services

Health service is a basic human need that plays an important role in human well-being as societies strive to improve their economic and social conditions. Various countries strive to provide appropriate capabilities, particularly in their health institutions, for the most comprehensive service process, whether human, technical, or financial, in order to improve health service performance.

6.2.1 The Concept of Service Quality

It refers to the quality of service that customers expect or experience in practice, and it is the primary determinant of consumer satisfaction or dissatisfaction, as well as one of the top priorities for institutions seeking to improve the level of quality in their services. We can draw three main conclusions from this definition:

• Arranging service product quality levels into three levels:

  – Expected quality of service: It represents the consumer's expectations for the level of service quality provided through his expertise and experiences.
  – Actual service quality: It represents the actual level of service performance, as it is the quality that the consumer feels after obtaining the service.
  – Perceived quality of service: It represents the perception of the consumer when he makes a comparison between the expected and perceived quality.

• The quality of service provided is one of the most important factors affecting the degree of consumer satisfaction.
• Service quality is an important competitive indicator that organizations rely on to strengthen their competitive position [4, p. 148].

6.2.2 Service Quality Dimensions

These elements can be relied upon as dimensions of the quality of service provided to the customer:

• **Tangibility**: physical facilities, equipment.

- **Empathy**: good communication with the consumer, understanding and caring for him.
- **Responsiveness**: the ability to provide service quickly and assist the customer when requested.
- **Reliability**: the ability to gain the consumer's trust and sense of security. Also, the ability to perform the service correctly, proficiently and consistently [4, p. 148].

6.2.3   Concept of Quality in Health Services

Quality in Health service is a complex process, and it is difficult to find a definition for this concept. As a result, its definition in the field of health is at the discretion of the person or persons who define it. And it appears clear in Palmar's definition of health service quality, as he sees it from the following perspectives:

– Patient: It is the treatment provided by the hospital that is characterized by respect and kindness.
– Doctor: Putting the most advanced knowledge, science and medical skills to provide service to the patient.
– Hospital management: Achieving efficiency in submission.
– Owners: Obtaining the best staff and the best facilities to provide customer service [2].

The quality of health service is viewed from the perspective of a medical professional: it provides the best services in accordance with the most recent scientific and professional developments, while adhering to the rules of health practice ethics, expertise, quality, and health service provided [18, p. 61].

We can conclude from the foregoing that the quality of health services is represented by a set of methods, steps, and procedures that occur within hospital institutions to achieve Health service for the patient and the patient's family. That is, achieving customer satisfaction through the use of skills, competencies, and experiences by workers in the sector, whether professionals or administrators, to achieve the desired results and goals.

6.3   Algerian Health System

Health is regarded as an important resource for social and economic development. In this context, Algeria has attempted, since independence, to consistently provide free medicine and meet the needs of the population, as well as to ensure the delivery of treatment to all citizens, regardless of their financial situation, in order to improve the health status and the Algerian health system.

6.3.1   Introducing the Algerian Health System

Historical Development of the Health System in Algeria

It was divided into four stages, as follows:

1. **The first stage 1963–1973**

During this period, health indicators showed a decrease in the number of workers in the sector, with the number of doctors dropping from 2500 to 600, including 285 Algerians stationed in the country's major regions. In addition to a nursing staff estimated at 138 nurses, the majority of whom are unqualified, and the administrative staff's lack of experience, the health indicators were characterized by a high death rate due to the spread of communicable diseases and epidemics.

To address this situation, the Ministry of Health has focused on two main goals:

– Reducing inequalities in the distribution of "public and private" medical staff to improve access to treatment.
– Fighting diseases, particularly communicable diseases, and requiring all children to be vaccinated.

At this point, health policy sought to adopt the socialist project and the health system as a public service, as well as to intensify efforts to build hospitals and increase medical staff formation [9, p. 125].

2. **The second stage (free treatment) 1974–1989**

This stage was characterized by the following:

– Starting on January 1, 1974, the public health sector began providing free medicine and treatment under the slogan "Health for all citizens, regardless of income or social status."
– Establishing the health sector and considering it a public administrative institution with financial independence and medical rehabilitation that meets the needs of the population.
– Reforming the educational system and medical studies, allowing a large number of medical practitioners to practice.
– In terms of health indicators, there has been a decrease in infant mortality rates, a decrease in infectious diseases, and an increase in life expectancy from 51 years in 1965 to 65 years in 1987 [9, p. 126].
– On the operational side, the state and social security funds bear all health expenditures, with the state funding 60%, social security funding 30%, and families funding the remaining 10% [14].

3. **The third stage from 1990 to 2000**

This stage was characterized by the accumulation of problems, which necessitated the gradual restructuring of the health system. Among the most important features of this stage, we mention the following:

– In order to achieve balanced social development, the health regionalization project and the use of decentralization must be implemented.
– Creating and implementing support structures for the Ministry of Health's activities, namely:
– The National Laboratory for the Control of Pharmaceutical Products (LNCPP) is in charge of inspecting medicines before they are released into the market.
– In 1994, the Central Pharmacy for Hospitals (PCH) was entrusted with financing pharmaceutical products for hospitals.
– In terms of health indicators, the birth rate increased by 25.3 per thousand, the general mortality rate increased by 604 per thousand, and the average life span increased by 68 years [18, p. 211].

4. **The fourth stage, 2000–2015**

This stage was characterized by the following circumstances:

– The government's efforts to ensure abundance, accessibility, prevention, and education.
– Political, economic, and social stability and improvement.
– The third stage of reform is to strengthen the national health system, particularly by funding it.
– The political will to change with the development of a health policy over a five-year period aimed at improving overall service levels.
– The issuance of Executive Decree No. 07-140 on May 19, 2007, which mandates the establishment of public hospital institutions and public neighborhood health institutions.
– The growth of private hospital clinics, as well as the transfer of medical competencies, particularly specialists, to the private sector, is due to the public sector's lack of friendliness.
– Reforming the health system by bringing health closer to citizens, reorganizing treatment levels, refocusing on prevention, and continuing to improve service quality [18, p. 212].

Reforming the Algerian Health System

This process aims to regain control of the national health system and implement a new reform policy following its crisis and poor provision of services to patients, as well as their low level. As a result, the authorities must seek solutions to the situation and keep up with global health developments, beginning with changing the name of the Ministry of Health and Population to the Ministry of Health and Population, and reforming hospitals as one of its goals:

– Assuring that health institutions have the necessary financial resources.
– Emphasizing user rights and responsibilities, as well as protecting patients in particular.
– Implementing the gradation principle in treatment.

- Quality while keeping costs under control.
- Reaffirming all those involved in citizen health's contractual obligations [18, p. 216].

Reform Achievements

The most important achievements were:

- Maintaining the principle of free treatment.
- Strengthening human resources.
- Establishment of several public health structures.
- Continuous provision of treatment and medicines.
- Health budgets are on the rise year after year.
- Establishment of CAC and heart surgery centers.
- In 2015, at the level of 189 public health institutions out of 273, home treatment activities were developed, where 23,240 visits were completed and 61,908 patients were taken care of.
- Proposing an action plan in 2003 and implementation started in 2015 on cancer for the period 2015–2019 [18, p. 226].

6.4 Quality Status in Algerian Hospital Centers

In terms of organization and management of these institutions, Executive Law No. 07-140 states that each hospital public institution and public health institution is run by a board of directors under the supervision of the institution's director. In addition to an advisory body represented by the Medical Council, priority was given by this decree to improving service quality by defining the internal organization of health institutions.

And, thanks to the new reform policy, a place was found for the private sector, with more than 3000 beds in the private sector and 62,000 beds in the public sector.

When it comes to investments in this sector, Algeria has opened its doors to foreign investors, as evidenced by the entry of some foreign companies in equipment repair and maintenance, as well as the freedom of movement across national borders. In addition, Cuban institutions specializing in ophthalmology have been established in some states of the country, which encourages Algerians to pay more attention to quality in providing services and achieving international quality [1, p. 141].

7   Field Study

This point includes the study's hypothetical model and the methods used in the applied study, which includes the research community, the sample studied, the study tool used, and the data collection methods and procedures required.

7.1   *Definition of Public Hospital Institution Reggane*

The state of Adrar's public hospital institution "Reggane" is regarded as one of the most important vital facilities in the state. It is a public administrative institution with moral personality and financial independence while remaining practically subject to the Ministry of Health's guardianship control. It was established by Executive Decree No. 07-140, dated Jumada Al-Awwal 1428, corresponding to May 19, 2007, which included the establishment of public hospital and health institutions.

The population's health needs are met by programming the distribution of treatment, rehabilitation, and disease diagnosis, as well as ensuring the implementation of national health programs, preserving health and purity, combating harm and social pests, and improving the level of health service users and renewing their knowledge. It consists of a number of districts and municipalities, as shown in Table 1.

7.2   *Departments of the Public Hospital Institution Reggane*

According to the executive decree of 2007, the public hospital institution in Reggane has 11 departments of various specialties, as shown in Fig. 1, and we should note that some departments are missing, requiring patients to be transferred to the state's center or neighboring states for treatment.

The institution is also overseen by a human element of various types, which is represented in Table 2.

7.3   *Methodological Procedures for Applied Study*

7.3.1   Study Population and Sample (Public Hospital Institution Reggane)

Given the study's objectives, we chose all of the people who were in the hospital, including staff and patients, as the study population.

Table 1 State districts, municipalities, and peoples councils affiliated to Reggane Hospital

Reggane General Hospital Corporation	
State districts	Municipalities and people's councils
Reggane–Aoulef–Zaouietkounta–Bordj Badji Mokhtar	Aoulef–Timokten–Tit–Akabli–Reggane–Sally–Zaouietkounta–Anjizimir–Timiaouine–Bordj Badji Mokhtar

Source Prepared by the student after an interview with the Director of Human Resources
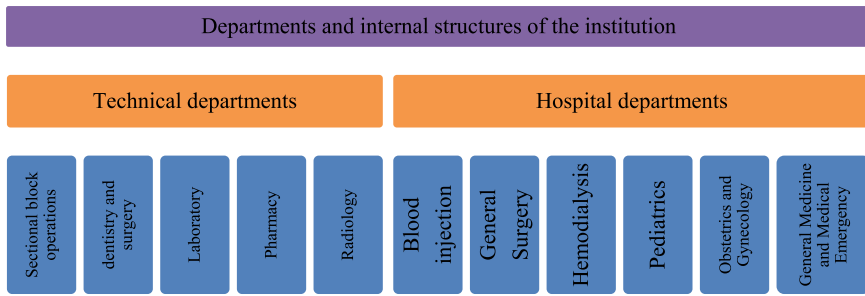
Fig. 1 The interests of the public hospital institution in Reggane. *Source* Directorate of Human Resources of the General Hospital Institution Reggane-Adrar

Table 2 The number of paramedical and administrative staff in Reggane Hospital

Reggane General Hospital Corporation		Number
Number of paramedical users at Reggane Adrar Hospital	Specialist doctors	27
	General physicians, pharmacists and dental surgeons	26
	Paramedical users	179
	Biologists	5
	Clinical psychologists	4
Number of administrative users at Reggane Adrar Hospital	Workers used for common departments	79
	Professional workers and motorists	48
	Retired employees	155
Total		523

Source Prepared by the student after an interview with the Director of Human Resources

Whereas the number of samples reached 110, we drew a sample using the facilitated, non-probability (intentional) sample method, and the questionnaire was distributed in a personal capacity through the interview, and it was retrieved later.

The study took from 01/17/2022 to 08/25/2022, and the number of final-use questionnaires was 103 out of a total of 110 distributed questionnaires, with an estimated 07 questionnaires cancelled for a variety of reasons, including that the answers were not acceptable.

7.3.2 Study Model

In light of the review of previous studies, the following model was prepared for approval in the study (Fig. 2).
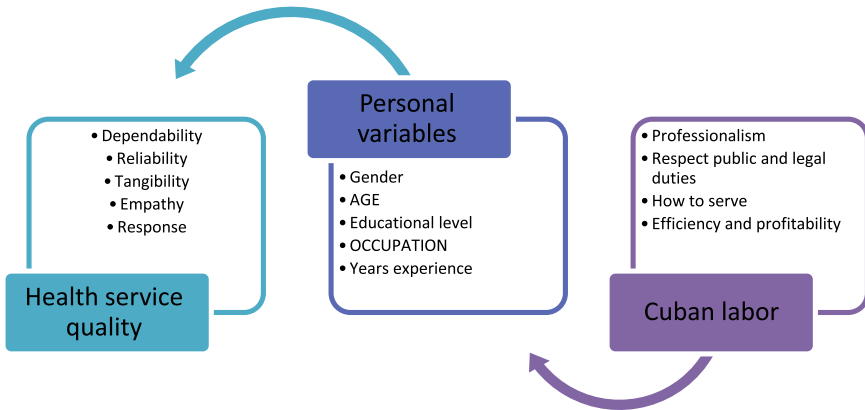
Fig. 2 Study model. *Source* Prepared by the researcher

7.3.3 Study Tool Design

We determined that the questionnaire is the best tool for achieving the study's objectives based on the nature of the data to be collected, the approach used in the study, and the available financial resources.

As a result, we based the study questionnaire on previous research in the same field. The questionnaire was divided into three sections, the first of which dealt with the study sample's personal variables and functional characteristics (sex, age, educational qualification, presence in the hospital). The second part was represented in the questionnaire's axes, which included two axes, the first of which deals with the independent variable Cuban labor and consists of (29) statements. The third erasure, on the other hand, is concerned with the dependent variable represented by the quality of Health service, and it consists of (32) items, with the degree of approval determined by the Lecartesian five-point division.

7.3.4 Methods for Statistically Analyzing the Study Questionnaire

After deciding to use the questionnaire, it was published and distributed throughout the hospital institution in its various departments for a period of 30 days, and interactive responses were collected, yielding an estimated (103) questionnaires valid for statistical analysis. The Statistical Packages for Social Sciences (SPSS) program has been approved to achieve the study's objectives because it contains a wide range of statistical tests that fall under descriptive statistics such as frequencies, averages, and standard deviations etc., as well as within inferential statistics such as correlation coefficient, regression etc. The statistical methods used in this study will be presented in the following sections.

- **Range**: The difference between the largest value and the smallest value in the set of values. To determine the length of the cells of the five-point Likert scale used in the questionnaire, the range was calculated between the largest and smallest value of the Likert scale scores ($5 - 1 = 4$), then divided by the scores of the scale to obtain the correct cell length, i.e. ($4/5 = 0.8$), and then this value is added to the lowest value in the scale, which is (1), in order to determine the upper limit of the category ($0.8 + 1 = 1.8$).
- **Frequencies and percentages**: The frequencies and percentages were adopted to find out the personal and functional characteristics of the study sample, as well as to determine the responses of the sample members towards the statements of the questionnaire axes.
- **Cronbach's alpha test**: It was used to find out the stability of the questionnaire's axes and paragraphs.
- **Spearman correlation coefficient**: This coefficient was used to find out the extent to which the study variables are related.
- **Linear regression coefficient**: This test was used to predict the Cuban employment as a mechanism for raising and improving the quality of health service in Algeria.

7.3.5 Study Tool Stability

Stability implies that if this questionnaire is redistributed to another sample from the same community with the same sample size, the results will be similar to the first sample. Cronbach's alpha is one of the most widely used measures of questionnaire stability. It is calculated using the following equation and is based on calculating the internal correlation between the answers to the questions:

$$\propto = \frac{K}{k-1}\left(1 - \frac{\sum_{i=1}^{k} \sigma_{yi}^2}{\sigma_x^2}\right)$$

where: K is the number of questions σ_{yi}^2 is the standard deviation of i question answers. σ_x^2 represents the standard deviation of all responses (answers all questions).

The overall stability coefficient of the resolution was calculated in addition to the stability according to each dimension and axis of the resolution by conducting stability steps on the sample using the "Alpha–Cronbach" method to measure the stability of the resolution.

Cronbach's alpha coefficient values are high in Table 3, reaching 0.937 for the Cuban labor evaluation axis and 0.914 for the health service quality axis. The overall stability coefficient of the questionnaire was 0.945, or 94%, indicating that the questionnaire is stable as a mechanism for the study and can be relied on in memorizing the results that will be obtained. That is, the questionnaire has a high degree of stability, and we conclude that if it were distributed again, it would have produced the same results for the same sample or category, and from this, we can rely on the questionnaire's results and its ability to achieve study objectives.

Table 3 "Alpha–Cronbach" coefficient of stability for the axes and dimensions of the resolution

	Paragraphs number	Alpha–Cronbach stability coefficient
The overall stability of the Cuban employment axis	29	0.937
The overall stability of the health service quality axis	32	0.914
The overall stability of the questionnaire	61	0.945

Source Prepared by researchers based on the outputs of the program (SPSS)

7.3.6 Applied Validity of the Study Tool

The correlation coefficient was calculated to determine the degree of correlation between each paragraph and an indicator with the axis to which it belongs within the questionnaire's axes, as shown in Table 4.

According to Table 4, the correlation coefficients of the paragraphs of the Cuban employment evaluation axis ranged between **0.874 for the dimension of how to serve and **0.339 for the first paragraph of the same dimension, and all correlation coefficients ranged from the aforementioned values and were statistically significant at a significant level (0.01). Internal consistency exists between all expressions of the Cuban Employment Evaluation axis and its overall score.

According to Table 5, the correlation coefficients of the paragraphs of the health service quality axis ranged between **0.829 for the response index and **0.153 for the first paragraph of the tangibility index, and all correlation coefficients ranged between these values and were statistically significant at a significant level (0.01). Internal consistency with the overall score of all phrases of the health service quality axis.

7.3.7 Presentation and Analysis of Data

The description of the personality variables will be discussed, and the levels of presence of the independent variable and dependent variable dimensions in the studied population will be presented, leading to the testing of the study hypotheses.

Table 6 depicts the distribution of the study sample based on personal characteristics, as determined by the gender variable. Whereas the highest percentage of females came from more than half of the sample, reaching (65) females from the total number of the sample, the highest percentage of males reached (38) from the total number of the sample. This is due to the nature of work in hospital institutions that focuses on the female gender, as well as the specialization of the Obstetrics Department, which only hires females.

With an estimated 79 people, the age group (from 26 to 50 years) is the most populous, followed by the age group (25 years and under) with 14 people. The age

Table 4 Spearman correlation coefficients for Cuban employment items and indicators

Cuban employment evaluation axis	Spearman correlation score
The Cuban doctor is characterized by discipline and punctuality	0.548**
The Cuban medical supervisor is fun and jovial	0.566**
My privacy, religion, customs and traditions are respected by the Cuban client	0.374**
The hospital has a sufficient number of Cuban staff around the clock	0.513**
The Cuban crew is always courteous	0.691**
Feel confident and comfortable with the Cuban treatment team	0.775**
I like the honesty and sincerity of the Cuban doctor	0.724**
The Cuban medical staff is keen to carry out the tasks entrusted to it	0.653**
Respect public duties and basic legal duties	0.832**
Patients have high confidence in the Cuban medical staff treating them	0.549**
Cuban doctors respond to patients' needs	0.561**
There is easy communication with Cuban doctors	0.425**
The Cuban doctor is highly qualified and skilled	0.639**
The Cuban doctor controls sophisticated medical equipment	0.683**
The Cuban doctor saves many patients	0.577**
The Cuban doctor is characterized by the ability to solve health problems	0.739**
Professionalism	0.830**
The patient receives good medical treatment	0.578**
The treatment prescribed by the Cuban doctor is effective	0.576**
Obstetric procedures and maternity and child care by Cuban staff are quick and easy	0.564**
Providing immediate maternal and child care services without the need for a prior appointment	0.472**
Doctors and nurses deal with pain quickly and appropriately	0.602**
Health service tasks are carried out effectively by the Cuban physician	0.697**
The Cuban medical staff achieves the goals of the hospital with perfection and quality	0.703**
Efficiency and profitability	0.844**
The hospital provides a sufficient number of translators to facilitate communication with Cuban doctors	0.339**
The Cuban crew is always willing to help	0.564**
The Cuban doctor is distinguished by listening to the patient's complaints and inquiries	0.663**
The Cuban doctor has high skills and competencies when dealing and communicating with patients	0.646**

(continued)

Table 4 (continued)

Cuban employment evaluation axis	Spearman correlation score
I have received sufficient information about my health condition	0.633**
I feel that the Cuban therapist is looking for patient satisfaction	0.689**
I am generally satisfied with the services of the Cuban medical staff	0.726**
Service	0.874**

Source Prepared by researchers based on the outputs of the program (SPSS)
* indicates p < 0.05, ** indicates p < 0.01, *** inidcates p < 0.001

group (over 50 years) had the lowest percentage by ten points, demonstrating the state's proclivity to employ and activate the youth component in its various sectors.

The distribution of the study sample based on the scientific level variable favored qualified graduates of the Medical Institute, totaling 35 people. While the university level category (pre-graduation Bachelor–Master) has a score of 21, the educational level secondary or lower has a score of 18. Then there were 15 people in the category of other levels and qualifications, and 14 people in the category of university qualifications (post-graduate masters–doctorate). The total sample under investigation.

It was discovered that the various frameworks of the hospital have a university scientific level, in addition to a diversity in the proportions of the study sample's educational level, and that this contributed to the formation of objective attitudes towards the subject of the study.

In terms of the distribution of the study sample based on the presence capacity within the hospital, the paramedical category has the most workers (53 in the studied sample). The category of other characteristics had 19 individuals (the majority of whom were patients), while the category of administrators had 17 administrative workers. General physicians were followed by 09 physicians and specialists by 05 physicians, respectively (Figs. 3, 4, 5 and 6).

7.3.8 Hypothesis Testing

The following statistical analyses were carried out to test the hypotheses.

Analyzing the Findings in Relation to the Study Subjects' Perceptions and Responses

- **Analyzing the findings related to the study participants' perceptions and responses to the axis of evaluating Cuban employment**

Table 5 Spearman correlation coefficients for health-care items and indicators

Health-care quality axis	Spearman correlation score
The hospital is keen to provide health services on time	0.511**
The hospital is keen to solve the patient's problems	0.600**
The hospital is keen to provide services in an appropriate manner	0.596**
The hospital maintains accurate and documented records	0.507**
The hospital contains different medical specialties	0.444**
The hospital provides health services with a high degree of accuracy	0.632**
Dependability index	0.809**
The hospital has a good reputation and standing in the community	0.505**
The hospital deals with politeness and good manners with patients	0.561**
The hospital has accurate and documented patient records	0.706**
There is confidence in the doctors, specialists and nurses present in the hospital	0.619**
The hospital takes great care in following up on patients	0.639**
The hospital maintains the confidentiality of each patient's information	0.463**
Patients feel safe when dealing with hospital staff	0.605**
Reliability index	0.823**
The hospital enjoys a convenient location and is easily accessible quickly	0.153**
The corridors and roads in the hospital are comfortable and wide	0.250*
The hospital has waiting rooms with all the supplies	0.488**
The hospital is characterized by its high level of cleanliness and good appearance	0.441**
The hospital has the appropriate facilities and equipment	0.506**
The hospital has medical materials (medicines) that the patient needs	0.447**
Tangibility index	0.596**
The hospital respects the customs and traditions of the community	0.436**
The medical staff explains to patients their health problems in an easy and understandable way	0.535**
The hospital cares about the patient's interest	0.589**
The hospital staff is characterized by a sense of humor and friendship in dealing with patients	0.604**
The working hours in the hospital are suitable for all patients	0.591**
The hospital appreciates the patient's condition and empathizes with him	0.637**
The hospital staff takes care of the patients personally and is keen on his satisfaction	0.549**

(continued)

Table 5 (continued)

Health-care quality axis	Spearman correlation score
Empathy index	0.803**
The hospital announces exact service times	0.633**
The hospital responds quickly to patients' complaints and inquiries	0.647**
Simplifying the work procedures in the hospital to ensure the speed and ease of providing the service	0.724**
Hospital nurses are always willing to cooperate with the patient	0.615**
Patient requests are met immediately by the hospital	0.647**
The required health service is provided quickly and efficiently	0.676**
Response indicator	0.829**

Source Prepared by researchers based on the outputs of the program (SPSS)
* indicates p < 0.05, ** indicates p < 0.01, *** inidcates p < 0.001

Table 6 Personal characteristics of the sample

Variable	Differentiation criterion	Number	Total
Gender	Male	38	103
	Female	65	
Age	25 years or less	14	103
	From 26 to 50 years old	79	
	Older than 50 years old	10	
Academic level and qualification	Secondary or less	18	103
	Medical institute graduate	35	
	University (pre-graduation bachelor–master)	21	
	University (post-graduation master's–doctorate)	14	
	Other	15	
Occupation	Administrative	17	103
	Paramedic	53	
	General doctor	9	
	Specialist doctor	5	
	Other	19	

Source Prepared by researchers based on the outputs of the program (SPSS)

To determine the reality of Cuban employment, the arithmetic means and standard deviations for the responses of the study participants to the items representing the Cuban employment axis, according to its dimensions, were calculated.

According to Table 7, the arithmetic averages for the Cuban labor evaluation axis ranged between 2.0777 and 4.0874, indicating that the level of response ranges
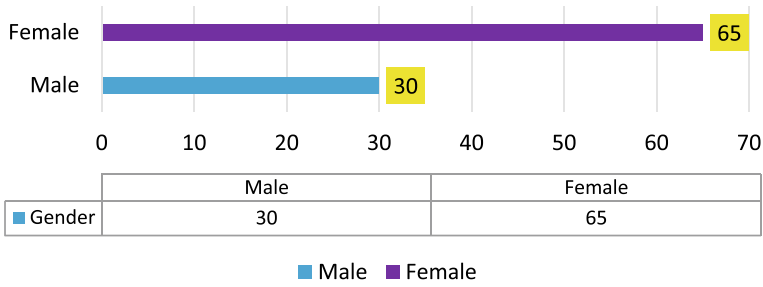
Fig. 3 Distribution of the study sample according to gender. *Source* Prepared by the researcher
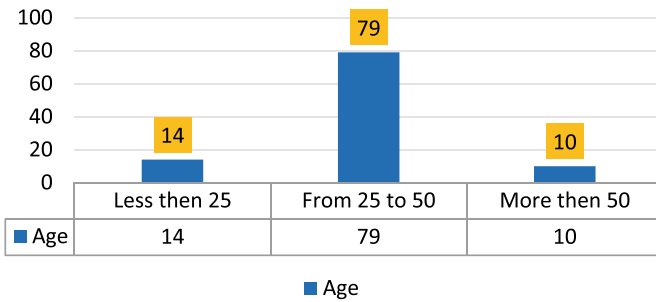
Fig. 4 The age distribution of the study sample. *Source* Prepared by the student
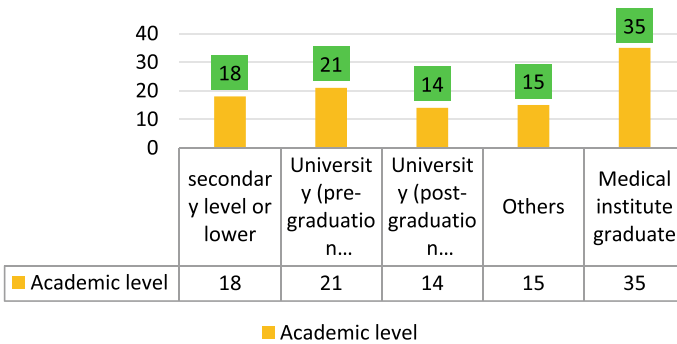
Fig. 5 Distribution of the study sample according to academic qualification. *Source* Prepared by the student

between relatively weak and high, indicating that the statements are more compatible with the respondents' points of view. The standard deviations ranged from 1.3140 to 0.6406, indicating that there is no significant dispersion in the study sample's opinions about the arithmetic means, implying that the statements are more concentrated and agreed upon among the sample.

	Administrative	Paramedic	General doctor	Specialist doctor	Other
☐ occupation	17	53	9	5	19
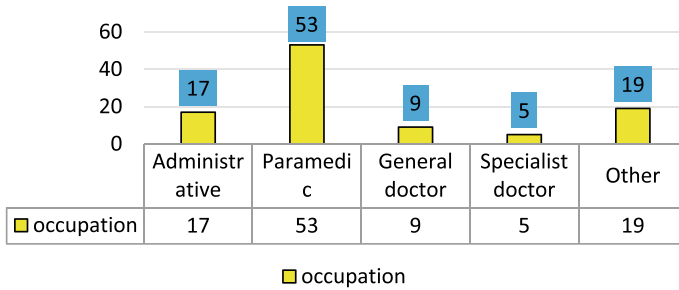
☐ occupation

Fig. 6 Distribution of the study sample by occupation. *Source* Prepared by the student

In general, the arithmetic mean within the axis of evaluating Cuban employment as a whole was 3.3545, corresponding to an average level of response, indicating that study sample members agree to some extent about the reality of health service quality, with a standard deviation of 0.6406. As a result, we reject the alternative hypothesis H_{1*1} and accept the null hypothesis on the basis that, at a statistically significant level of 1%, the reality of Cuban employment in the hospital institution under study is medium and not high.

- **Analyzing the results related to the response of the study individuals to the health service quality axis**

To determine the reality of health-care quality, arithmetic means and standard deviations were calculated for study participants' responses to items representing the Cuban employment axis, according to its indicators (dependability, reliability, tangibility, sympathy and response).

Table 8 shows that the arithmetic means for the health service quality axis ranged between 2.2427 and 04, indicating that the level of response ranges between relatively weak and high, indicating that the statements are more compatible with the respondents' points of view. The standard deviations ranged from 3.1467 to 0.6531, indicating that there is no significant dispersion in the study sample's opinions about the arithmetic means, implying that the statements are more concentrated and agreed upon among the sample.

In general, the arithmetic mean across the health service quality axis was 3.1344, corresponding to an average response level, indicating that the study sample agreed to some extent on the reality of health service quality with a standard deviation of 0.6531. Thus, we reject the alternative hypothesis H_{1*2} and accept the null hypothesis on the basis that, at a statistically significant level of 1%, the reality of the quality of health service in the hospital institution under study is medium and not high.

Table 7 Analyzing the results of the study participants' responses to the axis of evaluating Cuban employment

Cuban employment evaluation axis	Arithmetic average	Standard deviation	Response level
Discipline and punctuality are hallmarks of the Cuban doctor	3.6214	1.1809	High
The Cuban medical supervisor is cheerful and upbeat	3.7379	0.8627	High
The Cuban client respects my privacy, religion, customs, and traditions	4.0874	0.781	High
The hospital is staffed by a sufficient number of Cubans around the clock	3.1942	1.314	Medium
The Cuban crew is always pleasant	3.6408	0.9687	High
Feel at ease and confident with the Cuban treatment team	3.534	1.0461	High
I admire the Cuban doctor's candor and sincerity	3.5922	1.0426	High
The Cuban medical staff is eager to complete the tasks assigned to it	3.7573	0.9848	High
Patients have a high level of trust in the Cuban medical staff who are treating them	3.5049	1.1103	High
Cuban doctors attend to their patients' needs	3.5922	1.0612	High
Communication with Cuban doctors is simple	2.6311	1.2833	Weak
The Cuban doctor is extremely knowledgeable and skilled	3.233	1.1044	Medium
The Cuban doctor operates high-tech medical equipment	3.1165	1.1907	Medium
Many patients are saved by the Cuban doctor	3.6893	0.9185	High
The ability to solve health problems distinguishes the Cuban doctor	3.3981	1.0787	Medium
The patient receives excellent medical care	3.1068	1.0839	Medium
The treatment prescribed by the Cuban doctor works	3.1456	0.9843	Medium
Obstetric procedures, as well as maternity and child care, are performed quickly and easily by Cuban staff	3.5146	1.1364	High
Immediate maternal and child care services are available without an appointment	3.3301	1.1831	Medium
Doctors and nurses treat pain in a timely and appropriate manner	3.3689	1.0846	Medium
The Cuban physician performs health-care tasks efficiently	3.2524	1.0638	Medium
The Cuban medical staff achieves the hospital's goals with precision and quality	3.1359	1.1119	Medium

Table 7 (continued)

Cuban employment evaluation axis	Arithmetic average	Standard deviation	Response level
To facilitate communication with Cuban doctors, the hospital provides a sufficient number of translators	2.0777	1.1605	Weak
The Cuban crew is always eager to assist	3.5437	0.9051	High
The Cuban doctor distinguishes himself by attentively listening to the patient's complaints and inquiries	3.3107	1.0481	Medium
When it comes to dealing with and communicating with patients, the Cuban doctor excels	3.3107	0.9185	Medium
I have received adequate information about my medical condition	3.1068	1.0186	Medium
I believe the Cuban therapist is seeking patient satisfaction	3.3204	1.0118	Medium
I am generally pleased with the services provided by the Cuban medical staff	3.4272	1.099	High
Respect public duties and basic legal duties	3.6456	0.7301	High
Professionalism	3.3093	0.7858	Medium
Efficiency and profitability	3.2649	0.7808	Medium
Service quality	3.1567	0.7099	Medium
Cuban employment evaluation axis	3.3545	0.6406	Medium

Source Prepared by researchers based on the outputs of the program (SPSS)

An Examination of the Relationship and Impact Between the Evaluation of Cuban Employment and the Quality of Health Service

See Tables 8, 9 and 10.

7.3.9 Results Analysis

We can see from Table 9, which shows the Spearman's correlation coefficient for the study variables, that the correlation coefficient between the evaluation of Cuban employment and the quality of Health service has reached 0.467** in a direct medium, and the value of the significance level Sig is less than 0.05 (0.01), 0.01 > 0.000. On this basis, we reject the null hypothesis H_{0*3} and accept the alternative hypothesis H_{1*3}, which assumes a 1% statistically significant relationship between Cuban employment and health-care quality in the hospital under study.

The coefficient of determination was 0.270, the adjusted coefficient of determination was 0.263, and the estimated standard error was 0.56065, as shown in Table 10. The linear relationship of the change in the value of health service quality with

Table 8 Analyzing the results related to the responses of the study members to the health service quality axis

Health service quality axis	Arithmetic average	Standard deviation	Response level
The hospital is keen to provide health services on time	3.3107	1.1378	Medium
He is keen to solve the patient's problems	3.4369	1.1261	High
The hospital is keen to provide services in an appropriate manner	3.3204	1.2063	Medium
The hospital maintains accurate and documented records	3.6796	1.165	High
The hospital contains different medical specialties	3.4757	1.1618	High
The hospital provides health services with a high degree of accuracy	2.4272	1.1428	Weak
The hospital has a good reputation and standing in the community	2.6699	1.0515	Medium
The hospital deals with politeness and good manners with patients	3.1553	1.1268	Medium
The hospital has accurate and documented patient records	3.5922	1.0796	High
There is confidence in the doctors, specialists and nurses present in the hospital	3.5631	1.0065	High
The hospital takes great care in following up on patients	3.0583	1.0648	Medium
The hospital maintains the confidentiality of each patient's information	3.5825	1.1161	High
Patients feel safe when dealing with hospital staff	3.3495	1.1177	Medium
The hospital enjoys a convenient location and is easily accessible quickly	3.3981	1.2783	Medium
The corridors and roads in the hospital are comfortable and wide	3.0971	1.2486	Medium
The hospital has waiting rooms with all the supplies	2.3398	1.1337	Weak
The hospital is characterized by its high level of cleanliness and good appearance	2.3883	1.2065	Weak
The hospital has the appropriate facilities and equipment	2.2427	1.0798	Weak
The hospital has medical materials (medicines) that the patient needs	2.9806	1.1545	Medium
The hospital respects the customs and traditions of the community	3.6019	0.9003	High
The medical staff explains to patients their health problems in an easy and understandable way	4	3.1467	High
The hospital cares about the patient's interest	3.4757	1.1012	High

(continued)

Table 8 (continued)

Health service quality axis	Arithmetic average	Standard deviation	Response level
The hospital staff is characterized by a sense of humor and friendship in dealing with patients	3.2913	1.0903	Medium
The working hours in the hospital are suitable for all patients	3.2233	1.1196	Medium
The hospital appreciates the patient's condition and empathizes with him	3.1068	1.154	Medium
The hospital staff takes care of the patients personally and is keen on his satisfaction	3.068	1.2467	Medium
The hospital announces exact service times	2.8252	1.2636	Medium
The hospital responds quickly to patients' complaints and inquiries	2.5825	1.2565	Weak
Simplifying the work procedures in the hospital to ensure the speed and ease of providing the service	2.9806	1.1288	Medium
Hospital nurses are always willing to cooperate with the patient	3.5146	1.1278	High
Patient requests are met immediately by the hospital	2.7282	1.0403	Medium
The required health service is provided quickly and efficiently	2.835	1.1972	Medium
Dependability index	3.2751	0.808	Medium
Reliability index	3.2816	0.7833	Medium
Tangibility index	2.7411	0.7131	Medium
Empathy index	3.3953	0.8537	Medium
Response indicator	2.911	0.9323	Medium
Health service quality axis	3.1344	0.6531	Medium

Source Prepared by researchers based on the outputs of the program (SPSS)

Table 9 Spearman correlation results for the study variables (evaluation of Cuban employment and health service quality)

Evaluation of Cuban employment and the quality of health service in Algerian hospitals	Correlation	Sig.
	0.467**	0.000

Source Prepared by researchers based on the outputs of the program (SPSS)
* indicates p < 0.05, ** indicates p < 0.01, *** inidcates p < 0.001

the change in Cuban employment explains 27% of the value of the determination coefficient, and the remaining 73% is due to other factors affecting health service quality.

Table 10 Results of a linear regression analysis of the impact of Cuban employment assessment on health service quality

Standard error	Modified interpretation coefficient	Interpretation coefficient	Simple correlation coefficient
0.56065	0.263	0.27	0.520[®]

Source Prepared by researchers based on the outputs of the program (SPSS)

Table 11 Results of the linear regression equation analysis of the impact of the evaluation of Cuban employment on the quality of health service

Variants	Regression equation		(T) test	Significance level (sig.)
	Coefficients (B)	Standard error		
Constant (other factors)	1.365	0.296	4.583	0.000
Cuban employment assessment	0.53	0.087	6.118	0.000

Source Prepared by researchers based on the outputs of the program (SPSS)

Table 11 shows the following: The formula for the regression model of health service quality on Cuban employment is represented in the following formula:

$$\text{Health service quality} = 0.530 \times \text{Cuban employment} + 1.365$$

We also note that the value of Sig is less than 0.01. On this basis, then, we reject the null hypothesis H_{0*4} and accept the alternative hypothesis H_{1*4}, which assumes that there is a statistically significant effect of evaluating Cuban employment on the quality of health service in the hospital institution. The subject of the study is statistically significant at the 1% level.

8   Conclusion

The health services sector is the lifeline and backbone of societies in many countries around the world. It is clear that we are facing significant challenges in this regard because it is linked to the daily lives of citizens, requiring the state to be cautious and take care of it through a variety of reforms, including attracting external competencies to solve this.

Through this study, we attempted to address aspects of Cuban labor and its impact on the quality of health services, to provide answers about the evaluation of Cuban labor, and to address various points concerning the quality of health services. The health field seeks continuous improvement in the health quality provided to members of society, and from this standpoint, this study came to answer the problem raised,

and we arrived at the following main results through theoretical and practical study of the subject.

The following recommendation brought about are: first, the difference in the degree of contribution of Cuban workers to improving the quality of service from the point of view of hospital workers as well as service recipients (patients). Second, Reggane Hospital adopts the policy of evaluating the Cuban medical staff by patiently reviewing the opinions of the hospital staff and patients. Third, there is a direct correlation between Cuban employment and the improvement of the quality of health service in the public hospital institution Reggane at the level of statistical significance 1%. There is a statistically significant effect of Cuban employment on the quality of health service in the Reggane Hospital Public Institution at the level of 1% in the third place.

These are some main recommendations of the study: first, Work on establishing quality cells, activating their activity, and continuous monitoring of them. Secondly, Work to improve the quality of services and consider it a hospital priority. And, Continuous monitoring of Cuban workers and trying to discover their qualifications and abilities. Thirdly, Objectivity in determining the competencies of workers, not distinguishing between the Cuban crew and the Algerian crew, and working to apply the law to everyone without exception. Fourthly, Consider local doctors, encouraging and motivating them to do their work, and giving them good privileges to motivate them to work more like the Cuban worker. Finally, focus on the psychological aspect of the patient by giving lessons to the hospital staff on how to communicate and deal with the beneficiary.

As a study prospect, after a modest attempt to address the issue of Cuban labor and its role in improving the quality of health services, and in light of the results achieved, some studies related to the subject can be suggested: The reality of Cuban employment in Algerian hospitals, a comparative study between the Cuban medical staff and the local medical staff, requirements for achieving the quality of health services, Cuban labor and its role in improving the quality of service in other public sectors and at the end, foreign labor and its role in improving social and economic development.

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Conceptual Research Paper on Factors Influencing Corruption Levels in ASEAN Countries

Rapon Yuniar Suhardi and Arief Rahman

Abstract This conceptual study aims to examine the influence of information systems, the quality of human resources, and economic capabilities as derivatives of the fraud triangle theory on the level of corruption. The endemic threat of corruption is a significant problem in all countries, including some ASEAN countries. According to Transparency International, almost all countries in the ASEAN region were below 50 in 2020. The existence of corrupt fraud is discussed in the fraud triangle theory. This research is significant for understanding the factors that influence corruption in the context of cross-country analysis, especially by applying the fraud triangle theory and its derivatives. This research is also essential for decision-makers in ASEAN countries to eradicate corruption.

Keywords Corruption · Fraud triangle · Human resources · Economic capability · Information systems

1 Introduction

1.1 Background

Based on the legal view, corruption is said to be if it fulfils the elements of unlawful acts, abuse of authority, opportunity, or means, enriches oneself, others, or corporations, and harms state finances or the country's economy. Corruption is a severe problem in most ASEAN countries, so it is essential to know the factors that affect the level of corruption. The corruption figures in ASEAN countries are high. This

R. Y. Suhardi (✉) · A. Rahman
Department of Accounting, Faculty of Business and Economics, Islamic University of Indonesia, Yogyakarta, Indonesia
e-mail: rapon.suhardi@students.uii.ac.id

A. Rahman
e-mail: arief.rahman@uii.ac.id

Table 1 Corruption perception index (CPI) 2020

No.	Country	CPI
1.	Brunei Darussalam	60
2.	The Philippines	34
3.	Indonesia	37
4.	Cambodia	21
5.	Laos	29
6.	Malaysia	51
7.	Myanmar	28
8.	Singapore	85
9.	Thailand	36
10.	Vietnam	36

Source Transparency International

is supported by the 2020 Transparency International report that almost all countries in the region are below 50, which means all countries in the ASEAN region have a relatively high level of corruption (Table 1).

The phenomenon of corruption fraud in this research is discussed from the perspective of the Fraud Triangle Theory. This theory states that fraud can occur through pressure, opportunity, and rationalization. Various fields and studies on factors that affect corruption still focus more on regional revenues. Previous research mostly used agency theory. Research discussing the influence of the quality of human resources on corruption is also still lacking. Therefore, examining the impact of human resource quality on corruption is substantial. According to the World Bank [16], corruption is the direct or indirect act of offering, giving, receiving, or requesting something of value that unfairly affects the actions of others. Corruption combines the pursuit of personal financial gain with the government's efforts to provide public goods, correct market failures, and assist those in need [12]. Corruption undermines economic development by distorting the rule of law and weakening institutional foundations. Therefore, this research is based on the question: Do Economic Capability, Information Systems, and Quality of Human Resources affect Corruption level in ASEAN Countries? This conceptual study aims to contribute to the theoretical discourse on the factors that will influence the level of corruption in ASEAN countries. In addition, it is expected to provide insights into the influential factors of corruption and efforts to prevent it. This paper consists of five parts: introduction, literature review, theoretical background, conceptual model formulation, and conclusion.

2 Literature Review

The literature review is generally defined as a summary or summary of theories found from reading sources (literature) related to the theme that will be raised. The focus of this study is on the factors that influence corruption. Previous research on the factors influencing the level of corruption has been conducted by researchers using several variables. Previous studies that used the information system variable showed that the information system positively influences the level of corruption [1]. Meanwhile, other research results show that several factors, such as human resource quality and a country's economic ability, have a positive effect on the level of corruption [13]. Other studies that use the fraud triangle theory have not yet proven that the information system with e-government indicators, human resource quality with Human Development Index (HDI) indicators, and economic ability with Gross Domestic Product (GDP) indicators are derivatives of the fraud triangle theory (ability, Rationalization, and pressure) that will affect the level of corruption. Based on most of the research, researchers use the fraud triangle theory to construct opportunity perception, rationalization perception, and pressure perception as factors that can influence corruption. It is rare to use E-Government, HDI, and GDP in influencing the level of corruption as its derivatives. Researchers expand on this as something new to examine the factors influencing corruption in ASEAN countries.

3 Theoretical Background

3.1 Corruption Theory

Corruption is an act or omission in the exercise of decision-making power (either within the public sector or in the private sector) that seeks to generate a profit of any nature (economic, social, political, etc.) for oneself or a third party, and that may be attracting legal sanctions (criminal, civil or administrative) [2]. Transparency International uses the Corruption Perception Index (CPI) to measure the level of corruption at the country level. The CPI is an aggregate indicator combining different sources of information on corruption, making it possible to compare each country's corruption level. The threat of corruption that has become endemic has become a significant problem in all countries, including some countries in ASEAN.

3.2 Fraud Triangle

This theory suggests that someone will commit fraud when there is a complex financial problem (pressure), believe and know that the problem can be solved by hidden means using the job or position he has (opportunity), and change thinking from the

concept of the person who is given the responsibility to hold the asset to the concept as a user of the asset entrusted (Rationalization) [14]. Organizations need a fraud triangle in analyzing the motives or possibilities of fraud. Many of the fraud perpetrators know and realize that the actions committed are illegal, but fraudsters raise the thought that the actions taken are natural. Thus, Cressey [3] grouped three main factors that cause fraud: pressure, opportunity, and Rationalization.

3.3   Pressure

Pressure is the motivation behind fraudulent acts, and it can be personal financial pressure or pressure from superiors [8]. This pressure is related to a person's intention to commit fraud. A person can be driven to fraud because of personal economic issues such as debt, instalments, utility bills, luxurious lifestyles, and other financial needs. The same goes for companies. In addition, the urge to commit fraud can also be caused by unrealistic work targets. This condition can trigger someone to commit fraud, such as corruption with company funds for personal gain. Motives for fraud are often related to personal and business pressures on individuals. However, the real motive is a conscious desire to commit such fraudulent activities. In this research, pressure will be measured by economic capability. The following section outlines the measurement of economic capability.

3.4   Economic Capabilities

According to the official website of the Statistics Bureau, GDP (Gross Domestic Product) is one of the important indicators to assess the economic condition of a country during a period, either at current prices or constant prices. GDP can also be used to study the economy over time or to compare several economies at a given time. One measure of a country's growth can be seen from GDP, the most closely watched economic statistic and considered the best single measure of a country's well-being [7]. In this research, we expect that economic capability negatively affects corruption.

3.5   Opportunity

Opportunity is a chance for an employee to commit fraudulent acts. For example, an accountant may realize that financial audits are not conducted daily, so they may take advantage of the opportunity to embezzle company funds (commit corruption). The opportunity to commit fraud may increase if the internal supervision within the company is poor or still done manually without good information systems. To commit corruption, one must have access to assets or manage control procedures that allow

for such fraudulent schemes. A person's position, as well as their responsibility and authorization, also contributes to their opportunity to influence their corruption level. If a company improves its information system, for example, by utilizing electronic systems, it will reduce the chances of someone committing fraudulent acts. Current research uses information systems (e-government) as the measurement for opportunity. The following section describes the measurement of information systems.

3.6 Information System

One mechanism for reducing corruption is to reduce direct contact between government officials and the public. Nan [11] suggests that by expanding the dissemination of information, simplifying procedures, and facilitating data tracking, transparency can be increased, and deviant actions, such as corruption, can be reduced. E-government is an effort by the government to improve its services to the public, businesses, and other government agencies using information technology [1]. Manual paper-based services often require a long process because manual data and document verification are needed. Furthermore, direct interaction between the public and service providers takes a long time because of the need to wait in line patiently. Long queues and lengthy verification processes usually cause people to go directly to the service provider in person, and sometimes people resort to shortcuts by using intermediaries (brokers). The use of e-government is also a form of bureaucratic reform that aims to create a clean, transparent, effective, and efficient government. Hence, in this research, we expect that information systems negatively affect corruption.

3.7 Rationalization

When fraud is detected, the perpetrator usually provides rationalizations as self-defence. This Rationalization makes a mistake seem reasonable and refers to the individual's justification for committing fraud [6]. In committing fraud, an individual will believe that the fraud is more important than the possibility of getting caught. The perpetrator will assume that no one will know their actions. Additionally, someone who commits fraud may also believe that the fraud they are committing is right. Essentially, Rationalization is the conscious decision by the abuser to put their own needs ahead of those of others. Ethical decision-making processes depend on each individual's quality, culture and experience. This can quickly increase someone's behaviour in committing corruption within a company. In this research, Rationalization is measured by the quality of human resources. The following section explains the quality of human resources.

3.8   Quality of Human Resource

Human resources are crucial in developing, strengthening, and transforming organizational culture. HR professionals have two requirements that must be met when their company starts pursuing quality. Essentially, Human Resource Quality is the value of a person's behaviour in being accountable for all their actions both in personal and societal life [17]. The Human Development Index (HDI) is one measure that can reflect human development status [13]. HDI can be used to see how indicators of human development will affect a country's corruption level. The measured human development index can be in life expectancy, knowledge of each individual, and decent living standards [4]. Countries with high Human Development tend to have good environmental performance because a good environment will not lead individuals in their environment to engage in corruption. Therefore, current research expects that the quality of human resources negatively affects corruption.

4   The Formulation of Conceptual Model

4.1   The Influence of Information Systems (E-Government) on Corruption

Fraud can occur due to the perpetrator's position in relation to the object. One example is the management of an organization or company having a greater opportunity to commit fraud than employees [15]. In government, individuals in high-ranking positions (structural) may also have a greater opportunity to engage in corruption. E-government is a government effort to improve public services by utilizing information and communication technology. E-government is an effective tool in reducing corruption because it can expand access to information, simplify rules and procedures to be more transparent, reduce discretionary power, and increase accountability. Therefore, the more sophisticated the information system within a government, the lower the opportunity for corruption. The above description is a consideration in developing the following hypothesis:

H1: Information System is a derivative of opportunity that influences corruption.

4.2   The Influence of Human Development (HDI) on Corruption

One factor in the fraud triangle theory is Rationalization. Rationalization can be defined as a justification for one's actions when the perpetrator finds themselves in an

undesirable situation. Generally, perpetrators prepare justifications before committing fraud, not after. The level of rationalization can be measured by the Human Development Index (HDI). Countries with high HDI tend to have better environmental performance, as a good environment does not lead individuals in their surroundings to commit corruption. Usually, corruption occurs more frequently in countries with lower-quality of human resources. Morais et al. [10] stated in their research that the components found in the Human Development Index have a negative relationship with the Corruption Perception Index. Therefore, the following hypothesis can be proposed:

H2: Human Development is a derivative of rationalization that influence corruption.

4.3   The Influence of Economic Capability (Gross Domestic Product) on Corruption

The third factor in the Fraud Triangle Theory is Pressure. The low level of a country's economic capability will reflect low individual income, thus creating more pressure to support one's livelihood by engaging in fraudulent activities. Mondo [9] proved that Regional Gross Domestic Product (GDP) negatively influences corruption, so high-income countries have lower corruption rates than low-income countries [5]. However, middle-income countries have lower corruption rates than low-income countries. Elbahnasawy [5] and Mondo [9] stated in their research that economic capability, measured by GDP, negatively influences corruption. The above description serves as a consideration in developing the following hypothesis:

H3: Economic Capability is a derivative of pressure that corruption.

4.4   The Model of Factors Influencing

See Fig. 1.

5   Conclusion

The frequency of corruption is still high in most ASEAN countries, including Indonesia. This indicates the need to understand the factors that can cause corruption. This study contributes to the existing knowledge of the factors influencing corruption in ASEAN. This study conceptually updates the derivative of the fraud triangle theory by using variables such as information systems (E-Government), human resource
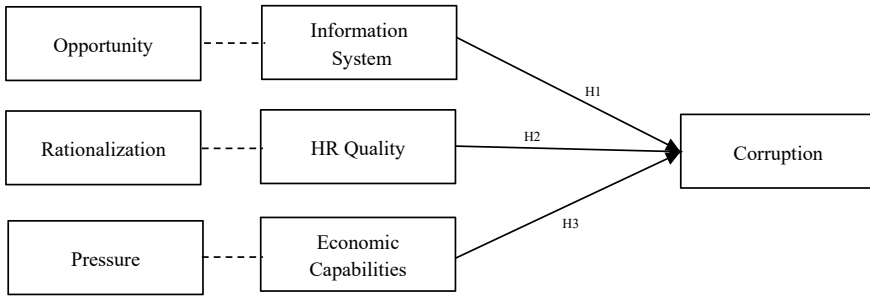
Fig. 1 Conceptual framework

quality (Human Development), and economic capability (Gross Domestic Product) on the corruption perception index.

This study also has several limitations. The model presented in this study is built using secondary literature data. Therefore, caution should be exercised in generalizing the findings. In addition, like other quantitative analysis studies, the findings are based on some secondary data obtained from websites or expanding data (comparing data) from ASEAN countries with the European Union or other associations. Finally, research on the factors influencing corruption can still be further developed.

Further research is expected to be carried out using qualitative methods to verify the assumptions' validity. Alternatively, future research can use qualitative methods such as interviews with workers in both government and private sectors to develop other variables. Further research is also expected to provide deeper insights into each factor and its impact on corruption.

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Adoption of Comprehensive Learning and Employment Record (CLER): A Literature Review

Irni Eliana Khairuddin, Nurul Auni Safian, Muhamad Khairulnizam Zaini, and Nora'ayu Ahmad Uzir

Abstract Access to learning and employment data is critical to meet the demands of the skills-based economy. A fragmented data ecosystem has created a gap in the supply and demand for skills. There are many ways to store data and document student education and experiences, from manual or old forms to new and more systematic ways. The Comprehensive Learning and Employment Record (CLER) is one of the best ways to keep records safely and systematically. CLER is a new generation of secure and verifiable learning records supporting all academic recognition and achievements, including courses, competencies, skills, and academic-based accomplishments and milestones [30]. However, the exploration of CLER is still limited. Hence, this paper focuses on CLER practices in several countries: the United States, Canada, and Australia. The United States developed CLERs to provide a more comprehensive picture of learners' competencies and skills, including those gained through work experience and extracurricular activities (Lumina Foundation in Comprehensive learner record (CLR) exchange, 2021. https://www.luminafoundation.org/grants-and-strategy/comprehensive-learner-record-exchange [20]). Meanwhile, in Canada, Canadian institutions are exploring CLERs to create secure, verifiable records of learners' achievements that can be easily shared with employers and other stakeholders, focusing on skills development and workforce readiness (Parchment in Comprehensive learner record: a shared vision for lifelong learning, n.d. https://www.parchment.com/blog/comprehensive-learner-record-a-shared-vision-for-lifelong-learning/ [27]). In contrast,

I. E. Khairuddin · N. A. Safian (✉) · M. K. Zaini · N. A. Uzir
College of Computing, Informatics and Mathematics, Universiti Teknologi MARA (UiTM)
Cawangan Selangor, Shah Alam, Selangor, Malaysia
e-mail: 2022291928@student.uitm.edu.my

I. E. Khairuddin
e-mail: irnieliana@uitm.edu.my

M. K. Zaini
e-mail: nizam0374@uitm.edu.my

N. A. Uzir
e-mail: n.uzir@uitm.edu.my

CLERs are often part of broader micro-credentialing initiatives in Australia, which aim to provide learners with more targeted, flexible learning opportunities that can be customised to their specific needs and interests (RMIT University in Micro-credentials and comprehensive learner records, n.d. https://www.rmit.edu.au/study-with-us/credentials-overview/micro-credentials-and-clr [28]). The deployment of CLER in other nations has prompted interest in the potential advantages of this strategy, even though it has yet to be widely embraced in Malaysia.

Keywords CLER · Employment record · Comprehensive learning

1 Introduction

The data and records of students and employees will influence the future workforce because, through the data and documents, the employers will know about the skills, experience, education, and various other forms to be given suitable work. The consistency of current education and employment supply chain data in certain countries needs to allow the analysis and quantification of a person's competencies and skills sufficient to apply for or obtain a suitable job. Access to learning and employment data is essential to meet the demands of a skills-based economy [18]. Individuals need to better communicate their verified accomplishments in the current environment. It implicates an urgency in the age of digital transformation, where people will be employed based on the analysis of relevant data rather than their CV or interview performance, which is a much better predictor of success [18]. However, this is being prevented by a substantial gap created by the dispersion of learner and workplace data. To address the issue of the need for coherence between education and employment data, some countries have adopted CLER, a new generation of secure and verifiable learning records that supports all academic recognition and achievements [30]. However, the exploration of CLER in most countries still needs to be expanded due to varying educational policies and practices [13].

According to the OECD study in 2019, transparency in learning outcomes, including a Comprehensive Learner Record like CLER, can increase learners' chances of entering and progressing in the labour market [26]. Thus, Malaysia and some other nations that have not yet adopted CLER are suggested to do so [26]. However, the use and adoption of CLER may vary in different countries due to various methods for managing academic and professional records [10]. This paper will compare and contrast the practices of countries that have to adopt CLER in their education as well as hiring systems. The management and maintenance of student and employee records vary based on several factors, including the individual, the academic institution, and the employer. This group is responsible for processing and keeping records, making them critical stakeholders in the implementation of CLER.

1.1 The Overview of Comprehensive Learning and Employment Records (CLER)

The Comprehensive Learner and Employment Record (CLER) is a digital record [1] that provides a complete view of a learner's academic and extracurricular achievements. It intends to record various learning events, such as formal education programs, extracurricular activities, workplace training, and skills acquisition through unofficial experiences. The CLER is designed as a standardised, transferable, and shareable record to help learners exhibit their knowledge, abilities, and competencies to prospective employers, academic institutions, and other stakeholders [1]. In many economic sectors, CLER is known by different names. The term "interoperable learning records" (ILR) refers to the ability to share learning records between the educational system and the workforce. However, many people find the word confusing and want clarification. The terms LER and ILR, as well as Comprehensive Learning Record (CLR), are interchangeable. According to the American Workforce Policy Advisory Board Digital Infrastructure Working Group [2], an individual's achievements in school, training, and job experience are generally documented in a learning record, or LER.

The Comprehensive Learner and Employment Record (CLER) is a digital record that provides a complete view of a learner's academic and extracurricular achievements [1]. It can demonstrate student learning across various contexts, including formal learning and experiential understanding [29]. CLER is designed as a standardised, transferable, and shareable record to aid students in exhibiting their knowledge, abilities, and competencies to prospective employers, academic institutions, and other stakeholders [1].

Additionally, the CLER program helps students develop metacognitive frameworks of proven knowledge and skills, allowing them to focus on crucial gaps in their academic and professional objectives [30]. As Thomas [33] notes, transcripts no longer hold as much value in the eyes of students or employers compared to digital credentials or enlarged records of accomplishment. Thus, the CLER provides a valuable addition to traditional academic records, offering a more comprehensive representation of a student's learning journey [33].

1.2 The Related Study to CLER

CLER helps students to develop metacognitive structures of demonstrated knowledge and skills and the agency needed to focus on essential gaps for their educational and career goals. Expanded records of accomplishment that can be readily accessed in digital form or digital credentials offer more excellent value than a transcript to learners and employers. Access to transparency and standardisation of the CLER as a skills-based system will give employers a deeper and more common understanding of learners' skills when they apply for employment [4].

Comprehensive Learner Records (CLERs) are increasingly recognised as a tool for providing a more thorough and uniform method of recording and identifying learning. Cederquist et al. [7] investigated how CLERs could be incorporated into the recruitment and hiring process, while Braxton et al. [4] outlined assessment technology that supports the development of CLERs. Meanwhile, Thomas [33] questioned whether higher education institutions have a strategy to adopt tools and technology to convert and catalogue student learning outcomes into skills-based data with currency with employers and recruitment agencies. Ocheja et al. [25] explored the barriers to connecting and transferring learning records across different institutions and presented a platform that allows other institutions to join the learning records of their students across different environments. Finally, Glover et al. [12] sought student feedback about the design and creation of CLERs. They found that participants envisioned a flexible record that allows them to personalise the contents based on their needs.

These studies reveal that while there are some parallels in how CLERs are implemented throughout various countries, there are also some disparities due to differences in education and workforce development systems. For instance, the United States developed CLERs to provide a more comprehensive picture of learners' competencies and skills, including those gained through work experience and extracurricular activities, while Canadian institutions are exploring CLERs as a way to create secure, verifiable records of learners' achievements that can be easily shared with employers and other stakeholders, with a focus on skills development and workforce readiness [13]. In Australia, CLERs are often part of broader micro-credentialing initiatives, which aim to provide learners with more targeted, flexible learning opportunities that can be customised to their specific needs and interests. Despite these differences, CLERs are viewed as a more accessible and systematic way of keeping records of students and employees, according to the American Workforce Policy Advisory Board [2].

2 Implementation of CLER

A relatively recent development in education and workforce development is the introduction of Comprehensive Learner Records (CLER). By recording and recognising various learning experiences, such as work experience, community service, and other extracurricular activities, CLERs are designed to give a complete and more accurate picture of what learners are capable of beyond traditional academic achievements [11].

The lack of a standardised method is one of the significant issues with CLER implementation. While some aspects of CLERs are the same across initiatives and nations, such as the emphasis on competencies and abilities, each performance is different and reflects the unique educational and workforce development requirements of the region or institution [16]. Previous studies indicate that many countries have used CLER as a method and system to keep academic and experiential records

of students' and employees' records. All those records are essential and must be kept safely [2]. There are various ways to store it, but CLER is a very safe and systematic method [22]. CLER tracks and documents student learning, skills, and achievements across various contexts and experiences. It primarily supports student learning and assessment in educational institutions such as colleges and universities. CLER is not limited to a single country because it is a concept and system that can be implemented by educational institutions worldwide [, p. 4].19

However, the use and adoption of CLER may vary based on different countries' educational policies and practices. Among the lands known to have established or are actively developing such systems for tracking student learning and achievements are the United States, Canada, and Australia [13]. Additionally, it is essential to note that these systems' specific implementations and details may differ depending on each country's educational context and requirements [13]. Various schools and universities are testing the implementation of Comprehensive Learner and Employment Records (CLERs) in the US, Canada, and Australia [8, 31]. The US Comprehensive Learner, and Employment Record Exchange pilot program, involving over 30 institutions, aims to establish a standard structure and language for CLERs focusing on competencies and skills [35]. In Canada, CLERs are being used to support skill development and workforce readiness, with some institutions investigating using blockchain technology to produce secure, verifiable records of students' accomplishments [15, 34]. Similarly, CLERs are part of a more significant trend towards micro-credentials and acknowledging prior learning in Australia. Some institutions build their CLER platforms, while others use pre-existing media [32, 36]. CLERs may include documentation of various learning experiences in all three countries, including work-integrated learning, co-op programs, and community service [32, 36].

Although the implementation of CLERs poses some challenges, the potential benefits of CLERs in supporting learners' lifelong learning and workforce development far outweigh these challenges. Further research is needed to explore their full potential [15, 34]. The CLER aims to highlight the learning that students gain from various experiences, such as co-curricular activities, academic courses, and other options [30], and does not serve as a substitute for a transcript of grades. It is a more helpful student record for students, employers, and others who must understand and validate postsecondary learning [17].

2.1 CLER in Malaysia

The exploration of CLER in Malaysia still needs to be improved. In Malaysia, the record-keeping method still needs to be consistent between universities. Also, the process of keeping records by employers and individuals differs in places and ways [26]. One of the potential issues is the design of their typical college or university student records, which only capture information such as courses, grades, and credits, as well as traditional methods of student record keeping such as transcripts, which provide only a limited scope [5]. Malaysia needs a formal system that is like

CLER. The Malaysia Education Blueprint 2013–2025 aims to transform the educational system to produce students with twenty-first century skills that can compete globally. The Malaysian government has introduced many initiatives to enhance the educational system [24].

The Malaysian Qualifications Framework (MQF), which offers a uniform reference point for academic qualifications and makes it simpler to compare and evaluate capabilities across various education providers, was also introduced by Malaysia [21]. The MQF is built on standards comparable to those found in a CLER system, such as learning outcomes, program standards, and qualification levels. Although CLER is not officially implemented in Malaysia, there are systems akin to it in existence, such as the National Occupational Skills Standard (NOSS) and the Malaysian Qualifications Framework (MQF) [9]. These systems similarly offer a uniform framework for identifying abilities and credentials, but CLER might need to be more thorough in monitoring formal education and professional experience. Adopting CLER or comparable systems can offer a more open and consistent method of identifying and evaluating skills and qualifications, which may benefit individuals and the larger economy (Lumina Foundation n.d.) [9].

There are several reasons why some countries still need to embrace CLERs. Firstly, there may be a need for more understanding or knowledge about the potential benefits of CLERs [6]. Secondly, regulatory barriers or conflicting state or federal policies may hinder the development and implementation of CLERs. Thirdly, resource constraints such as a lack of funding or time may make it challenging for countries to invest in creating and implementing a CLER system [11]. Finally, adopting CLERs may be more difficult in other countries due to differences in educational systems or cultural perspectives on credentials [27]. It is important to note that the concept of CLERs is still relatively new and that adoption is evolving, and more countries may consider their potential benefits in the future.

2.2 CLER in Other Countries

The Comprehensive Learner and Employment Record (CLER) is a new idea in education. It has not yet been fully adopted as a standard practice by any country [14]. However, a few universities and colleges in the United States, Canada, and Australia have launched pilot programs to experiment and introduce CLER to keep track of student learning and work experiences [1]. As CLER continues to receive more attention and acknowledgement, other countries may also explore integrating it into their education systems.

In the United States (US), the Comprehensive Learner and Employment Record exchange pilot program run by the U.S. Department of Education intends to create a technical infrastructure for schools to exchange CLERs [35]. The program involves over 30 institutions and aims to establish a standard structure and language for CLERs, focusing on competencies and skills. In addition to formal learning experiences, CLERs in the US may also include proof of skills and competencies acquired

from work experiences, volunteer work, and other extracurricular activities [35]. The focus on competencies and skills is intended to paint a complete picture of what learners are capable of beyond traditional academic achievements.

In Canada, CLERs are becoming increasingly popular, with some schools and universities investigating using blockchain technology to store and disseminate CLERs safely. The use of CLERs in Canada is frequently connected to more extensive programs that support skill development and workforce readiness [3]. Evidence of both formal and informal learning experiences, including work-integrated learning, co-op programs, and community service, may be included in CLERs in Canada. Using CLERs is a more significant effort to improve workforce preparation and skill development, ensuring that learners are ready to enter the job market with the knowledge and abilities that employers demand [3].

In Australia, CLERs are part of a more significant trend towards micro-credentials and acknowledging prior learning. Some colleges create CLERs, while others use already-existing platforms to record and communicate learner accomplishments [23]. In Australia, CLERs may encompass a variety of abilities and encounters, including job-integrated learning, volunteer work, and international travel. CLERs are frequently a component of more extensive micro-credentialing programs that seek to give learners more focused, adaptable learning experiences that may be tailored to their unique needs and interests [23]. Documentation of various learning experiences, including volunteer work, paid employment, and overseas study.

In addition to these benefits, CLERs can reduce the security issue of students' and employees' academic and experiential records. The existence of CLERs solves the problem of losing student and employee records that many people often experience. Moreover, as mentioned earlier, CLERs can help reduce unemployment problems, such as in the United States, where it has proven effective [20]. However, it is essential to note that implementing CLERs is challenging. Some countries may need more support from institutions or individuals who are used to the traditional way of recording and recognising learning [28]. The standardisation of CLERs across governments and institutions may also pose a challenge. Nonetheless, the potential benefits of CLERs far outweigh the challenges, and further research is needed to explore the full potential of CLERs in supporting learners' lifelong learning and workforce development [20].

3   Conclusion

In conclusion, while not all countries currently use CLER, it is clear that CLER has significant potential to contribute to more efficient and secure record-keeping for students, employees, and institutions. Countries that still need to implement CLER may benefit from doing so to address unemployment challenges, as seen in the United States. Additionally, CLER can help employers and companies better evaluate and hire candidates based on their educational background, achievements, and skills. Canada, Australia, and Malaysia have all taken steps to implement similar

record-keeping systems to CLER, highlighting the value and importance of such systems in today's rapidly evolving workforce. Failure to adopt modern record-keeping methods, such as CLER, may result in countries falling behind in effectively managing student and employee records and impede individuals' ability to find and secure higher-skilled work.

Future studies on using CLER could focus on implementing and adopting the system in different countries and the long-term impact on individuals, institutions, and the workforce. Research could also explore how CLER can be improved to serve better the needs of various stakeholders, including students, employers, and education providers. Additionally, as technological advancements continue to shape the education and employment landscape, examining how CLER can adapt and evolve to keep up with these changes would be valuable. Future studies could also investigate the potential of CLER to facilitate global mobility and recognition of skills and qualifications across borders, which could have important implications for the future of work and education. Overall, the use of CLER has the potential to revolutionise the way student and employee records are managed and shared, and future studies could shed light on the full extent of its benefits and impact.

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Improving Municipal Enterprise Capitalization: Insights on Determining Factors—Evidence from Ukraine

Kateryna Bagatska ⬤**, Hanna Blakyta** ⬤**, Nataliia Guliaieva** ⬤**,
Oleksandr Miniailo** ⬤**, and Iryna Vavdiichyk** ⬤

Abstract The development of municipal services in cities and territorial communities is of crucial importance for the economic recovery of Ukraine. Municipal-owned enterprises lead in this as part of the local life support system. Municipal enterprises in Ukraine operate on a commercial basis and are regulated by the Commercial Code while often receiving funds from local budgets. Therefore, the problem of forming their capital and maintaining its effective structure is a very relevant issue. General economic and specific factors influence the capital structure formation of Ukrainian municipal-owned enterprises, among which domestic political factors are significant. These factors help to test the conformity of municipal enterprises' capital formation process with two main capital theories: pecking order and trade-off theory. The study of enterprises sample showed a general non-compliance with the main postulates of both theories and a discrepancy in the financial factors influencing the capital structure of municipal-owned enterprises, which requires further scientific research.

Keywords Capital · Capitalization · Municipal-owned enterprise · Capitalization factors

1 Introduction

Determinants of municipal-owned enterprises' (MOE) capital formation, which is the object of our scientific interest, require detailed research and theoretical justification in Ukraine. Although such enterprises are founded by the local council and receive start-up capital from the municipal budget, they operate on a market basis and are regulated by the commercial code, just like private sector companies; that is, they declare to make a profit.

K. Bagatska (✉) · H. Blakyta · N. Guliaieva · O. Miniailo · I. Vavdiichyk
State University of Trade and Economics, 19 Kyoto, Kyiv 02156, Ukraine
e-mail: k.bagatska@knute.edu.ua

The insufficient development of the stock market in Ukraine is a restraining factor in municipal companies' corporatization, and in addition, such companies do not issue debt instruments. This situation limits the possibility of testing those theories of capital structure that are based on the presence of a developed stock market. However, since the theory of compromise and the theory of pecking order concentrate on out-of-stock market processes of choosing optimal capital sources, we consider it possible to empirically assess the feasibility of testing the main provisions of these theories for Ukrainian municipal-owned companies.

2   Literature Review

Coverage of the corporate finance theoretical foundations is the subject of research by many modern scholars. As noted by Jensen and Smith [1, p. 4], modern theories of corporate finance are based on financial economics theories formed in the second half of the twentieth century.

In particular, the agency theory of Spence and Zeckhauser, Ross, Jensen and Meckling, the essence of which is to analyze the control of incentives for conflict in contractual relations, is considered by many scholars [2, 3] as one of the main theories of corporate finance.

In continuation of the study on maximizing firm value by increasing debt financing, the static trade-off theory is developed. This theory, introduced by Brealey and Myers in 1984, postulates that firms increase their leverage to the point where the utility of an additional unit of debt equals the cost of debt, including the costs incurred due to the increased probability of bankruptcy (associated with increased debt levels). As a result, firms try to reach an optimal static point known as the target capital structure [4].

The pecking-order theory, developed by Mayers and Mailuf [5], stated the hierarchical sources of financing: retained earnings as the first preference, followed by debt and choosing the equity rising as the last resort.

Generalizing conclusions on the relationship between the capital structure and the corporate control market are proposed by Tudose. As a result of a thorough study of the models introduced by the "pecking order" theory (based on the goals set by the management), Tudose divided the research within this theory into two groups:

(a)   theories focused either on maximizing a particular insider's company wealth or on maximizing the total company wealth (indirectly in favor of certain partners of the firm);
(b)   theories aimed at reducing contractual costs to maximize firm value [6, p. 283].

Formation of the MOEs' optimal capital structure is an essential strategic task both at the enterprise management level and local government as a representative of community interests. Therefore, studying the possibilities of applying fundamental capital structure theories and selecting influencing factors on capital formation is of scientific interest to Ukrainian researchers.

3   Methodology

The scientific synthesis was conducted by employing methods of systematization to analyze the impact of various factors on the formation of enterprise capital. The identification of determinants influencing the capital structure of Ukrainian municipal enterprises was carried out using an empirical desktop analysis of the published financial statements of municipal enterprises in Kyiv and five regional centers in Ukraine. A quantitative assessment of the financial leverage factor was conducted on a sample of Kyiv's municipal enterprises.

4   Results of the Research

Municipal-owned enterprises' capital formation in the local finance system occurs under the influence of external factors in relation to the territorial community. These factors are determined by the country's general political and socio-economic situation and internal factors within the territorial assembly. The definition of influencing factors on the capital of enterprises formation is widely considered in the works of scientists with an emphasis on the selection of influencing factors on the capital structure, to which scientists [7, p. 92; 8, p. 16; 9, pp. 366–367; 10–12; 13, p. 46] refer:

– External: financial market situation, in particular development of regional markets, risks and uncertainties of the external environment, the dynamics of macroeconomic indicators and economic cycles, development of the legal field, availability of budget programs and regulatory policy, fiscal policy.
– Internal: revenue growth rate, the structure of assets and state of production facilities utilization, stage of the enterprise life cycle and its age, dividend policy, the financial mentality of owners and managers, tax pressure, level of authorized capital, and total equity concentration, operating margin and its industry specifics, pricing policy, operating cycle duration, stakeholder behavior and corporate conflicts, selected development strategy, business process management system at the enterprise.

We note that not all of the above factors can be considered influencing factors on the municipal-owned company's capital formation. Such factors as market situation, dividend policy, owners' and managers' financial mentality, stakeholders' behavior, etc., are not influential for the municipal industry. Such factors as the duration of the operating cycle, tax pressure and, fiscal policy, the level of capital concentration do not have a decisive influence on the capital formation of MOEs. The reasons for the absence and insignificance of effect are:

– the peculiarities of the MOEs market status (lack of competition for crucial

MOEs);
– the specificity of the ownership form;
– MOEs subordination.

The foreign theory of corporate finance summarized the following influencing factors on the capital structure formation of the enterprise, which are interpreted in different ways by the fundamental corporate finance theories (trade-off and packing order) and have been tested empirically in many countries. These factors are briefly described in Table 1.

For Ukrainian municipal-owned companies, internal factors such as operational profitability of assets and income growth and external factors such as GDP growth, inflation, and risk can be considered relevant factors influencing capital formation. The factor of "materiality" of assets is also valuable. Still, we propose to replace it with the factor of the fixed assets' physical and moral deterioration level since tangible assets in all MOEs significantly outweigh intangible ones. So it is not so much the presence of such assets as their condition that is more relevant. The tax factor is also a significant factor influencing the capital of MOE, but not from the position of the tax shield, but from the point of view of the local government tax policy, which has the power to establish income tax benefits for MOE.

The selective analysis of the capital of a group of municipal owned enterprises carried out in [17, 18] does not allow us to conclude the existence of a typical capital structure for Ukrainian MOEs enterprises of various sectors of economic activity; therefore, we excluded this factor from the system of influencing factors.

Using the example of MOEs in Kyiv, the capital of Ukraine, where 128 municipal owned enterprises operate, we will provide data on the average value of the Liabilities to Equity (L/E) indicator, which is called the Financial risk ratio in Ukrainian practice. Figure 1 shows the data on the average annual L/E ratio distribution for the period 2017–2020 (Fig. 1).

According to the data sample median financial risk ratio = 0.26, part of the companies with financial risk ratio over 1 (liabilities excess equity) = 32.8%.

In 2020 L/E median = 0.3, Part of MOE with ratio over 1 = 37%.

Fewer outliers were observed in 2020, but the risk increased on average. Note that Ukrainian MOEs, including Kyiv municipal companies, hardly attract debt capital. So, on average, over 4 years, only 6.85% of MOEs in Kyiv used bank loans. They rely mainly on their own capital. Moreover, in the structure of equity capital, the advantage is not the reserves accumulated from profit, but the invested capital, which is regularly received from the local budget.

The growth factor, particularly the growth of incomes, is somewhat controversial concerning MOEs, since, for tariff MOEs, income growth is a derivative of the community population and the local government tariff policy. In contrast, for non-tariff MOEs, this factor can be considered significant. The local government policy also has a decisive influence on the revenue growth of those MOEs that form these revenues, mainly at the expense of the local government's orders. Therefore, we left this factor with clarification regarding the budgetary presence in revenues.

Table 1 Assessment of factors affecting corporate companies' capital formation

Factors	Theory
Operating return on assets (operating profit to total assets)	*Trade-off theory*
	Trade-off theory predicts a positive relationship between this return and leverage. Since the probability of bankruptcy is low for profitable firms and they have profits that are more protected by the tax shield, the debt-to-equity ratio of such firms should be higher
	Pecking order theory
	Pecking order theory claims that the company tries to finance investments primarily from internal sources. Companies resort to debt financing as a second-order source if these are insufficient. Thus, this theory declares a negative relationship between leverage and profitability and denies that profitable companies will have higher leverage in a certain period
Assets structure from the position of tangible assets fullness	*Trade-off theory*
	The trade-off theory assesses the positive relationship between the tangibility of assets and leverage. Tangible assets are easy to pledge; relatively speaking, they retain their value even if the firm is threatened with bankruptcy. Therefore, companies with a more significant share of tangible assets can easily borrow. Based on the trade-off theory, a positive relationship is predicted between materiality and leverage
	Pecking order theory
	Pecking order theory claims that the tangibility of assets mitigates the information asymmetry problem, making issuing shares less expensive. Thus, firms with more tangible assets are expected to have lower leverage ratios. At the same time, materiality is defined as the ratio of net fixed assets to total assets
Company size	*Trade-off theory*
	The trade-off theory predicts a positive relationship between firm size and leverage. This is because the assets of large companies are more diversified, and large firms have a better reputation in the debt markets
	Pecking order theory
	The pecking order theory declares a negative relationship between firm size and leverage. Because large firms have been in business for a longer period and are well known, so they can issue shares at lower costs than smaller firms. In addition, large firms have the opportunity to preserve profits. Thus, based on the pecking order theory, large firms are assumed to have less leverage
Growth	*Trade-off theory*
	The trade-off theory predicts the high growth rate of the developing companies value depends on the current value for these growth opportunities. In other words, most of the assets of growth companies are intangible. Therefore, in the case of financial difficulties, growing firms lose much more value than non-growing firms. Thus, the trade-off theory predicts a negative relationship between firm growth and leverage
	Pecking order theory
	Pecking order theory claims a positive relationship between firm growth and debt. This is explained by the fact that developing enterprises need more external financing, and borrowing takes first place among the external funding sources

(continued)

Table 1 (continued)

Factors	Theory
Taxation level and tax shield	*Trade-off theory*
	Trade-off theory suggests that firms will increase borrowing as marginal corporate tax rates rise. Some studies use the marginal corporate tax rate as an explanatory leverage variable [14]. Non-debt tax shields, such as depreciation, R&D, and advertising costs, are also suggested in the literature as substitutes for leverage to reduce firms' tax payments [5, 14, 15]. Thus, trade-off theory predicts a negative relationship between non-debt tax shields and leverage
	Pecking order theory
	Pecking order theory treats debt financing as an external source of capital rather than a tax defense mechanism. The theory does not assess any relationship between non-debt tax shields and leverage
Risk	*Trade-off theory*
	The trade-off theory claims that the companies with more volatile operating cash flows are riskier than others. Risky firms are more likely to get into financial trouble, and their probability of bankruptcy is high. Volatile cash flows also reduce the overall benefits of the tax shield for firms. According to the trade-off theory, firms with a high level of risk should have less debt. In other words, the trade-off theory assumes a negative relationship between risk and leverage
	Pecking order theory
	Pecking order theory suggests that firms with more volatile cash flows need more external capital. Debt capital occupies the first place among external sources of financing. Thus, the pecking order theory predicts a positive relationship between risk and leverage
Average industry capital structure	*Trade-off theory*
	Trade-off theory predicts a positive relationship between industry median leverage and firm leverage because firms in the same industry face many common factors
	Pecking order theory
	Pecking order theory predicts a somewhat mediated relationship between median industry leverage and firm leverage because an industry is only relevant to the extent that it is a proxy for the firm's financing gap
Expected inflation	*Trade-off theory*
	The trade-off theory predicts a positive relationship between expected inflation and leverage
	Pecking order theory
	Pecking order theory does not specify any relationship between expected inflation and leverage
Expected level of GDP growth	*Trade-off theory*
	According to the trade-off theory, firms are expected to borrow more during periods of economic growth due to increased taxable income and the high collateral value of assets. The trade-off theory predicts a positive relationship between GDP growth rates and credit leverage

Table 1 (continued)

Factors	Theory
	Pecking order theory
	The pecking order theory predicts a negative relationship between GDP growth rates and leverage because firms have plenty of internal funds to invest during periods of economic growth and therefore do not need external capital

Source Aggregated by authors based on [5, 14–16]
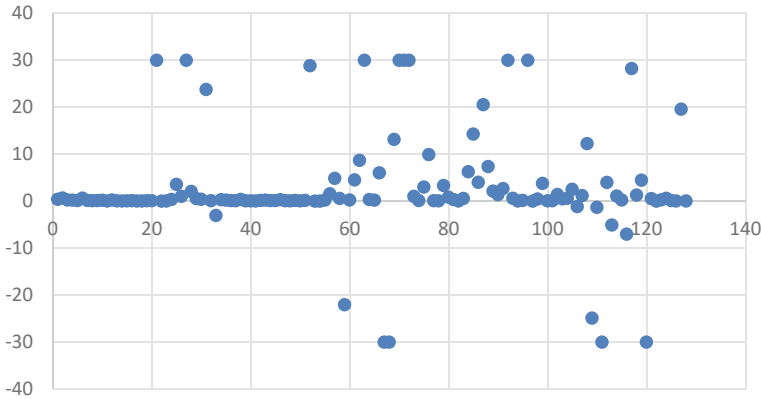
Fig. 1 Distribution of the average L/E ratio values of the of Kyiv's municipal owned enterprises for the period 2017–2020 [19]

The generalization of factors influencing the MOEs capital formation is presented in Table 2. The table suggests factors determined by the form of ownership and subordination, i.e. specific to utility enterprises.

Diagnostics of the financial performance and empirical analysis of the Ukrainian MOEs sample [17] and an assessment of their financial plans led to the conclusion that, in addition to external general economic factors that affect all enterprises, for Ukrainian municipal enterprises, significant influencing factors on capital formation are relationships with local self-government bodies and politics carried out by these bodies in the field of the municipal economy management. A manifestation of the influence of these factors is the presence or absence of budgetary financing of the MOEs' capital and the presence of budget funds in the MOEs revenues.

Diagnostics of the Kyiv municipal enterprises' financial condition and the study of reports on the Kyiv budget implementation indicated the presence of priority groups among municipal enterprises. The expense of the city budget directly capitalized these groups; that is, they receive funds to replenish the authorized capital instantly. These are housekeeping management companies, livelihood companies, and image companies.

Table 2 Assessment of factors affecting the capital formation of municipal owned enterprises

Sources of capital	Factor groups	External factors	Internal factors
Internal	*Financial and economical*	Commodity prices Fixed assets prices Prices for services	Return on assets The level of the management accounting and cost control system Quality of the financial planning Quality of business processes management The level of the fixed assets depreciation
	Relations with local government bodies	Tariff policy for tariff MOCs The level of the budget revenue growth Local authorities policy regarding the MOCs financing The regulatory framework development for the regulation of relations between the MOC and the local government	The presence of lobbying in the Deputies' corps Presence of lobbying in the specialized department The presence of a supervisory board in MOCs
External	*General macro-economic*	Political situation Activation of the Euro integration processes Economy situation Situation of the long-term lending market development State policy regarding housing, transport, energy, etc.	Creditworthy Capital structure
	Local macro-economic	Availability of territorial projects and cooperation programs with international donors Availability of projects and programs of cooperation with state institutions and projects	Expertise in financial management (availability of specialists in grant writing, drawing up business plans, etc.) Prospects for changing the form of ownership
Internal and external	*General*	GDP growth Inflation rate The level of macro risks	Revenue growth
	Local	City/community development strategy	The level of taxation and tax policy of local authorities

Source Development by the authors based on [8–13, 20; 21, p. 278]

Financing of the MOEs capital needs through budget programs is provided regularly to the MOEs of the public works sector, local roads companies, landscaping and construction enterprises. For other categories of MOEs, capital formation at the local budget's expense occurs indirectly through revenues. The city serves as a customer of works and services in MOEs, forming their income. In the case of a well-thought-out cost management policy, such MOEs can be capitalized at the expense of internal sources.

The worst case of MOE budgetary financing is covering actual or potential losses. There are two MOEs—permanent recipients of such subventions from the budget of Kyiv, both from the public transport sector: "Kyiv Metropolitan" and "Kyivpastrans." The COVID-19 pandemic and the partial Russian invasion of Ukraine until 2022, against the background of an insignificant increase in ticket prices only at "Kyivpastrans," caused a significant increase in the financing of this MOE.

During the analyzed period, the overall effectiveness of the Kyiv MOEs was primarily low. In addition to low profitability and capital turnover, almost half of the companies had a risky capital structure with a significant advantage of liabilities over equity and inferior liquidity. There were critically few alternative sources of funding in MOE. Such a situation is unacceptable for private or corporate business owners. Still, for municipal companies, despite possible differences in trends with indicators of financial condition, the problem with capital formation is typical.

5   Conclusions

The present study examines the capital formation policy of MOEs in Ukraine, focusing on of their capital structure determinants. Empirical analysis of financial reports of a sample of Kyiv municipal enterprises indicates that the pecking order theory is not applicable to Ukrainian MOEs since their funding source order is opposite to the one proposed in theory. The trade-off theory is also not considered suitable for MOEs due to the high loan rates in Ukraine compared to the income tax rate, and the non-relevance of the bankruptcy problem for most enterprises.

The MOEs' capital formation policy is a critical component of local budget policy, as expenditures of the local budget directed to MOEs can serve as consistent income or capital. Local authorities' behavior in forming the MOEs' funding policy is often a compromise between the public interest and economic effect. However, the presence of a significant number of MOEs in large cities complicates the formation of a common, generalized approach to all MOEs, resulting in irrational financial decision-making, distortion of competition, and unjustified advantages to individual MOEs.

The deficit of equity capital not only poses a challenge to productive capital financing sources but also represents a factor of systemic risk for the country's financial system. The nominal growth of equity capital in MOEs, caused not by the capitalization of profits but by an increase in registered and additional capital, is not typical of successful large corporations and SMEs in the private sector. These enterprises' balance sheet capitalization grows mainly due to retained earnings. As

profit is a crucial factor in the growth of a company's value, such a deformation of equity capital structure is an indirect sign of its loss.

To select the relevant factors influencing the capital structure of Ukrainian MOEs, both qualitative and quantitative assessments of two theories were conducted. This approach allowed for the elimination of factors that were irrelevant to the problem under investigation, correction and re-evaluation of relevant factors, and the formation of our own proposals regarding the determinants of the impact on the capital structure of Ukrainian MOEs. The goal of further research should be to test the applicability of other theories of capital structure for municipal enterprises in order to develop an optimal capital management policy.

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Conceptual Research Paper on Financial Cybercrime Avoidance Behavior in Indonesia

Hanifah Zahra and Dekar Urumsah

Abstract In this digital era, human life is becoming increasingly intertwined with the development of cyber technology. As cyberspace users, we need a secure cyberspace. However, in reality, cyberspace is not secure, and there are still many cyber crimes that occur. This study aims to propose a conceptual model to explore the factors that influence financial cybercrime avoidance behavior. The method used in this research is the conceptual research method, which is described as a set of broad ideas and principles taken from relevant field investigations and used to develop and propose a framework model for further research. The main theory of this research is the Technology Threat Avoidance Theory, and the researchers expand the theory with the Regret Theory. This conceptual model is expected to provide an overview of the factors that influence financial cybercrime avoidance behavior.

Keywords Avoidance behavior · Financial cybercrime · Regret theory · Technology Threat Avoidance Theory

1 Introduction

1.1 Background

Human lives are becoming more intertwined with the advance of cyber technology. As consequently, it is imperative that access to secure cyberspace is needed. However, in reality, cyberspace is not secure, and many cybercrimes continue to occur. In Indonesia, there were more than 700 million cyber-attacks in 2022. The most

H. Zahra (✉) · D. Urumsah
Department of Accounting, Faculty of Business and Economics, Islamic University of Indonesia, Yogyakarta, Indonesia
e-mail: 21919012@students.uii.ac.id

D. Urumsah
e-mail: dekar.urumsah@uii.ac.id

common cyber-attack is ransomware or malware that demands a ransom payment. In addition to ransomware, cyber-attacks that use phishing methods and vulnerability exploitation are also prevalent at the second and third levels. The increasing frequency of cybercrimes is directly proportional to the frequency of people using the internet. According to a survey [1], the number of internet users in Indonesia reached 204.7 million people, representing 73.7% of the total population of Indonesia. The majority of Indonesians access the internet using mobile phones and personal computers or laptops, with an average access time of 8 h and 36 min. However, the high usage of the internet by Indonesians is not proportional to the level of cyber security in the country. According to a report [2], Indonesia ranks 84 out of 161 countries in terms of cyber security, with a score of 38.96 out of 100. This indicates that the level of cyber security in Indonesia is still low.

The low level of cybersecurity is a challenge for companies that have undergone a digital transformation in their business operations. One of the challenges for companies in using technology is the inability to improve the level of data security to effectively protect and safeguard information about stakeholders and the company itself more effectively [3]. According to the Global Economic Crime and Fraud Survey report released by PwC in 2022 [4], cybercrime poses the biggest threat across organizations of all sizes, followed by customer fraud and asset misappropriation. Additionally, the survey also identifies that fraud schemes have shifted from the past. The main threat profile now emerges from external entities that are beyond the control of the company. Globally, 43% of fraudsters are from external entities, 31% are from internal entities, and 26% collude between internal and external entities. Approximately 33% of external entity fraud is committed through hacking, and 28% is committed through organized crime [4].

In 2022, the largest cyber attacks were targeted toward the manufacturing sector, which accounted for 23.2% of incidents. This was followed by the financial sector at 22.4%, the business services sector at 12.7%, the energy sector at 8.2%, the trade sector at 7.3%, the healthcare sector at 5.1%, the transportation sector at 4%, the government sector at 2.8%, the education sector at 2.8%, and the media sector at 2.5% [5]. According to [6], 95% of successful cyber attacks result from human error. The percentage of human error in cyber security is quite significant, with 19 out of 20 cyber breaches caused by human error. Human error includes activities such as downloading infected software, using weak passwords, and not updating software. Humans or computer users play the most critical role in creating a safer cyberspace in the growth of internet technology. Internet technology is so pervasive today that it has become the focus of modern life, allowing ordinary people to shop, socialize, and be entertained through their computers. As people's dependence on the internet continues to grow, the likelihood of hacking and other security breaches also increases regularly [7]. Therefore, research on financial cybercrime avoidance behavior is important to be conducted.

This conceptual research aims to contribute to the theoretical discourse related to financial cybercrime avoidance behavior. It is also expected to provide insights into financial cybercrime and the efforts to avoid it. This paper consists of five parts, namely introduction, literature review, theoretical background, the formulation of conceptual model, and conclusion.

2 Literature Review

Previous research on cybercrime avoidance behavior has been conducted by previous researchers using several existing theories such as Technology Threat Avoidance Theory (henceforth TTAT) [8–10].

A previous study that used the TTAT framework showed that self-efficacy positively influenced phishing avoidance motivation and phishing avoidance motivation influenced phishing avoidance behavior [8]. Meanwhile, another research result indicated that several factors, such as perceived vulnerability, perceived severity, perceived threat, self-efficacy, protection effectiveness, safeguard cost, and avoidance motivation had a positive effect on phishing avoidance behavior [9]. Other studies using the TTAT theory, proved that perceived vulnerability, safeguard cost, and self-efficacy influenced cybercrime avoidance behavior [10].

Based on the research conducted, the researchers used the TTAT framework with the construction of perceived susceptibility, perceived severity, perceived threat, self-efficacy, safeguard cost, and cybercrime avoidance motivation as factors that can influence financial cybercrime avoidance behavior. The researchers expanded the research model by adding the anticipated regret construct formulated from the regret theory.

3 Theoretical Background

3.1 Technology Threat Avoidance Theory

Technology Threat Avoidance Theory is a theory that explains an individual's behavior toward network protection in terms of motivation to avoid threats to the network or computer being used. TTAT was developed by integrating several existing theoretical models, including the cybernetics theory, coping theory, protection motivation theory, health belief model, and risk analysis research model [11].

TTAT argues that in a specific context, perceived threats are formed based on individuals' perceptions of the severity of a particular cybercrime threat and their perception of their susceptibility to cybercrime threats. By perceiving perceived threats, individuals will then evaluate their ability to address these threats based on the following factors:

1. How effective they believe the protection provided is to avoid cyber threats,
2. The overall cost incurred in the effort to implement protection to avoid cyber threats, and
3. Their ability to implement protection to avoid cyber threats.

The output of this assessment process is a certain level of motivation to avoid cyber threats, which in turn will affect individuals' decisions to engage in behavior specifically intended to help them avoid cyber threats.

Perceived severity is defined as an individual's belief about the severity they would experience if they were to become a victim of a cyber-attack, based on their knowledge or belief about the risks of cybercrime. Perceived susceptibility, on the other hand, refers to an individual's belief about their vulnerability to cyber-attacks, which can motivate them to adopt better security behaviors. Perceived threat is an individual's belief about the likelihood of becoming a victim of a cyber-attack. Safeguard effectiveness is an individual's assessment of how effective security measures are in avoiding dangerous information technology threats. Safeguard cost refers to the physical and cognitive efforts, such as time, money, inconvenience, and understanding, required to use security measures. Self-efficacy is an individual's belief in their ability to take security measures. Avoidance motivation is defined as the extent to which individuals are motivated to avoid information technology threats by using security measures [11].

3.2 Regret Theory

Regret Theory is a model in economic theory developed by Bell [12]. This theory model explains regret under uncertainty by considering the anticipated regret effect. Regret theory is based on two assumptions. First, individuals tend to compare the outcome of their choices with the outcome of what they would have received if they had made a different choice. Second, individuals tend to anticipate regret before making a decision, which often leads them to alter their choice to avoid potential regret [12]. Anticipated regret arises when the outcome of a process that has gone through planning turns out to be different than expected [13].

3.3 Financial Cybercrime

Cybercrime is a criminal activity carried out through the internet network. It can also be defined as intentional exploitation against computer systems, technology-dependent companies, and networks [14]. Several works of literature define cybercrime as an act that is identical to computer crime. According to the U.S. Department of Justice, computer crime is an illegal act that requires knowledge in the field of computer technology for its commission, investigation, and prosecution.

Meanwhile, according to the Organization for Economic Cooperation and Development (OECD), computer crime is an illegal or unethical or unauthorized act related to the processing of automated data and/or the transmission of data. In this study, financial cybercrime referred to a crime committed in computer-based systems or the internet network to manipulate financial information or target the victim's money as their primary goal, thereby causing financial losses.

3.4 Avoidance Behavior

Avoidance behavior is a universal response to emotionally charged situations that are most often associated with anxiety or fear. Avoidance behavior can also be defined as any action to avoid or escape from certain thoughts or feelings [15]. Based on those meanings, avoidance behavior can be defined as an action commonly taken by someone to avoid something. From the definitions mentioned, financial cybercrime avoidance behavior can be interpreted as an action commonly taken by someone to protect themselves from becoming a victim of financial cybercrime.

4 The Formulation of Conceptual Model

4.1 The Effect of Perceived Susceptibility on Perceived Threat

Perceived susceptibility is defined as the personal belief of an individual that the malicious use of information technology (IT) will have a negative impact on them. Perceived susceptibility refers to an individual's belief about their vulnerability to the risk of being a victim of a cyberattack, which will motivate them to engage in better behavior [7].

The increasing number of cybercrime incidents in this digital era can make technology users feel vulnerable to becoming victims of cybercrime. The perceived susceptibility can affect the perceived threat because when technology users feel vulnerable, they will believe that there are cybercrimes that threaten their cybersecurity. Several previous studies [9, 16] show that perceived susceptibility has a positive effect on the perceived threat.

Based on the discussion above, this study formulates the following hypotheses:

H1: Perceived susceptibility has a positive effect on the perceived threat.

4.2   The Effect of Perceived Severity on Perceived Threat

In general, perceived severity is a feeling that can motivate individuals to perform certain behaviors. The higher an individual's belief in the severity of action, the higher their desire to perform a behavior to avoid that severity [17]. Perceived severity is an individual's belief about the severity of the consequences of experiencing a cyberattack based on the information or knowledge they have or their belief in the risk of being targeted by cyber criminals [7].

In the context of cybercrime avoidance, when information technology users believe that cybercrime will create a severe condition, they will also believe that financial cybercrime is a serious threat. Previous research [16] has proven that perceived severity has a positive effect on the perceived threat, while another research [10] shows that perceived severity does not affect perceived threat. This indicates that the research results regarding the influence of perceived severity on perceived threat are still inconsistent.

Based on the discussion above, this study formulates the following hypotheses:

H2: Perceived severity has a positive effect on perceived threat.

4.3   The Effect of Perceived Threat on Financial Cybercrime
Avoidance Motivation

Perceived threat is defined as a situation that is difficult or distressing for an individual [18]. Perceived threat can also be defined as an individual's cognitive assessment of the likelihood of danger affecting them and how bad it would be if it were to happen. The level of threat is measured with one item where the subject indicates the level of concern caused by the threatening event [18]. In the TTAT theory, perceived threat is defined as an individual's belief that they will become a victim of information technology threats [11].

In relation to the motivation to avoid financial cybercrime, when an individual feels threatened by the possibility of becoming a victim of financial cybercrime, they will be motivated to avoid such threats. One of the previous studies showed that perceived threat has a negative effect on the motivation to avoid phishing threats [9], while another research show that perceived threat has no effect on the motivation to avoid cybercrime [19].

Based on the discussion above, this study formulates the following hypotheses:

H3: Perceived threat has a positive effect on financial cybercrime avoidance motivation.

4.4 The Effect of Self Efficacy on Financial Cybercrime Avoidance Motivation

Self-efficacy is an individual's belief in taking security measures [7]. Self-efficacy is a crucial determinant of avoidance motivation. Self-efficacy is present in an individual at present, not in the past or future. Liang and Xue [7] have argued that self-efficacy is a crucial determinant of avoidance motivation. An individual's self-confidence plays a vital role in behavioral change.

Referring to TTAT, the relationship between self-efficacy and avoidance behavior of financial cybercrime is that the confidence an individual has can be a motivation for themselves to make changes to avoid unwanted behavior. Previous research [8] has shown that individuals are more motivated to perform security-related behavior in IT because their level of self-efficacy increases.

Based on the discussion above, this study formulates the following hypotheses:

H4: Self-efficacy has a positive effect on financial cybercrime avoidance motivation.

4.5 The Effect of Safeguard Cost on Financial Cybercrime Avoidance Motivation

Safeguard cost is defined as physical and cognitive efforts such as time, money, inconvenience, and understanding required in using security measures [11]. Safeguard cost can also be interpreted as any effort made to avoid criminal threats. In this research context, safeguard cost is referred to the effort in installing security software against financial cybercrime. The higher the effort required to install protection or security software, the less cybercrime avoidance motivation.

Previous research [10] has shown that safeguard cost has an effect on cybercrime avoidance behavior. However, another research [16] found that safeguard cost has no effect on avoidance motivation.

Based on the discussion above, this study formulates the following hypotheses:

H5: Safeguard cost has a negative effect on financial cybercrime avoidance motivation.

4.6 The Effect of Anticipated Regret on Financial Cybercrime Avoidance Motivation

In regret theory, anticipated regret is defined as an individual's reaction to anticipating regret before making a decision [12, 20]. Anticipated regret can also be defined as a negative emotional reaction experienced by individuals as a result of comparing

the anticipated outcome of their decision not to act with the outcome they would experience if they were to act [21].

Referring to cybercrime avoidance, anticipated regret is defined as the expected negative affective response that technology users will experience if they fail to take necessary protective measures against information technology threats [8]. In relation to the motivation to avoid cyber financial crime, regret occurs when individuals are confronted with cyber financial crime threats and they fail to make decisions to protect themselves from cyber financial crime threats.

Previous research [8] has shown that anticipated regret has a positive effect on avoidance motivation. However, similar studies that use this variable are still limited, thus further research is needed on different objects.

Based on the discussion above, this study formulates the following hypotheses:

H6: Anticipated regret has a positive effect on financial cybercrime avoidance motivation.

4.7 The Effect of Financial Cybercrime Avoidance Motivation on Financial Cybercrime Avoidance Behavior

Avoidance motivation is defined as the extent to which a user is motivated to avoid information technology threats by taking security measures or using security methods [7]. Avoidance motivation describes individuals who are driven by a desire to avoid troublesome problems and unwanted outcomes [22]. Avoidance motivation is traditionally linked to concepts such as reluctance, punishment, and threat [23]. Several previous studies [8, 10, 16] have shown that avoidance motivation has a positive effect on cybercrime avoidance behavior.

Based on the discussion above, this study formulates the following hypotheses:

H7: Financial cybercrime avoidance motivation has a positive effect on financial cybercrime avoidance behavior.

4.8 The Proposed Model of Factors Influencing Financial Cybercrime Avoidance Behavior

Previous literature reviews have shown that many similar studies are based on the Technology Threat Avoidance Theory (TTAT). This study proposes the concept of using constructions within the TTAT framework and adds the construction of anticipated regret from the regret theory framework. The addition of this construction is based on the regret theory proposing that in every decision made by someone, there is always an element of regret. The proposed conceptual model is shown in Fig. 1.
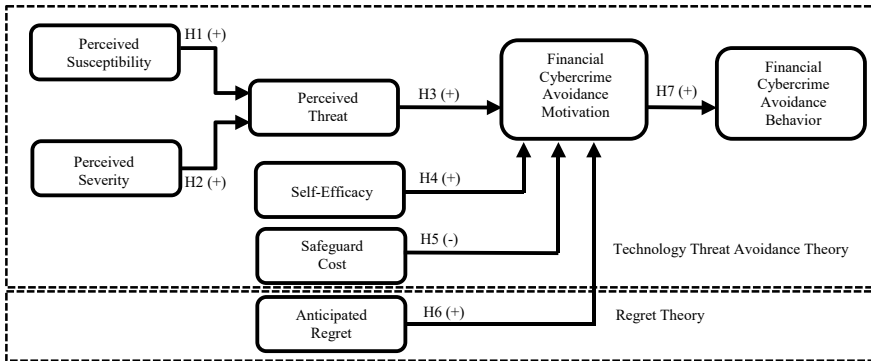
Fig. 1 The proposed model of factors influencing financial cybercrime avoidance behavior

5 Conclusion

Currently, the frequency of financial cybercrime incidents is still proportional to the number of victims. This highlights the need to understand the causes and information technology user behavior in responding to financial cybercrime attacks. Specifically in Indonesia, there have not been many studies conducted to examine the factors that influence financial cybercrime avoidance behavior.

This study contributes to the existing body of knowledge regarding the factors that influence financial cybercrime avoidance behavior, especially in Indonesia. The previous discussions have shown that there are many factors affecting the financial cybercrime avoidance behavior. This study conceptually develops a model related to the factors that influence financial cybercrime avoidance behavior based on Technology Threat Avoidance Theory and Regret Theory.

The research also has some limitations. The model presented in the study was built using secondary literature-based data, and collecting primary data to test the hypothetical relationships that could enhance the study. It is therefore necessary to exercise caution when generalizing the findings. Additionally, like other qualitative content analysis-based studies, the findings are based on subjective interpretation, and further longitudinal or cross-sectional studies may be needed to expand on this work. Finally, research on financial cybercrime avoidance behavior is still in its early stages, so the research presented here is foundational and requires further studies to advance knowledge in this area.

Further research is expected to move forward by using quantitative methods to test the model and verify the validity of the assumptions developed in this model. In another way, future research could employ qualitative methods such as interviews with workers in various sectors to evaluate the models. Further research is also supposed to provide deeper insights into each factor and its impact on avoidance behavior of financial cybercrime. Further exploration is warranted for these research

concepts, as it is possible that the factors contributing to financial cybercrime avoidance could have a greater impact on certain industries, such as the financial sector, compared to others such as retail sector.

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Harnessing AI for Business Success: Opportunities and Challenges

Demographic Dividend and Customer Satisfaction of Banks in India

Cherian Thomas ⓘ **, N. M. Vipulkumar** ⓘ **, and Ibha Rani**

Abstract Age is a demographic factor. India has a closer relationship to this factor. Her population is younger. This gives her edge over other countries. However, with changing demographic situation, have banks changed the way they serve these younger generation? This study aims to answer this question. Banks were introduced to serve the marginalized in the post-independence era. However, with changing dynamics, banks are facing an issue of catering to a segment that is not marginalized but comprises a major chunk of the Indian society. Their aspirations and dreams are different. The way they perceive customer satisfaction is different than the past generations. Hence, it is imperative for banks to do a self-assessment and see where they stand in the whole spectrum of serving the youths.

Keywords Demographic dividend · Customer satisfaction · Banking in India · Youths · Demographic factors

1 Introduction

The term "demographic dividend" refers to a period of economic growth that can occur when a country experiences a significant increase in its working-age population relative to the dependent population (children and elderly). This situation arises as a result of declining fertility rates and a subsequent "bulge" in the working-age population.

During the demographic dividend, there is a favorable age distribution where the working-age population is relatively larger, which can potentially lead to increased productivity, economic development, and improved living standards. Several factors contribute to this dividend, including reduced fertility rates, improved healthcare leading to lower infant mortality rates, and increased access to education.

C. Thomas (✉) · N. M. Vipulkumar · I. Rani
Kristu Jayanti College (Autonomous), Bengaluru, Karnataka 560077, India
e-mail: cherian28@gmail.com

However, it's important to note that the demographic dividend is not automatic or guaranteed. To harness its potential, countries need to implement appropriate policies and reforms to capitalize on the opportunities presented. This includes investing in education and healthcare, promoting job creation, fostering entrepreneurship, and ensuring an enabling environment for economic growth. Failure to take advantage of the demographic dividend can result in missed opportunities and potential challenges when the population starts aging and the dependency ratio increases.

India is often cited as a prime example of a country experiencing or potentially experiencing a demographic dividend. India's demographic situation is characterized by a large and youthful population, with a significant proportion of its population being of working age. To maximize the potential of the demographic dividend, the Indian government has launched various initiatives and policies aimed at skill development, job creation, and promoting entrepreneurship. These include programs such as "Skill India," "Make in India," and "Startup India" to facilitate training, employment, and entrepreneurial opportunities for the youth. Overall, the demographic dividend in India presents a significant opportunity for economic growth and development, but it requires careful planning, investment in human capital, and the implementation of effective policies to ensure inclusive and sustainable development.

Customer satisfaction refers to the measure of how well a product or service meets or exceeds customer expectations. It is a critical factor in building and maintaining a successful business. When customers are satisfied, they are more likely to be loyal, make repeat purchases, and recommend the company to others, which can lead to increased revenue and growth. Customer satisfaction is a vital aspect of any successful business. By understanding customer needs, delivering exceptional experiences, and continuously improving, companies can cultivate a loyal customer base, drive positive word-of-mouth, and ultimately achieve business growth.

Customer satisfaction in India, like in any other country, is a critical aspect of businesses across various industries. India is a diverse market with unique cultural, regional, and socioeconomic factors that influence customer expectations and satisfaction.

The objective of the study is to find- "have banks changed the way they serve these younger generation?" This is a conceptual paper. It is a primer for other researchers to reflect about the current research and current scenario. This paper will help them to move forward to the correct direction pertaining to the customer satisfaction of youths in banks.

This study is structured in the following manner. The previous literatures are reviewed and seen if this study had taken place earlier. It is followed by a discussion on whether banks in India are doing enough to match the aspirations of the youths and later ends with a conclusion.

2 Literature Review

This literature review aims to explore the relationship between demography and customer satisfaction in the context of Indian banks. It synthesizes and analyzes the existing research to gain insights into how demographic factors, such as age, gender, income, and educational level, influence customer satisfaction in the banking industry. All these factors are taken into consideration to gain perspective of the impact of these on customer satisfaction.

2.1 Age

The relationship between age and customer satisfaction in Indian banks can vary and is influenced by several factors. While age alone may not be the sole determinant of customer satisfaction, it can play a role in shaping customer preferences and expectations.

Generation Gap: Different age groups, such as millennials, Generation X, and baby boomers, have unique preferences, experiences, and expectations when it comes to banking services. Younger customers, like millennials, often value convenience, digital banking options, and personalized experiences. Older customers may prioritize personalized customer service, face-to-face interactions, and trust in traditional banking systems. Banks need to cater to these varying preferences to ensure customer satisfaction across different age groups [15].

Technological Adoption: Younger generations tend to be more tech-savvy and comfortable with digital banking platforms, mobile apps, and online services. They may expect seamless and user-friendly digital interfaces. In contrast, older customers may be less comfortable with technology or have limited access to it. They may require more assistance, and their satisfaction may depend on the bank's ability to provide adequate support and guidance [18].

Product and Service Preferences: Age can influence the types of banking products and services customers seek. Younger customers may be interested in innovative financial products, such as mobile payment solutions, robo-advisors, or virtual wallets. Older customers may have different priorities, such as retirement planning, fixed deposits, or traditional savings accounts. Banks need to understand these preferences and offer a diverse range of products and services to cater to different age groups [2].

Customer Service and Communication: Communication styles and expectations can vary across age groups. Younger customers may prefer quick responses through digital channels like chatbots or social media platforms. On the other hand, older customers may value personalized interactions with bank staff and appreciate more traditional forms of communication, such as phone calls or in-person visits. Banks should adopt an omnichannel approach to customer service to accommodate these preferences [18].

Financial Goals and Life Stages: Age often correlates with specific life stages and financial goals. Younger customers may be focused on building wealth, saving for education, or purchasing a home. Older customers may prioritize retirement planning, estate planning, or investment strategies. Banks can tailor their services and advice to align with these life stages, helping customers achieve their financial objectives and enhancing satisfaction [3].

2.2 Education

Early studies on the impact of education on customer satisfaction in Indian banks are limited, and there is relatively less research specifically focused on this topic. However, studies on customer satisfaction in the banking sector and the influence of education on consumer behavior can provide some insights.

Education and Financial Literacy: Education plays a crucial role in enhancing financial literacy among individuals. Financial literacy refers to the knowledge and understanding of financial concepts and products, including banking services. Studies have shown that individuals with higher levels of education tend to have better financial literacy, which can positively impact their satisfaction with banking services [6].

Trust and Confidence: Education can contribute to building trust and confidence in banking institutions. Higher education levels may lead to greater awareness and understanding of banking processes, regulations, and customer rights. This awareness can foster trust in banks and enhance customer satisfaction. Individuals with more education may also have higher expectations from the banking sector, leading to more critical evaluations of services and potentially influencing their satisfaction levels [7].

Service Quality Perception: Education can shape individuals' perception of service quality in the banking sector. Educated customers may have higher expectations of service delivery and are likely to evaluate the quality of services more critically. Banks that provide efficient, personalized, and technologically advanced services are more likely to meet the expectations of educated customers, resulting in higher satisfaction levels [13].

Digital Banking Adoption: Education can influence the adoption of digital banking channels. Educated individuals may be more open to using online and mobile banking services, leading to greater convenience and satisfaction. Banks that invest in digital infrastructure and offer user-friendly interfaces can attract and retain educated customers by providing them with seamless digital banking experiences [9].

Customer Engagement: Education can contribute to increased customer engagement with banks. Educated customers may actively seek information about banking products, compare offerings, and provide feedback to banks. Such engagement can lead to a better understanding of customer needs and preferences, enabling banks to tailor their services accordingly and improve overall customer satisfaction (Ananda et al., [1]).

2.3 Gender

Gender Differences in Financial Behavior: Several studies suggest that men and women may exhibit different financial behaviors and preferences. For example, women tend to have a stronger inclination towards savings and risk aversion compared to men. These differences in financial behavior may influence their satisfaction with banking services [16].

Gender-Based Perceptions of Service Quality: Research indicates that men and women may have distinct perceptions of service quality in the banking sector. Factors such as responsiveness, empathy, convenience, and reliability may be prioritized differently by male and female customers. Understanding these differences can help banks tailor their services to meet the specific needs and preferences of each gender [8].

Gender and Trust in Banks: Studies have explored the relationship between gender and trust in banks. Findings suggest that women may exhibit higher levels of trust in banks compared to men. This trust is influenced by various factors, including perceptions of transparency, security, and integrity of banking institutions. Higher levels of trust can contribute to increased customer satisfaction among female customers [14].

Gender and Financial Inclusion: Financial inclusion is another important aspect related to customer satisfaction in Indian banks. Studies have highlighted the gender gap in financial inclusion, indicating that women face unique challenges in accessing and utilizing banking services. These challenges may impact their overall satisfaction with banks. Initiatives to promote gender-specific financial literacy and inclusive banking services can help bridge this gap and enhance customer satisfaction among female customers [4].

Gender and Digital Banking Adoption: The adoption of digital banking channels has witnessed significant growth in India. However, research suggests that there may be differences in the adoption of digital banking services between men and women. Factors such as access to technology, digital literacy, and trust in online transactions may influence the satisfaction levels of male and female customers regarding digital banking services [11].

2.4 Income

Perceived Value for Money: Income levels can impact customers' assessment of value for money in banking services. Customers with lower incomes may place a greater emphasis on affordability and cost-effectiveness. Banks that offer competitive interest rates, low fees, and inclusive financial products may attract and satisfy customers with lower income levels [17].

Accessibility and Convenience: Income can affect customers' access to banking services and convenience in conducting transactions. Customers with higher incomes

may have better access to bank branches, ATMs, and other banking facilities. The availability of convenient banking channels, such as online and mobile banking, can positively influence the satisfaction of customers across income levels [10].

Financial Inclusion: Income disparities can significantly impact financial inclusion and access to banking services. Customers with lower incomes may face challenges in accessing and utilizing banking services, leading to lower satisfaction levels. Initiatives focused on improving financial inclusion and providing tailored services to low-income individuals can contribute to higher customer satisfaction [13].

Relationship Banking: Income levels may influence customers' engagement in relationship banking. Higher-income customers often have more complex financial needs and may seek personalized advice and assistance from banking professionals. Establishing strong relationships with such customers through personalized services and financial planning can enhance their satisfaction [5].

Social Factors: Income can intersect with social factors, such as social status and perceived social identity, which may influence customer satisfaction in Indian banks. Customers with higher incomes may seek services that align with their perceived social standing, such as priority banking or exclusive offers. Meeting these social expectations can positively impact satisfaction levels [19].

The above literature gave an overall idea as to how customer satisfaction tilts scales based on the demographic variable in question. Age can be seen as a factor that stands out different from other demographic variables. It is different due to the fact that previous studies have laid stress on the youths. This segment is highly studied. However, a reality check on the efforts taken by Indian banks have not yet been studied. This is the place in which this study becomes relevant.

3   Discussion

In the context of India, where it has a significant youth population, the demographic dividend can have implications for various sectors, including the banking industry. Here's how the demographic dividend may impact customer satisfaction of banks in India:

Increased Customer Base: The demographic dividend in India implies a larger working-age population, which translates into a growing customer base for banks. With a larger pool of potential customers, banks have the opportunity to expand their market reach and cater to the financial needs of this demographic. By providing tailored products and services that address the specific requirements and aspirations of the youth, banks can enhance customer satisfaction.

Technologically Savvy Customers: The youth population, which is a significant part of the demographic dividend, tends to be more tech-savvy and comfortable with digital technologies. This demographic is more likely to adopt and utilize digital banking channels, such as online and mobile banking. Banks that invest in innovative digital platforms, user-friendly interfaces, and seamless customer experiences can attract and satisfy this demographic, leading to higher customer satisfaction levels.

Changing Expectations: The demographic dividend is accompanied by changing expectations and preferences of customers. The youth population often seeks personalized, convenient, and efficient banking services. They value technological advancements, quick response times, and customized solutions. Banks that adapt their offerings to align with these evolving expectations are more likely to meet the satisfaction levels of this demographic.

Financial Inclusion: The demographic dividend in India also brings attention to the importance of financial inclusion. While the youth population presents an opportunity for banks, it also highlights the need to extend banking services to underserved segments of the population. By promoting financial literacy, expanding branch networks, and providing accessible and inclusive banking solutions, banks can improve customer satisfaction among previously excluded individuals.

Demand for Innovative Products: The demographic dividend creates a demand for innovative financial products and services. For instance, the youth population may seek flexible credit options, digital wallets, peer-to-peer payment platforms, and investment solutions tailored to their needs. Banks that proactively offer such innovative products can better serve the demographic dividend and enhance customer satisfaction.

Employment and Income Growth: The demographic dividend, if harnessed effectively, can drive economic growth, employment opportunities, and income growth. As individuals experience higher incomes and improved financial stability, their satisfaction with banking services may increase. Banks can leverage this by offering suitable financial products, investment opportunities, and advisory services to help customers optimize their financial well-being.

It's important to note that the impact of the demographic dividend on customer satisfaction in Indian banks is influenced by various factors, such as socioeconomic disparities, technological infrastructure, regulatory environment, and cultural dynamics. Further research and analysis specific to the Indian banking context will provide deeper insights into the interplay between the demographic dividend and customer satisfaction in the industry.

The extent to which banks in India neglect or embrace the demographic dividend can vary and may depend on various factors, including the bank's business strategy, target market, and level of awareness regarding the potential of the demographic dividend. While it is challenging to make a definitive statement about all banks in India, here are some observations:

Embracing Digital Transformation: Many banks in India have recognized the significance of the demographic dividend and the increasing demand for digital banking services. They have invested in technology and digital infrastructure to provide convenient and user-friendly banking experiences to the youth population. This includes offering mobile banking apps, online platforms, and digital payment solutions to cater to the tech-savvy demographic.

Tailoring Products and Services: Some banks have been proactive in developing and tailoring products and services to meet the needs and aspirations of the youth population. They have introduced specialized savings accounts, educational loan

schemes, digital wallets, and investment platforms targeted towards this demographic. By doing so, they aim to capture the growing customer base and enhance customer satisfaction.

Financial Inclusion Efforts: Recognizing the potential of the demographic dividend, several banks have focused on expanding financial inclusion initiatives. They aim to bring underserved and excluded segments of the population into the formal banking sector. This includes setting up branch networks in rural areas, providing basic banking services through business correspondents, and offering financial literacy programs to promote financial inclusion among the youth population.

Skill Development and Entrepreneurship Support: Some banks have also ventured into skill development initiatives and entrepreneurship support programs. By providing vocational training, entrepreneurial loans, and mentorship, they aim to empower the youth population and contribute to their economic growth. Such initiatives not only align with the demographic dividend but also foster customer loyalty and satisfaction.

Room for Improvement: While progress has been made, there may still be areas where the potential of the demographic dividend is not fully harnessed by all banks. Some banks may have limited awareness or understanding of the specific needs and preferences of the youth population. They may not have developed tailored products or may not have effectively communicated their offerings to this demographic. In such cases, there may be scope for banks to further align their strategies to capture the demographic dividend and enhance customer satisfaction.

It's important to note that the banking landscape in India is diverse, comprising various types of banks, including public sector banks, private sector banks, and regional rural banks. The extent to which they embrace the demographic dividend can vary. Additionally, the rapidly evolving nature of the demographic dividend means that strategies and initiatives by banks may evolve over time as they adapt to changing customer needs and market dynamics.

4 Conclusion

The above discussion highlighted the fact that banks need to embrace technology. Banks are termed to be younger and reaching, if they are tech-enabled. In such a case banking premises will lose their importance. However, it opens a new vista for banks. It opens up opportunities to build digital spaces or platforms. Bank employees must be trained to cope with a generation that needs troubleshooting in a virtual manner.

Banks used to offer loans to established firms. However, the scenario has changed with the offshoot of startups. In future, bankers need to act as venture capitalists to youths. Thereby, they can promote entrepreneurship and script success with the youths of this country.

Women and elderly are taken care more than the youths. The time has come to change the focus. Youths need banking products that are more helpful to embark on their financial goals. A mindset of savings and investment amongst youth have

changed. The present generation smarter youths believe that money has to be managed rather than being saved. This is a clarion call for banks to change the strategy with which they operated for several years.

On the other hand, youths also have a role to play before assessing the satisfaction level in banks. It is in becoming a part of financial inclusion drive of the government. Ample opportunities are there to be financial literate. Youths can also explore more banking products and services in their younger age. They can also serve as a catalyst for other demographic segments in improving customer satisfaction. Youths are well versed in being ambassadors of change in several organizations. Banks can make use of this demographic dividend to their advantage.

As far as future researchers are concerned, they need to be aware that the aspirations, perceptions and expectation of the youths are higher than other demographic segments. When setting a questionnaire, they must make sure that banking products and other services which are offered by the banks are not convential but rather modern ones. If conventional bank products and services are presented, youths might not vouch for customer satisfaction in banks.

The limitation of this study is that there has been no data collected. The study is based only on Indian banks in a general manner. This study will help future researchers to frame questionnaires. It will also help them focus more on the issues that youths are facing with the present banking system in India. Future study can be conducted to assess the impact of intelligence quotient level as a mediator in assessing the customer satisfaction in banks.

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An Empathetic Elucidating on Females Merchandising Behavioural Approach

K. Jagannathan, R. Madhusudhanan, K. Opika, G. Sridevi, K. R. Sowmya, and J. Krithika

Abstract Females are the most responsible and contributing their part on merchandising is in rolling forward due to double income category and acceptances and recognition of female decision in the society. Presently the purchase decision and shopping behaviour of females is in uptrends. Females are part of decision makers in most of the family purchasing. This research study also tried to find out the best part of the female shopping behaviour in retailing, through that the objectives are focused on factors influencing shopping behaviour and measuring the satisfaction and measuring the effects of shopping behaviour. The results are derived through application of Correlation, Multiple Regression and SEM modeling. The results are Service Quality Loyalty Location are direct relationship with shopping and Ambience and Assortment are found indirect relationship with their purchase.

Keywords Ambience · Assortments · Price · Patronage · Satisfaction · Women's shopping behaviour

K. Jagannathan (✉) · R. Madhusudhanan · K. Opika
Department of Management, Kristu Jayanti College, Benngaluru, India
e-mail: jagannathan@kristujayanti.com

R. Madhusudhanan
e-mail: madhusudhanan@kristujayanti.com

K. Opika
e-mail: opika@kristujayanti.com

G. Sridevi
Department of Management Studies, AVC College of Engineering, Mayiladuthurai, India
e-mail: sridevig@avccengg.net

K. R. Sowmya
College of Business and Economics, Kebri Dehar University, Kebri Dehar, Ethiopia
e-mail: sowmya7021@kdu.edu.et

J. Krithika
Xavier Institute of Management and Entrepreneurship, Chennai, India
e-mail: Krithika.j@xime.org

1   Introduction

India is one among the world's fastest emergent economy and a universal hotspot in creating itself for their greatest trade needs. The freshest and most energetic of the world's population, the country is in the way to set a benchmark for the other growing economies. At the center of this growth it is important to mention the 50% of the women population, is likely to be driving force of 85% of purchase decision of an average house hold items. At the outset the power and influence of Indian women are renowned the international markets. Women's are limited to purchase Just grocery is gone. These days' womenfolk are energetically tangled in decision making, from buying a car and property. Industry professionals also saying, women still hold the foremost purchasing power when it comes to categories like Jewellery; make up, apparel, mean house hold accessories and children's product. But their part in sorts like electrical appliances, financial products is improving by day. Also their lifestyle likings are nascent considerably. Modern Indian women are tech savvy, discriminating, and smart shoppers. The last few years have seen a significant evolution in her role in consume salvage, and in addition to being major influences, they are now also looming as equal purchasers. The trend is expected to continue to be positive in the years to come, therefore it is crucial for marketers to understand how to approach women and give them what they want. The effort of the study is to understand and interpret the information about the female purchase behaviour and the various dynamics which impelling them to think and made final purchase decision. After the long review, the analysis was proceed with the percentage analysis, correlation, multiple regression and test the variables for the best fit and the model for SEM analysis also executed to derive the results.

2   Literature Review

Wan Halim and Good [8] examined how eight different consumer decision-making styles and purchasing patterns affected consumers willingness to shop at factory outlet malls in the future. Six decision-making philosophies are positively correlated with future shopping intentions, according to the findings. To make inferences about the influence of consumer decision-making and associated shopping behaviours, the outcomes of the current study were analysed. Barone et al. [1] did a study to find out whether marketers utilise cause-related marketing methods to boost sales. There is ongoing discussion over whether retailers should compromise on the causes that offer high or low degrees of fit when thinking about their fundamental business practises. By examining how retailer cause fit influences retailer consumers' assessments of cause-related marketing techniques, the study examines prior studies. The findings of the study indicate that there is a relationship between retailer and cause fit, which is moderated by retailer consumer perceptions of intentions to engage in cause-effect related marketing, as well as the attachment that consumers can live

up to for the societal cause attribute of the campaign from the second study and the interaction between the two. El-Bachir [2], the study reveals that the evaluation of the store's atmosphere is significant in relation to consumer behaviour. Specifically on the individual's attraction, motivation, and positive/negative atmosphere. As a result, if the store is appealing and rewarding, customers will spend more time there and buy more products. It also has an impact on the desire to return there. Patil and colleagues [6]. According to the descriptive analysis, visual merchandising (17.6%) includes store floor planning, window display, and merchandise display, which attracts customers to a store. Visual merchandising is the process of creating a store environment through the use of various elements such as design, architecture, decoration, and visual communication, among others, in order to engage the customer in a shopping environment. Customers prefer store layout (23.1%), which includes artwork, furniture, store size, parking facility, and other amenities. Customers are expected to stay in a store for a longer period of time to explore more if the store is well designed. They are also more likely to interact with other customers and salespeople. Greeshma [3], male consumers did not consider the opinion of family members when purchasing, whereas female consumers did consider the opinion of family members when purchasing household items and clothing, and the majority of female consumers gave extra time for their purchase. Ndengane [4] the study identifies two dependent variables, Time Spent in Store and Intention to Return to Store, were not statistically significant in the model. These variables so affect consumers' emotions and moods as well as their perception of the store, their time spent there, and their likelihood of returning. However, other factors also affect these dependent variables. The stimulation of clients' senses within the business environment is generally referred to as the "store atmosphere." The emphasis was placed on a few ambient, design, and social elements that were believed to have the biggest effects on customer happiness. Mandal and Rahul [7] The significantly impacted score category includes both mean and median, as determined by the descriptive statistics for the design layout. On the other hand, the statistical distribution has a variety of modes. The category with the lowest score, 28.0, is known as the moderately impacted score. Most customers said that one of the most crucial elements in creating a welcoming in-store environment at grocery outlets is cleanliness. The results show that 62% of respondents and 36% of respondents, respectively, indicated that cleanliness will have a strong and moderate influence on their selections about which store to shop at. Because of this, the quantitative statistics demonstrate that visual merchandising significantly influences consumers' choices of stores in South India. Panicker and Mohammad [5], approximately 71% of women prefer to spend money on products that enhance their personality, such as apparel, footwear, bags, jewellery, and accessories. Women from all three age groups agree that they enjoy spending money on such items, and that there is a significant relationship between age and spending on personality-enhancing products among urban working women. Importantly almost half of the women said they mostly shopped with their earnings. It demonstrates that women have a strong desire for independence, and the satisfaction of spending their earnings is extremely important to them.

3   Research Design

The researchers have carried out a descriptive research and the research involves surveys through questionnaire and fact finding enquiries of different kinds. The data was collected from women's from different categories that is being studied, which include surveys, observation and to describe or validate some sort of hypothesis or objectives. Correlation, Multiple Regression and SEM modeling.

3.1   Statement of the Problem

Delivering the right goods in the right place at the right time to the women is the big challenge for the retailers. Actually the retailers are seriously under pressure and breaking their head to understanding their behaviour and they also stressed to frame the best retail strategies to attract the female consumers and to find out the big plan for them. Women's are more fascinated towards fashion, fancy, entertainment, ambience, aesthetics, beauty and price for the quality product and service. Retailers realize which are important to continue their loyalty with the outlet they visit. Therefore, it is inevitable to the managers of retail outlets to provide incredible infrastructure and distribution channels for efficient processes. This, in turn, led the retailers to revisit their existing marketing strategies and introduce appropriate changes in them to get themselves flourish and succeed in the retail business. Hence, it is worthwhile to study the factors influencing shopping behaviour and satisfaction of women consumers in retail stores.

3.2   Sources of Data

The primary data was collected from working class women who are Joint breadwinners for the family by using the questionnaire method using Google forms. Secondary data was collected from journals, websites, newspapers, and survey reports.

3.3   Sample Size and Sampling Methodology

The total sample size for this study was 500, out of which a total of 430 respondents filled the questionnaire and the sampling methodology used for this research was convenience sampling, which involves the sample being drawn from the target population.

3.4 Objectives

  i. To identify the association and difference between factors influencing shopping behaviour and level of satisfaction among women consumers.
 ii. To evaluate a model measuring the effects of shopping behaviour and satisfaction of women consumers.

3.5 Limitations of the Study

The study focuses on female respondents, limited to the selected factors and focused products. The study targets only on to highlight the buying behavioral pattern not involving in decision making patterns. The analysis and the interpretations are time bound. The tools used for the study also has its own limitations.

3.6 Scope for Further Study

The further scope of study can focuses on the different set of targeted consumers like male, salaried class people, Entrepreneurs etc. The factors also can be different for analysis. The study also include the testing of buying behavior with decision making.

4 Results and Discussions

Objective 1
To identify the association between factors influencing shopping behaviour and level of satisfaction among women consumers (Tables 1, 2, 3, 4, 5, 6 and 7).

Multiple Regression
Multiple regression analysis is performed using enter method to test whether the factors influencing (Ambience, Location, Patronage, Assortment, Price, Service Quality and Loyalty) shopping behaviour of women in retail outlets significantly predict the level of satisfaction.

Anova predicts significance of the model by evaluating the factors influencing (Ambience, Location, Patronage, Assortment, Price, Service Quality and Loyalty) shopping behaviour of women respondents predicting their level of satisfaction during shopping in retail outlets. The study evaluates to understand that when the P-value (0.000) is less than the alpha (0.05) to statistically prove fitness of the model. In other words $F(7422) = 20.674, p = 0.000$ is found significant at 1% level to reject the null hypothesis (Table 8).

Table 1 Ambience

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Am1	Count	9	27	150	145	99
	Row N %	2.09%	6.28%	34.88%	33.72%	23.02%
Am2	Count	7	32	153	169	69
	Row N %	1.63%	7.44%	35.58%	39.30%	16.05%
Am3	Count	14	37	161	143	75
	Row N %	3.26%	8.60%	37.44%	33.26%	17.44%
Am4	Count	19	41	120	147	103
	Row N %	4.42%	9.53%	27.91%	34.19%	23.95%
Am5	Count	11	24	54	192	149
	Row N %	2.56%	5.58%	12.56%	44.65%	34.65%
Am6	Count	7	17	47	209	150
	Row N %	1.63%	3.95%	10.93%	48.60%	34.88%
Am7	Count	11	15	66	196	142
	Row N %	2.56%	3.49%	15.35%	45.58%	33.02%

Factors influencing shopping behaviour of women based on ambience shows the mean and standard deviation viz. Am1 = 3.6930; followed by Am2 = 3.6070; Am3 = 3.5302; Am4 = 3.6372; Am5 = 4.0326; Am6 = 4.1116; and finally, Am7 = 4.0302 with the reliability of ambience construct is 0.749

Table 2 Location

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Loc1	Count	7	44	34	228	117
	Row N %	1.63%	10.23%	7.91%	53.02%	27.21%
Loc2	Count	17	64	53	212	84
	Row N %	3.95%	14.88%	12.33%	49.30%	19.53%
Loc3	Count	11	81	73	169	96
	Row N %	2.56%	18.84%	16.98%	39.30%	22.33%

Factors influencing shopping behaviour of women based on location of shopping shows the mean and standard deviation viz. Loc1 = 3.93; followed by Loc2 = 3.65; and finally, Loc3 = 3.60 with the reliability of location construct is 0.830

Dependent Variable: Satisfaction

Relationship between factors influencing (Ambience, Location, Patronage, Assortment, Price, Service Quality and Loyalty) women predicting satisfaction among women shopping behaviour in retail outlets examined using VIF (Variance Inflation Factor) collinearity diagnostic test method portrays that the model did not violates rule of thumb (VIF < 5), means that the variance inflation is not multi-colinear as prescribed by Ghozali (2006). The model is framed by equation (Table 9).

Table 3 Patronage

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Pat1	Count	41	43	17	151	178
	Row N %	9.53%	10.00%	3.95%	35.12%	41.40%
Pat2	Count	32	33	13	203	149
	Row N %	7.44%	7.67%	3.02%	47.21%	34.65%
Pat3	Count	22	30	32	201	145
	Row N %	5.12%	6.98%	7.44%	46.74%	33.72%
Pat4	Count	19	52	72	190	97
	Row N %	4.42%	12.09%	16.74%	44.19%	22.56%
Pat5	Count	27	14	54	192	143
	Row N %	6.28%	3.26%	12.56%	44.65%	33.26%

Factors influencing shopping behaviour of women based on patronage of shopping shows the mean and standard deviation viz. Pat1 = 3.8884; followed by Pat2 = 3.9395; Pat3 = 3.9698; Pat4 = 3.6837; and finally, Pat5 = 3.9535;with the reliability of patronage construct is 0.865

Table 4 Assortment

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Ass1	Count	16	61	116	133	104
	Row N %	3.72%	14.19%	26.98%	30.93%	24.19%
Ass2	Count	3	45	146	110	126
	Row N %	0.70%	10.47%	33.95%	25.58%	29.30%
Ass3	Count	15	52	147	104	112
	Row N %	3.49%	12.09%	34.19%	24.19%	26.05%
Ass4	Count	5	36	155	107	127
	Row N %	1.16%	8.37%	36.05%	24.88%	29.53%

Factors influencing shopping behaviour of women based on Assortment of shopping shows the mean and standard deviation viz. Ass1 = 3.5767; followed by Ass2 = 3.7233; Ass3 = 3.5721; and finally Ass4 = 3.7326; with the reliability of Assortment construct is 0.788

$$Y = 4.043 + 0.106(\text{Ambience}) - 0.140(\text{Location})$$
$$+ 0.138(\text{Patronage}) + 0.088(\text{Assortment}) + 0.181(\text{Price})$$
$$+ 0.271(\text{Service Quality}) + 0.192(\text{Loyalty})$$

Dependent Variable: Satisfaction

Beta coefficient result examining factors influencing (Ambience, Location, Patronage, Assortment, Price, Service Quality and Loyalty) women predicting satisfaction among women shopping behaviour in retail outlets describes eight variables which are explanatory, seven variables are significantly predictors at 5% level and one variable (assortment) predicts at 10% level. As the consistent coefficient of factors

Table 5 Price

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Pri1	Count	5	3	14	213	195
	Row N %	1.16%	0.70%	3.26%	49.53%	45.35%
Pri2	Count	5	7	13	213	192
	Row N %	1.16%	1.63%	3.02%	49.53%	44.65%
Pri3	Count	6	76	20	185	143
	Row N %	1.40%	17.67%	4.65%	43.02%	33.26%
Pri4	Count	12	37	5	209	167
	Row N %	2.79%	8.60%	1.16%	48.60%	38.84%
Pri5	Count	16	34	21	209	150
	Row N %	3.72%	7.91%	4.88%	48.60%	34.88%

Factors influencing shopping behaviour of women based on Price of shopping shows the mean and standard deviation viz. Pri1 = 4.3721; followed by Pri2 = 4.3488; Pri3 = 3.8907; Pri4 = 4.1209; and finally, Pri5 = 4.0302 with the reliability of Price construct is 0.828

Table 6 Service quality

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Sq1	Count	16	84	20	211	99
	Row N %	3.72%	19.53%	4.65%	49.07%	23.02%
Sq2	Count	16	34	13	261	106
	Row N %	3.72%	7.91%	3.02%	60.70%	24.65%
Sq3	Count	13	37	29	223	128
	Row N %	3.02%	8.60%	6.74%	51.86%	29.77%

Factors influencing shopping behaviour of women based on Service Quality of shopping shows the mean and standard deviation viz. Sq1 = 3.6814; followed by Sq2 = 3.9465; and finally, Sq3 = 3.9674 with the reliability of Service Quality construct is 0.727

Table 7 Loyalty

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Loy1	Count	40	65	12	186	127
	Row N %	9.30%	15.12%	2.79%	43.26%	29.53%
Loy2	Count	28	67	15	213	107
	Row N %	6.51%	15.58%	3.49%	49.53%	24.88%
Loy3	Count	33	61	25	225	86
	Row N %	7.67%	14.19%	5.81%	52.33%	20.00%

Factors influencing shopping behaviour of women based on Loyalty of shopping shows the mean and standard deviation viz. Loy1 = 3.6860; followed by Loy2 = 3.7070; and finally, Loy3 = 3.6279 with the reliability of Loyalty construct is 0.879

Table 8 Model measuring relationship between factor influencing shopping behaviour of women in retail outlets

R value	R square value	Adjusted R square value	Degree of freedom (V_1, V_2)	F value	Significance
0.835	0.775	0.737	(3, 427)	13.674	0.000

Predictors: (Constant), Loyalty, Location, Assortment, Patronage, Servquall, Ambience, Price

Table 9 Coefficient measuring relationship between factor influencing shopping behaviour of women in retail outlets

Model variables	Unstandardized coefficients	Standardized coefficients		t	Sig	Collinearity statistics	
	B	Std. error	Beta			Tolerance	VIF
Constant	4.043	1.525		2.651	0.008		
Ambience	0.106	0.040	0.124	2.645	0.008	0.798	1.253
Location	− 0.140	0.056	− 0.106	− 2.491	0.013	0.981	1.020
Patronage	0.138	0.035	0.177	3.958	0.000	0.884	1.131
Assortment	0.088	0.047	0.082	1.884	0.060	0.940	1.064
Price	0.181	0.050	0.179	3.591	0.000	0.711	1.407
Servqual	0.271	0.064	0.188	4.223	0.000	0.886	1.128
Loyalty	0.192	0.047	0.176	4.055	0.000	0.938	1.066

influencing women shopping behaviour constructs show highest score with respect to service quality ($\beta = 0.188$) and the relationship between assortment and satisfaction significant statistically ($t = 4.223$, Sig. 0.000) to reject (H_0) the null hypothesis. Second highest coefficient ($\beta = 0.179$) score is achieved between Price and satisfaction are significant statistically ($t = 3.591$, Sig. 0.000) to reject (H_0). Third position of beta coefficient ($\beta = 0.177$) score is achieved between Patronage and satisfaction proved to be statistically significant (t = 3.958, Sig. 0.000) to reject (H_0). Fourth position of beta coefficient ($\beta = 0.176$) score is achieved between Loyalty and satisfaction showed to be statistically significant ($t = 4.055$, Sig. 0.000) to reject (H_0). Fifth position of beta coefficient ($\beta = 0.124$) score is achieved between Ambience and satisfaction showed to be statistically significant ($t = 2.645$, Sig. 0.013) to reject (H_0). Sixth position of beta coefficient ($\beta = − 0.106$) score is achieved between Location and satisfaction proved negatively significant ($t = − 2.491$, Sig. 0.013) to reject (H_0). Finally, the last position of beta coefficient ($\beta = − 0.106$) score achieved seventh position between Assortment and satisfaction showed statistically significant ($t = − 1.884$, Sig. 0.060) to reject (H_0) at 10% level.

Whereas, there is no statistically significant relationship achieved between brand quality and repurchase intention ($t = 0.912$, Sig. 0.362) to accept (H_09b) the null hypothesis at 5% level and also promotion based on brand perception did not achieved significant relationship with repurchase intention ($t = 0.987$, Sig. 0. 324) signifies promotion did not relate with repurchase intention of college students buying personal care products to support (H_09c) the null hypothesis at 5% level.

Objective 2

To test the developed model measuring the effects of shopping behaviour and satisfaction among women consumers

Overall factors' influencing shopping behaviour among women shows Convergent and Discriminant Validity, Average Variance Extracted (AVE), and Composite Reliability

The most important phase to test the dimensional consistency is; Overall factors influencing shopping behaviour among women in retail outlets involved testing the validity and reliability of all six components. The results of the default CFA model (Table 10) initially showed low fitness level of the model, therefore elimination few items from the factor needed to improve the model fitness. The default CFA model maintained 27 items.

Validity Concerns

Convergent Validity: the AVE for Ambience is less than 0.50.

Convergent Validity: the AVE for Service Quality is less than 0.50.

Table 10 Construct, convergent and discriminant validities factors influencing shopping behaviour (default model)

	CR	AVE	MSV	MaxR(H)	
Assortment	0.802	0.513	0.017	0.843	
Ambience	0.748	0.340	0.041	0.914	
Patronage	0.875	0.596	0.112	0.966	
Price	0.830	0.507	0.112	0.975	
Service quality	0.730	0.474	0.041	0.977	
Location	0.841	0.643	0.014	0.982	

Assortment	Assortment	Ambience	Patronage	Price	Service_quality	Location
	0.716					
Ambience	0.131	**0.584**				
Patronage	− 0.077	0.051	**0.772**			
Price	0.123	0.194	0.334	**0.712**		
Service quality	0.016	0.203	− 0.073	0.195	**0.689**	
Location	− 0.054	− 0.063	0.008	0.035	0.118	**0.802**

It is found that average variance did not achieved the recommended threshold (0.5) and therefore few items (Am5, Am6 and Am7) were eliminated, also service quality dimension did not achieved AVE recommended however retained all items because the value (0.474) reached nearest to the threshold level (Fig. 1).

Sem Model
The direct relationship exists between the following

- Service Quality and Satisfaction Among Women Shoppers
- Loyalty And Satisfaction Among Women Shoppers
- Ambience And Loyalty Perceived By Women Shoppers
- Patronage And Loyalty Perceived By Women Shoppers
- Ambience And Satisfaction Among Women Shoppers
- Location And Satisfaction Among Women Shoppers
- Patronage And Satisfaction Among Women Shoppers
- Assortment And Satisfaction Among Women Shoppers
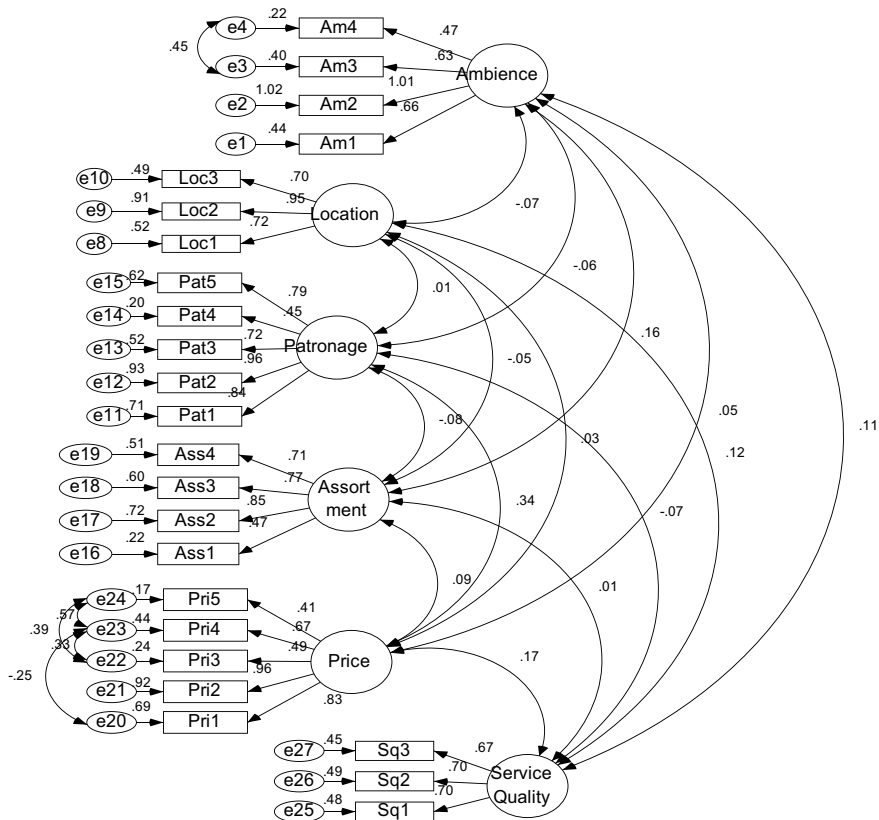
Fig. 1 Standardized modified model showing factors influencing shopping behaviour

- Price And Satisfaction Among Women Shoppers.

There is an indirect relationship between

- Ambience And Satisfaction Mediated By Loyalty Perceived By Women Shoppers
- Assortment And Satisfaction Mediated By Loyalty Perceived By Women Shoppers.

Model Summary shows the suggested verge as delineated by Hu and Bentler (1999), where, GFI, CFI, NFI, TLI > 0.90, CMIN/DF < 0.3, RMSEA and RMR < 0.05, PCLOSE > 0.05. Goodness of fit indices reveals factors influencing shopping behaviour, loyalty and satisfaction among women consumers in retail outlets shows CMIN = 6.768, CMIN/DF = 1.692, RMR = 0.189, GFI = 0.996, AGFI = 0.965, NFI = 0.980, CFI = 0.991, RMSEA = 0.040 and PCLOSE = 0.553 resulted as excellent fit.

5 Conclusion

Customers have high expectations from the retail outlets, and places like super markets, hypermarkets, and malls are quickly becoming into places for socializing and amusement (apart from shopping). For them, shopping centers serve as a one-stop shop for a variety of activities like dining, entertaining, hanging out, and making new and old friends. Therefore, management of retail establishments needs to be aware that these spaces are now more than just places to buy goods. In order to entice the target clients, they should change the retail establishments into lively, energetic stores with appealing goods and a variety of entertainment bundled with modern, more upscale environments and amenities. The following are the limitations and further scope of study. The study focuses on female respondents, limited to the selected factors and focused products. The study targets only on to highlight the buying behavioral pattern not involving in decision making patterns. The analysis and the interpretations are time bound. The tools used for the study also has its own limitations. The further scope of study can focuses on the different set of targeted consumers like male, salaried class people, Entrepreneurs etc. The factors also can be different for analysis. The study also include the testing of buying behavior with decision making.

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Assessing Contractor Views on Time Overrun Causes in Gaza Strip Construction Projects

Saleh Abu Shaban, Ramdane Elkourd, and Mohammed Abu Saif

Abstract Time overrun is a common problem in construction sector and industry. Previous researchers have identified factors and indicators related to contractors, consultants, or owners that contribute to delays of projects. This study aims to identify the major reasons leading to project delays and time overrun in the Gaza Strip's construction industry. The study involved interviews and questionnaires that covered twenty-six delay factors related to construction projects in Gaza, which were distributed to a population of sixty contractor offices, with a 90% response rate. The research reveals that financial difficulties, delays in payment to suppliers, shortage of building materials, mismanagement in the workplace, and late payments to contractors are the most significant indicators of time overrun. The study results suggest that contractors should develop a comprehensive plan for scheduling before and during the construction phase to minimize disputes and avoid delays.

Keywords Contractor · Time overrun · Delay · Construction · Project · Management

1   Introduction

The construction sector plays a vital role in the global economy and employs a significant portion of the labor force. However, many construction projects around the world face significant delays. For instance, a study found that public building projects in Jordan and Al-Khalil experienced a delay percentage of 81.5% [1].

S. A. Shaban (✉) · R. Elkourd · M. A. Saif
University College of Applied Sciences, Gaza, Palestine
e-mail: sabushaban@ucas.edu.ps

R. Elkourd
e-mail: ralkord1@smail.ucas.edu.ps

M. A. Saif
e-mail: maboseif1@smail.ucas.edu.ps

The construction industry is a key sector in the Palestinian economy and employs a significant portion of the labor force, with 11.6% of the Palestinian workforce in the Gaza strip and West Bank working in this industry [2].

Construction projects in the Gaza Strip are prone to time overruns due to the unstable economy in Palestine. These overruns impact all parties involved in the construction sector, including owners, contractors, and consultants. Delays can also lead to cost overruns, termination of contracts, and conflicts between contractors, consultants, and owners. Additionally, Israel's control of the Gaza Strip borders leads to closures and shortages of necessary materials and equipment, resulting in further time and cost overruns [3]. Therefore, the research illustrates theoretical framework, methodology, main results, conclusion and recommendations to identify and avoid the major reasons and causes of project's time overruns in the Gaza Strip construction industry according to contractor perspectives.

2   Theoretical Framework

2.1   Construction and Management

Project management refers to the use of knowledge and skills to meet project requirements and objectives [4]. The approach to project management can vary based on the nature, size, or industry of the project. For instance, the construction industry encompasses various models, styles, and deliverables such as buildings, roads, bridges, infrastructure, and tunnels [5].

The success of a project's performance is dependent on four key factors: quality, time, cost, and client satisfaction. Quality control involves the techniques used to maintain the quality of a product or service, which includes continuous monitoring, problem solving, and meeting customer requirements. Quality assurance, on the other hand, involves the prevention of quality problems through systematic activities, good management systems, and the assessment of adequacy [6]. On the other side, cost control refers to reducing expenses to increase project profits [7].

Time management involves achieving project goals through the planning and scheduling of activities. This enables managers to monitor and evaluate progress based on start and finish dates, and compare planned versus actual timeframes for implementing activities [8].

Cost management is a process aimed at controlling expenses within the project's planning phase. This is achieved by examining and comparing the actual and planned budget, helping to keep the project on track [9].

Quality management is a necessary process throughout the project life cycle to ensure that project requirements, outputs, and deliverables meet client needs and satisfaction [10].

Effective change management involves reviewing and carefully studying all necessary changes in the project. This process helps managers to track and control the effects of any changes made, ensuring that they are beneficial for the project [10].

The risk management process involves recognizing and managing potential problems to minimize their impact on the project. This includes identifying actions to minimize, accept, avoid, or transfer risks [11].

2.2 *Delay and Time Overruns*

Time overrun refers to a delay in project activities that extends the time required to complete the project according to the plan and contract. In other words, time overrun occurs when the completion date specified in the contract is exceeded [12, 13].

Time overruns refer to the delay in completing a project beyond the estimated completion time. Despite the use of advanced and efficient technology in the construction industry, project managers still face challenges with delays. [14].

In a case study conducted in Ghana on groundwater construction projects, a survey was carried out to identify and evaluate the factors contributing to time overruns. The study revealed that the main causes of delay were payment difficulties, poor contractor management, procurement, poor technical performance, and escalation of material prices [15].

Another study conducted in Kuwait on residential construction projects identified the main factors causing delays as change orders, financial constraints, lack of experience, contractor-related problems, and material-related problems [16]. In a study conducted in Saudi Arabia on public sector construction projects, the causes of delays were found to be the lack of qualified and experienced staff and workforce [17].

3 Methodology

The descriptive methodology was utilized to identify and discuss the primary factors contributing to delays in construction projects in Gaza. This involved evaluating the current situation and addressing the key issues associated with time overruns in construction [18–22]. To accommodate language barriers, the questionnaire was translated into Arabic and reviewed by two proficient Arabic speakers to ensure accuracy [23–26]. The results were analyzed and presented using IBM SPSS software version 22. The survey was completed and submitted by 60 contractors from the Palestinian Contractors Union, with a response rate of 90%.

The relative importance index (RII) method was used to determine the contractors' view and perspective on the causes of delays in construction projects in Gaza Strip. The RII index is calculated as follows [27].

$$RII = \sum W/(A \times N)$$

where

W   is the weight ranges from 1 to 5
A   the highest weight $= 5$
N   the total number of respondents.

4   Analysis and Key Findings

This section provides a summary of the ranking of contractor factors and the main results related to the causes of delays in construction projects in Gaza.

As shown in Table 1, the contractors identified the top five causes of time overrun as financial difficulties, delayed payment of dues to suppliers, shortage of building materials, mismanagement in the workplace, and late payments to the contractor. This is because of siege and difficult economic situation in the Gaza Strip.

This is consistent with the literature, since construction projects in the Gaza Strip are prone to time overruns due to the unstable economy and construction industry in Palestine. These overruns impact all parties involved in the construction sector, including owners, contractors, and consultants. Therefore, Israel's control of the Gaza Strip borders leads to closures and shortages of necessary materials and equipment, resulting in further time and cost overruns [3].

According to the study and literature, the main causes of delay were payment difficulties, poor contractor management, procurement, poor technical performance, escalation of material prices, financial constraints, lack of experience, material-related problems, lack of qualified and experienced staff and workforce [15–17].

5   Conclusion

Construction projects in Gaza Strip often suffer from time overruns due to the unstable economy and industry in Palestine. This problem affecting all parties involved in the construction sector, including owners, contractors, and consultants. This research aimed to identify the major reasons causing delay in Gaza Strip construction projects. The study utilized interviews and a questionnaire survey consisting of twenty-six delay factors related to construction projects. The questionnaire was distributed to sixty contractor offices, and achieved a response rate of 90%.

Based on the study, it was found that the most common causes of time overrun in construction projects in Gaza Strip are financial difficulties arising from simultaneous project execution, delay in payment of dues to suppliers, shortage of building materials, mismanagement in the workplace, and late payments to the contractor.

Table 1 Ranking of contractor factors by relative index (RII)

	Contractor factor	RII	Rank
1	Financial difficulties because of several projects in the same period	3.69	1.00
2	Delay in payment of dues to suppliers	3.69	1.00
3	Shortage of building materials	3.66	3.00
4	Mismanagement in the workplace	3.38	4.00
5	Late payments to the contractor	3.26	5.00
6	Ineffective planning and scheduling and poor oversight during implementation	3.24	6.00
7	The contractor's failure to comply with the consultant's instructions	3.24	6.00
8	Lack of skilled labor in the market	3.07	8.00
9	Poor communication	2.93	9.00
10	Appointment of fresh graduate engineers in site management	2.91	10.00
11	Change Contract Specifications (Variation Orders)	2.84	11.00
12	Equipment failure on the job site	2.84	11.00
13	Delay in supplying materials to the job site	2.81	13.00
14	Disagreement and personal conflict between employees and management team	2.74	14.00
15	Spending a long time searching for subcontractors at the lowest price to carry out project activities	2.68	15.00
16	Errors in calculating quantities and estimating prices	2.67	16.00
17	Lack of adequate knowledge	2.65	17.00
18	Non-compliance with specifications	2.55	18.00
19	Low equipment productivity	2.53	19.00
20	Lack of human resources in the project	2.36	20.00
21	Lack of equipment and machinery	2.34	21.00
22	Equipment spare parts shortage	2.34	21.00
23	Poor use of technology (software)	2.13	23.00
24	Wrong distribution of equipment	2.05	24.00
25	The use of bureaucracy in organizing work within the site	1.94	25.00
26	Weakness/absence of incentives (material or moral)	1.85	26.00

6   Recommendations

Based on the conclusion above, the researchers recommend that consultants should not select contractors based solely on the lowest bid. In addition, the winning contractor should have good experience, sufficient financial capability, and qualified manpower to implement the project on time.

A new approach should be adopted for contractor selection by giving less weight to price and more weight to capabilities and performance. It is recommended to pay an advance payment to the contractor to achieve and perform work according to plan.

Contractors should plan a schedule for resources, time, and cost before and during the construction phase to monitor the work and avoid disputes. On the other hand, contractors should store building materials for their projects to assist them in case of material shortages and increasing material prices.

Finally, it is recommended for contractors and consultants to use new technology tools and techniques such as Power BI software program to analyze data and have sufficient information and reports during planning, monitoring and evaluation processes. That will assist managers to make the suitable decision at the right time, which reduces lost time.

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The Effect of Brand Reputation on Consumers' Willingness to Pay a Premium Price: A Study of the Hospitality Industry

Mohammed Zedan Salem

Abstract   This study examines how customer willingness to pay more for a product in the hospitality sector is influenced by brand reputation. We used a survey-based study approach to gather information from a simple random sample of hotel visitors (278) in the Gaza Strip in order to evaluate our hypothesis. Results indicate that consumers' willingness to pay more for hotel services is highly influenced by brand reputation. Customers are more likely to spend extra for hotels with a great brand reputation since this denotes a better degree of perceived quality, trust, and general contentment. Additionally, our results imply that brand reputation is a more significant determinant in customers' willingness to pay than other elements like location and facilities. Overall, this study emphasizes the significance of upholding a strong brand reputation for hotels aiming to charge premium pricing and offers recommendations for hotel managers trying to strengthen their brand reputation in the cutthroat hospitality sector. This research is unique because it focuses on the hotel industry's unique setting, which hasn't been thoroughly explored in the literature on the link between brand reputation and customers' willingness to spend. The study contributes to the body of knowledge by offering concrete proof that consumers' willingness to pay more for hotel services is significantly influenced by brand reputation.

Keywords   Brand reputation · Consumers' willingness to pay a premium price · Gaza Strip · Palestine

1   Introduction

Hotels are continuously looking for methods to set themselves apart from their rivals and offer value to their clients in today's fiercely competitive hospitality sector. Hotels may do this, for example, by building and preserving a solid brand reputation.

M. Z. Salem (✉)
University College of Applied Sciences, Gaza, Palestine
e-mail: mzsalem@ucas.edu.ps

Increased customer loyalty, favorable word-of-mouth, and eventually higher revenue and profitability may all be attributed to a great brand reputation. However, little is known about the precise ways in which customer willingness to pay more for hotel services is influenced by brand reputation [1–3].

The aim of this study is to look at how customer willingness to spend more in the hotel sector relates to brand reputation. We specifically want to respond to the following question: How much does a company's reputation affect customers' willingness to pay more for hotel services?

The significance of this study resides in its application to hotel managers looking to build their brand reputation in a cutthroat market. Hotel managers may create successful strategies for enhancing their brand image, which can eventually result in higher revenue and profitability, by recognizing the significance of brand reputation in influencing consumers' willingness to pay. This study also emphasizes the necessity for hotels to spend in creating and keeping a strong brand reputation in order to compete in the market.

Despite the significance of brand reputation in the hospitality sector, little is known about the precise ways in which it affects consumers' willingness to pay a premium price. According to some research [4], location and facilities may not have as much of an impact on customers' willingness to spend as brand reputation does. The correlation between brand reputation and willingness to pay, however, has been the subject of conflicting findings in previous research [5, 6].

The rest of the work is organized as follows. Part 2 explains the conceptual foundations and hypotheses. The procedure is explained in Part 3. Part 4 presents the study's findings, while Part 5 includes a discussion.

2 Theoretical Background

2.1 Brand Reputation

Brand reputation is the general opinion that customers hold about a certain brand. Numerous elements, such as the brand's caliber, dependability, and level of customer service, influence it. Increased customer loyalty, favorable word-of-mouth, and eventually higher revenue and profitability may all be attributed to a great brand reputation. Brand reputation is crucial in the hospitality sector since guests frequently base their choice of accommodations on the reputation of a specific hotel chain. Strong brand-name hotels are more likely to draw in and keep guests, and they may be able to charge more for their services [7, 8].

Hotel management must continually work to uphold their brand's image. This includes making investments in promotional and advertising initiatives that set the hotel apart from its rivals' brands. Additionally, it entails making sure that the hotel constantly provides first-rate offerings that reflect the image and core values of the company. Hotels may achieve this through fostering client loyalty and trust, which can

result in favorable testimonials and recommendations that further improve the brand's reputation. In conclusion, customers' impressions of hotel brands and their readiness to pay more for hotel services are significantly influenced by brand reputation [9–11].

2.2 Consumers' Willingness to Pay a Premium Price

Consumers' willingness to pay a premium price is the amount of money they are prepared to spend on a certain good or service that is more expensive than the going rate. Customers' willingness to pay more for hotel services can vary depending on a number of aspects in the hospitality sector, such as the hotel's perceived quality, its location, its facilities, and its reputation. Customers may be more likely to pay a premium fee for the hotel's services if the hotel has a strong brand reputation that communicates to them that it is of high quality and offers an exceptional experience. Customers could also be prepared to pay more for a hotel with a good brand reputation if they think the brand embodies a lifestyle or image they want to be associated with [12–14].

Hotel managers should be aware of consumer propensity to pay premium prices as it might influence pricing strategies and revenue management choices. Hotel managers may find chances to improve their hotel's value proposition and boost revenue by studying the elements that affect guests' willingness to pay. Hotel management may also customize their marketing and branding efforts to appeal to their target demographic and set their hotel apart from rivals by knowing how eager their consumers are to spend. In conclusion, understanding how brand image affects consumers' willingness to pay a premium price is important for the hospitality business. Hotel managers who want to boost revenue and profitability may benefit greatly from this knowledge [15, 16]. Based on the foregoing, we set the following hypothesis:

H1. The brand reputation influences the Palestinian consumers' willingness to pay a premium price for a product in the hospitality sector.

3 Methodology

3.1 Participants

As seen in Fig. 1, 278 respondents completed the questionnaire and returned it. The figure showed the results for the demographic variables.
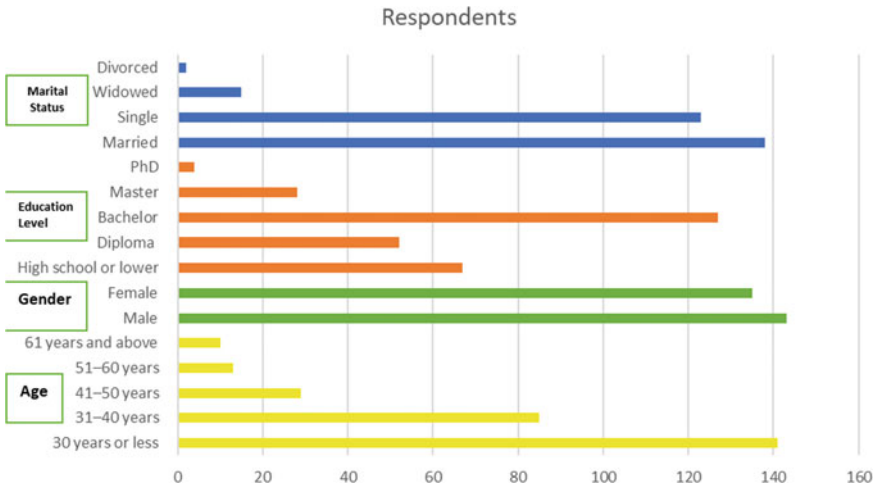
Fig. 1 Respondents' personal information ($n = 278$)

3.2 Procedures

The major instrument utilized to gather data for this paper was a face-to-face question-naire. The original questionnaire was appropriately translated into Arabic because Arabic is a language that is widely spoken in the country. After that, a pilot test and accuracy testing were conducted by two native Arabic speakers. In order to analyze the statistical data, IBM SPSS version 23 was used.

3.3 Measures

For the survey, a 5-point Likert scale was used. Three sections made up the survey. To assess the brand reputation in the first part, eight questions based on Che et al. [5], Han et al. [8], and Koh et al. [9] are employed. Consumers' willingness to pay a premium price is examined in the second section using nine questions based on Gupta et al. [1], Kiatkawsin and Han [12], Heo and Hyun [13], and González-Rodríguez et al. [10]. In the final part, the demography-related aspects are covered.

4 Results

4.1 Factor Analysis

The KMO and Bartlett's tests were applied to assess whether the factor analysis was appropriate for the investigation. With a score of at least 0.7, the dependability test must be passed. Results from the Bartlett's Sphericity test should typically have a value less than 0.05. The KMO result implies that this analysis is sufficient for the research because it surpasses the permissible cutoff level of 0.000.

The factor score coefficient matrix as a result of principal component analysis is shown in Table 2 and rotated by one main factor using the varimax normalization approach [17–21]. There are 21 items that make up the factor. Factor loadings on a range of scales should satisfy a minimal loading criteria of 0.30, according to earlier research [22–27]. The fact that all of the loadings in Table 1 are higher than 0.30 demonstrates that the scales' construct validity has been preserved.

Table 1 The constructions' reliability and factor loading

Construct	Item	MV	SD	FL	Cronbach's α
Brand reputation	1	3.74	0.97	0.754	0.764
	2	3.79	0.92	0.761	
	3	3.56	0.86	0.757	
	4	3.67	0.87	0.743	
	5	3.77	0.84	0.756	
	6	3.52	0.91	0.738	
	7	3.69	0.75	0.764	
	8	3.58	0.86	0.745	
Consumers' willingness to pay a premium price	1	3.75	0.74	0.734	0.752
	2	3.61	0.79	0.749	
	3	3.68	0.84	0.774	
	4	3.63	0.86	0.765	
	5	3.85	0.71	0.759	
	6	3.54	0.83	0.767	
	7	3.82	0.84	0.752	
	8	3.56	0.86	0.778	
	9	3.74	0.78	0.749	

Table 2 Simple regression analysis outputs

Model		Unstandardized coefficients		Standardized coefficients	T	Sig
		B	Std. Error	Beta		
1	(Constant)	0.076	0.186		0.467	0.315
	Brand reputation	0.383	0.059	0.268	3.468	0.000

Notes Dependent variable: Consumers' willingness to pay a premium price; adjusted $R2 = 0.497$, $F = 125.493$, and sig. $= 0.000$

4.2 Hypotheses Testing

The relationship between the independent variable (brand reputation) and the dependent variables (consumers' willingness to pay a premium price) was investigated using simple regression analysis. As shown in Table 2 (adjusted $R2 = 0.497$), independent variables account for 49.7% of the variance in consumers' willingness to pay a premium price. Additionally, it was discovered that brand reputation and consumers' willingness to pay a premium price are positively correlated ($t = 3.468$, $p = 0.000$). It was deemed that H1 was well supported as a consequence.

5 Discussion

Our study's findings indicate that consumers' willingness to spend more for hotel services in the hospitality sector is significantly positively impacted by brand reputation. Our results are in line with other studies that have demonstrated that brand reputation plays a significant role in influencing customers' opinions of hotel brands and their willingness to pay more for hotel services. Our study adds to the body of knowledge by offering empirical proof of the link between brand reputation and customers' willingness to pay more for a product or service in the hotel sector.

Our results have strong consequences for hotel managers. Hotel managers should concentrate on creating and upholding a strong brand reputation that sets their hotel apart from rivals and conveys to clients that their hotel offers high-quality services and experiences if they want to boost revenue and profitability. This can be accomplished in a number of ways, such as making investments in marketing and advertising campaigns that support the hotel's brand, making sure the hotel consistently provides top-notch experiences and services, and actively managing the hotel's online reputation through review management and social media engagement.

It's crucial to keep in mind, though, that a solid brand image might not be enough to support a high cost for hotel services. The perceived value of the services offered and the customer's financial restrictions may also have an impact on a consumer's willingness to pay. In order to balance earning income and giving consumers value,

hotel managers need take a variety of aspects into account when determining rates for their hotel services. The success of a hotel's pricing plan will ultimately depend on its capacity to comprehend its target market and provide experiences and services that live up to their expectations.

There may be some limitations to this study on the impact of brand reputation on customers' willingness to spend more in the hotel business. The possible lack of generalizability, the reliance on self-reported data, the inability to determine causation, and the potential influence of brand loyalty are some of these drawbacks. Future study should concentrate on cross-industry comparisons, experimental investigations, the analysis of particular aspects of brand reputation, and longitudinal studies that monitor changes in brand reputation over time to overcome these limitations and expand the field's understanding. These methods could offer more in-depth and trustworthy insights into the intricate connection between company reputation and consumers' willingness to spend more in the hotel industry and others.

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Exploring the Influence of Psychological Burnout and Compassion Fatigue on Turnover Intentions in Egypt's Governmental Nursing Sector

Mahmoud Elsawy and **Kalpana Solanki**

Abstract The study examines the relationships between psychological burnout, compassion fatigue, and turnover intentions among Egyptian government-employed nurses. Specifically, four hypotheses are tested: Using a combination of empirical descriptive and analytic methods, including database surveying, qualitative research approaches, and a field survey, data were collected from a sample of 365 nursing staff members representing various responsibilities in the public sector. The researchers found that; All four hypotheses are supported by the findings, which demonstrate the complex interaction between psychological burnout, compassion fatigue, and turnover intentions in the nursing profession in Egypt's public sector. Considering these results, the researchers discussed the theoretical and practical implications and their insights for future research.

Keywords Psychological burnout · Compassion fatigue · Turnover intention

1 Introduction

Exploring the Influence of Psychological Burnout and Compassion Fatigue on Turnover Intentions in Egypt's Governmental Nursing Sector.

The healthcare business is increasingly concerned about nursing staff well-being, notably psychological fatigue, and turnover intentions [1]. Recent trends show this. Burnout, which causes emotional burnout, depersonalisation, and decreased

M. Elsawy (✉) · K. Solanki
HRM Department, City University Ajman, Ajman, UAE
e-mail: r.elsawy@cu.ac.ae

K. Solanki
e-mail: k.solnaki@cu.ac.ae

M. Elsawy
HRM Department, Sadat Academy for Management Sciences, Cairo Governorate, Egypt

personal achievement [2], has been linked to unfavourable consequences for health-care workers and their organisations [3]. Burnout can harm healthcare personnel and organisations [3]. Turnover intentions, which may be described as an individual's propensity or burnout intentions in their current work or organisation [4], have also been noted as a serious issue in the nursing profession [1], resulting in high costs and poor treatment. Nursing shortages cause this issue.

Although this problem affects people worldwide, little is known about burnout and turnover intentions among public-sector nursing personnel in Egypt. Western research has dominated [1]. Egypt's public healthcare system has neglected nursing personnel issues. Previous research also ignored the unique problems foreign nursing workers experience. Given Egypt's growing population and healthcare demand, it's crucial to screen nurses for burnout and desire to quit. To fill the gap in the literature, this study examines psychological burnout and turnover intentions among Egyptian government-employed nurses. This study examines how these variables interact to explain Egyptian nursing staff fatigue and turnover intent. This research also seeks practical solutions to these difficulties.

2 Literature Review and Hypotheses Development

2.1 Psychological Burnout

Psychological burnout research spans decades. Burnout has many literary precursors. Karasek's Demand-Control Model [5] relates burnout to high job demands and low control. Demerouti et al. [6] Demands-Resources Model expands on this. Burnout emphasises work expectations and resources. Kahn et al. [7] highlighted role ambiguity and conflict as pressures. Jackson et al. [8] linked them to burnout. Cohen and Wills [9] found that social support lessens stress. Leiter and Maslach [10] found that social isolation causes burnout. Low self-esteem and neuroticism cause burnout. Lee and Ashforth [11] say these attributes raise burnout risk. Organisational culture can create fatigue. Bakker et al. [12] believe a good organisational culture can reduce job demands and burnout.

Numerous academic theories explain psychological fatigue. We'll discuss Burnout's beginnings and key scholars. American psychologist Herbert Freudenberger defined "burnout" as occupational stress and fatigue. A 1974 research described burnout as physical and mental tiredness caused by persistent stress and excessive expectations, especially in helping professions like healthcare, social work, and education. Burnout produced mental and physical tiredness, cynicism, a decreased sense of accomplishment, and lower work quality, Freudenberger discovered. High-stress workers must recognise and treat fatigue.

Maslach [2]. Leiter and Jackson created the Maslach Burnout Inventory (MBI). Maslach's burnout theory encompasses emotional burnout, depersonalization, and diminished personal achievement. Schaufeli and Bakker [13] defined burnout

as work-related tiredness caused by continuous job demands without sufficient resources. Employment-related burnout is different. Chronic emotional stress causes mental, bodily, and emotional burnout, according to [14]. They believed mental and emotional burnoutcreates burnout. Maslach and Leiter [3] defined burnout as persistent emotional and interpersonal stress at work. They did this because career burnout may happen everywhere. They say burnout is fatigue, cynicism, and futility.

2.2 Turnover Intentions

"Turnover intentions" are a person's intention to leave their job or organisation soon. Many scholars have defined and studied turnover intentions. Mobley [15] defined "turnover intentions" as the intention to depart a job. He emphasised turnover intentions before turnover. Tett and Meyer [4] defined turnover intentions as the self-reported likelihood of leaving a job within a year. Their meta-analysis indicated that employee turnover intentions predict turnover. Price and Mueller [16] defined "turnover intentions" as the desire to leave a job within a given timeframe. They argued that individual and organisational factors influence employee turnover.

Experts have studied resignation triggers since employee turnover is so important to businesses. Herzberg and colleagues' [17] Two-Factor Theory suggests inner and outer influences affect job satisfaction. According to [15] and [4], work dissatisfaction predicts job loss. Meyer and Allen [18]'s Three-Component Model of Organisational Commitment includes affective, continuance, and normative commitment. Meyer and Allen [19] and Griffeth et al. [20] found that lack of organisational commitment increased quitting. Karasek's Demand-Control Model [5] and [3] burnout studies show occupational stress. Lee and Ashforth [11] found burnout and job stress increased leaving intentions. Eisenberger et al. coined "perceived organisational support" in 1986. Company care affects employees. Rhoades and Eisenberger [21] showed insufficient organisational support increased employee turnover 1995. Leader-Member Exchange. It emphasises management-employee relations. Harris et al. [22] found weak LMX interactions increase business turnover. Greenhaus et al. [23] examined work-life balance. Allen et al. [24] found that work-life imbalanced employees resign more. Greenhalgh and Rosenblatt [25] suggested job insecurity. Sverke et al. [26] observed work instability increases corporate turnover.

2.3 Psychological Burnout and Turnover Intentions

Academics have examined psychological burnout and nursing turnover. Alharbi et al. discovered a high correlation between burnout and nursing resignation in Saudi Arabia. They believed treating burnout would increase nursing turnover. Labrague and de Los Santos evaluated Filipino nurses' burnout, job satisfaction, and quitting. Job satisfaction moderated the burnout-work quit intention relationship. Zhang et al.

investigated Chinese nurses' burnout, engagement, and quitting. Burnout increased turnover intentions, while work engagement decreased them. Work mediated burnout and quitting.

El-Shafei and colleagues discovered that burnout made Egyptian nurses more inclined to resign. The study suggested work satisfaction and organisational commitment as mediators. Hinderer et al. [27] evaluated Turkish nurses' burnout, compassion satisfaction, and departure plans. Burnout and compassion fulfilment were the organization's burnout goals. These studies link nursing resignation to psychological burnout. Researchers believe burnout therapies may lessen healthcare employees' and firms' inclinations to depart.

H1 Psychological burnout is positively associated with turnover intentions among Nursing Staff in The Governmental Sector in Egypt.

2.4 Compassion Fatigue as a Mediator

Figley defined compassion fatigue as a "secondary traumatic stress disorder" that therapists and nurses who treat traumatised patients can feel. He defined compassion fatigue as the emotional and physical depletion caused by sympathetic interaction and exposure to suffering. He stated empathic engagement produces it. Nurses' emotional burnout from patient care was called "compassion fatigue" by Joinson. She hypothesised that compassion fatigue occurs when medical professionals like nurses exhaust their emotional reserves due to their empathy-intensive occupations. Compassion fatigue is one of Stamm ProQOL model's main components. They defined compassion fatigue as the emotional fallout of witnessing others' pain and the challenges of caregiving. Combining these two causes compassion fatigue, she added. Coetzee and Klopper conducted a nursing practise concept study of compassion fatigue. Compassion fatigue is a state of physical and mental burnout that reduces empathy, work attitudes, and personal accomplishment. Healthcare workers experience compassion fatigue.

Ryn et al. found a statistically significant and positive correlation between burnout and compassion fatigue among Iranian nurses. They hypothesised that burnout treatments could also diminish compassion fatigue in nurses. Maben and Bridges [28] examined burnout and compassion fatigue in UK nurses. Burnout and compassion fatigue were positively correlated, indicating the need for particular therapies to improve nurses' mental health. Hunsaker et al. [29] examined burnout, compassion fatigue, and satisfaction in US nurses. Burnout, compassion fatigue, and compassion fulfilment were linked. Sacco et al. [30] investigated the connection between burnout, compassion fatigue, and the level of satisfaction experienced by critical care nurses. According to the results of their study, compassion fatigue was positively connected with burnout, while compassion fulfilment was inversely correlated with burnout.

H2 Psychological burnout is positively associated with Compassion fatigue among Nursing Staff in The Governmental Sector in Egypt.

Compassion fatigue and plans to leave nursing have been studied. Hinderer et al. [27] found that compassion fatigue positively correlated with turnover intentions in Turkish nurses. The study found that treating compassion fatigue may reduce nurses' inclinations to quit. Cocker and Joss [31] examined compassion fatigue, burnout, and career exit in Australian emergency nurses. They found that compassion fatigue was positively associated with turnover intentions and hypothesised that reducing compassion fatigue in emergency nurses could reduce turnover intentions. Fronda and Labrague [32] studied nurses and discovered a substantial positive connection between compassion fatigue and turnover intentions. The study was published in the journal Nursing Research. The researchers hypothesised that addressing the issue of compassion fatigue could assist in enhancing the mental health of nurses and lower the likelihood that they would leave their jobs.

H3 Compassion fatigue is positively associated with turnover intentions among Nursing Staff in The Governmental Sector in Egypt.

Studying compassion fatigue and nurse retirement. Compassion fatigue increased turnover intentions in Turkish nurses, according to [27]. Treating compassion fatigue may reduce nurses' quitting, the study revealed. Cocker and Joss [31] evaluated compassion fatigue, burnout, and career exit in Australian emergency nurses. They hypothesised that minimising compassion fatigue in emergency nurses would minimise turnover intentions. These studies indicate that compassion fatigue mediates the relationship between psychological burnout and turnover intentions among nurses. Interventions targeting compassion fatigue may help mitigate the impact of burnout on nurses' intentions to leave their jobs, ultimately benefiting both healthcare professionals and organisations.

H4 Compassion fatigue mediate the relationship between psychological burnout and turnover intentions among Nursing Staff in The Governmental Sector in Egypt

2.4.1 Proposed Model

See Fig. 1.
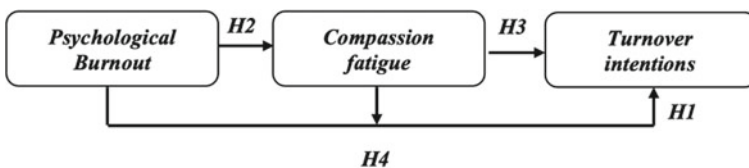
Fig. 1 Proposed Model

3 Methodology

Empirical descriptive and analytic methods were used to compile this study's findings. These methods included database surveying, utilising specific qualitative research approaches, and the field survey design to collect data via a targeted survey.

3.1 Sampling and Data Collection

The nursing staff in the governmental sector, Including the chief medical officer, the head of male nurses, the head of female nurses, the male nurses, the female nurses, the assistant of male nurses, the assistant of female nurses, and the home nursing staff, this includes everyone who works in the nursing field. Figure 2 reflects the number of Nursing Staff in the Governmental Sector in Egypt, which is 148600. The sampling method was chosen for gathering the necessary data because of the vast population of nurses working in the public sector, the time factor, and the cost considerations. According to the principle of large numbers, 384 people made up the sample size.

The sample was surveyed online for this study. The first section evaluates psychological fatigue. The researchers used a ten-item measure [33]. The second component evaluates compassion fatigue using a 13-item scale [34]. The final segment measured turnover intentions using a six-item scale [35]. A five-point Likert scale from Strongly Disagree to Agree Strongly. Online questionnaire data were collected using Google Forms. We analysed 365 of 411 replies—data collection from January to March 2023. Data analysis used SPSS and Amos Ver.18.
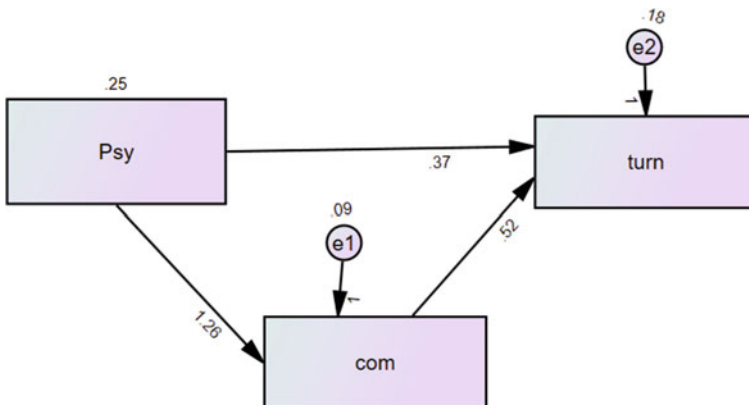
Fig. 2 Model

Table 1 Shows the CR, AVE, and Cronbach's Alpha coefficients

variables	Alfa	CR	AVE
Psychological burnout	0.827	0.836	0.737
Compassion fatigue	0.823	0.834	0.771
Turnover intentions	0.835	0.844	0.782

3.2 Reliability of the Field Study's Measures

Table 1 illustrates Psychological Burnout, Compassion Fatigue, and Turnover Intentions dependability and validity. CR and AVE are indices. Psychological Burnout; Cronbach's Alpha = 0.827 indicates good internal consistency, indicating that the scale's items are closely related and consistently measure Psychological Burnout. Strong Composite Reliability (CR): 0.836. The scale's CR score surpasses 0.7 indicates construct validity. AVE: 0.737, above the recommended limit of 0.5. The scale accurately measures psychological burnout. Compassion Fatigue; Cronbach's Alpha = 0.823 indicates excellent internal consistency, indicating the scale's components accurately assess Compassion Fatigue. Composite Reliability (CR): 0.834, over the 0.7 threshold, confirming construct validity for the Compassion Fatigue scale. Average Variance Extracted (AVE): 0.771 meets the convergent validity threshold of 0.5. The scale captures compassion fatigue. Turnover Intentions; Cronbach's Alpha = 0.835 indicates excellent internal consistency, showing the scale's components accurately reflect turnover intentions. Composite Reliability (CR): 0.844 exceeds 0.7, indicating construct validity for the Turnover Intentions scale. AVE: 0.782 shows satisfactory convergence. Turnover Intentions match the scale.

In conclusion, the table shows that all three scales—Psychological Burnout, Compassion Fatigue, and Turnover Intentions—have strong internal consistency, construct validity, and convergent validity, making them valid and reliable measures of their respective constructs in the study.

3.3 Data Analysis

Table 2 shows psychological burnout, compassion fatigue, and turnover intentions correlations. Positive correlation coefficients indicate a positive association between variables, while negative values indicate a negative relationship. Psychological burnout and compassion fatigue have a substantial positive association (0.904). Psychological Burnout increases compassion fatigue. Psychological Burnout and Turnover Intentions: These factors are positively correlated (0.746). Psychological Burnout raises turnover intentions. The correlation coefficient between compassion fatigue and turnover intentions is 0.772, indicating a moderately significant positive association. Turnover Intentions tend to increase as Compassion Fatigue increases.

Table 2 Correlation matrix

Variables	Psychological burnout	Compassion fatigue	Turnover intentions
Psychological Burnout	1		
Compassion Fatigue	0.904[a]	1	
Turnover Intentions	0.746[a]	0.772[a]	1

[a] Correlation is significant at the 0.01 level (2-tailed)

Testing H1 Psychological burnout is positively associated with turnover intentions among Nursing Staff in The Governmental Sector in Egypt.

Table 3 displays the regression analysis results examining the relationship between Psychological Burnout and Turnover Intentions in the Egyptian public sector nursing workforce. The table contains several important statistics:

- RPsychological Burnout and Turnover Intentions have a fairly positive correlation of 0.746.
- R2: Psychological Burnout explains 55.6% of Turnover Intentions. Psychological Burnout may explain Egyptian government nursing staff turnover intentions.
- Beta: Psychological Burnout's standardised regression coefficient (Beta) is 0.543, meaning that when Psychological Burnout increases by one standard deviation, Turnover Intentions increase by 0.543 standard deviations, all other variables held constant.
- The regression model's F-statistic is 455.487, indicating its importance. Models with high F-values fit data well.
- Psychological Burnout and Turnover Intentions have a statistically significant link, as the significance level (Sig) is 0.001, which is below the 0.05 threshold.

Testing H2 Psychological burnout is positively associated with Compassion fatigue among Nursing Staff in The Governmental Sector in Egypt.

Table 4 displays the regression analysis results examining the relationship between Psychological Burnout and Compassion Fatigue in the Egyptian public sector nursing workforce. The table contains several important statistics:

- R: Psychological Burnout and Compassion Fatigue have a substantial positive connection (0.904).
- R2: Psychological Burnout explains 81.7% of the variance in Compassion Fatigue. Psychological Burnout likely explains Compassion Fatigue in Egyptian government nursing staff.

Table 3 Regression analysis of psychological burnout and turnover intentions

Var	R	R^2	Beta	F	Sig	Status
Psychological burnout	0.746[a]	0.556	0.543	455.487	0.001[b]	Accepted

[a] Predictors: (Constant), Turnover Intentions

Table 4 Regression analysis of psychological burnout and compassion fatigue

Var	R	R^2	Beta	F	Sig	Status
Psychological burnout	0.904[a]	0.817	0.646	1617.681	0.001[b]	Accepted

[a] Predictors: (constant), compassion fatigue

- Beta: Psychological Burnout's standardised regression coefficient (Beta) is 0.646, meaning that when Psychological Burnout increases by one standard deviation, Compassion Fatigue increases by 0.646 standard deviations, all other factors held constant.
- F-statistic: 1617.681. Models with high F-values fit data well.
- Sig: Psychological Burnout and Compassion Fatigue are statistically significant since the significance level (Sig) is 0.001, below the generally used threshold of 0.05.

Testing H3 Compassion fatigue is positively associated with turnover intentions among Nursing Staff in The Governmental Sector in Egypt.

Table 5 displays the regression analysis results examining the relationship between Compassion Fatigue and Turnover Intentions among nursing staff in the Egyptian government sector. The table contains several important statistics:

- **R**: The correlation coefficient between Compassion Fatigue and Turnover Intentions is 0.772, indicating a moderately strong positive relationship.
- **R2**: The coefficient of determination (R2) is 0.595, indicating that Compassion Fatigue explains 59.5% of the variance in Turnover Intentions. This suggests that Compassion Fatigue contributes significantly to explaining Turnover Intentions among nursing staff in the Egyptian government sector.
- **Beta**: The standardised regression coefficient (Beta) for Compassion Fatigue is 0.786, indicating that, holding all other variables constant, as Compassion Fatigue increases by one standard deviation, Turnover Intentions increase by 0.786 standard deviations.
- **F**: The F-statistic for the regression model is 533.987, which measures its overall significance. A high F-value signifies that the model fits the data well.
- **Sig level**: is 0.001, which is less than the generally accepted threshold of 0.05, indicating that the relationship between Compassion Fatigue and Turnover Intentions is statistically significant.

Table 5 Regression analysis of compassion fatigue and turnover intentions

Var	R	R^2	Beta	F	Sig	Status
Compassion fatigue	0.772[a]	0.595	0.786	533.987	0.001[b]	Accepted

[a] Predictors: (Constant), Turnover Intentions

Testing H4 Compassion fatigue mediates the relationship between psychological burnout and turnover intentions among Nursing Staff in The Governmental Sector in Egypt.

Table 6 demonstrates a multiple regression investigation of Psychological Burnout, Compassion Fatigue, and Turnover Intentions in Egyptian government nurses. The concept suggests psychological burnout increases compassion fatigue and turnover intentions. Compassion fatigue boosts turnover. Psychological burnout causes compassion fatigue and turnover. Compassion Fatigue increases turnover intentions. SPSS and Multiple Regression Analysis tested the hypothesis that compassion fatigue mediates psychological burnout and turnover intentions. Relational paradigms were taught. The researcher used regression and multiple correlation analyses on psychological burnout as the independent variable and turnover intentions as the dependent variable (without compassion fatigue and with compassion fatigue).

Comparing these two situations can reveal compassion fatigue's involvement as a mediator between psychological burnout and turnover intentions. When compassion fatigue is included to the model, the association between psychological burnout and turnover intentions decreases or changes, suggesting that compassion fatigue mediates the relationship.

To conduct this analysis using SPSS, the researcher will take the following steps:

Without compassion fatigue, I will conduct a regression analysis with psychological burnout as the independent variable and turnover intentions as the dependent variable.

I will conduct a second regression analysis with psychological burnout and compassion fatigue as independent variables and turnover intentions as the dependent variable. Then Comparing, the coefficients, R-squared values, and significance levels in both models were used to determine the role of compassion fatigue in the relationship between psychological burnout and turnover intention.

Psychological burnout linear regression results are shown above. Analysis shows relationship intensity, direction, and importance. Results analysis:

Unstandardised Coefficients (B): show how much psychological burnout changes with a one-unit change in turnover intentions, with other parameters held equal. Psychological burnout is 1.845 with zero turnover intents. Turnover intentions

Table 6 The multiple regression weight between constructs

Variable	Path	Variable	Est	S.E	C.R	P
Compassion fatigue	←	Psychological Burnout	1.265	0.031	40.276	***
Turnover Intentions	←	Psychological Burnout	0.365	0.105	3.468	***
Turnover Intentions	←	Compassion fatigue	0.522	0.075	6.935	***

enhance psychological burnoutby 0.543%. Beta: Standardised coefficients represent the strength of the dependent-independent relationship. Higher coefficient absolute values indicate a stronger relationship. The 0.746% standardisation coefficient reveals that psychological fatigue strongly predicts turnover intentions. T-value: The T-statistic examines the null hypothesis that dependent and independent variables are unrelated. The turnover intentions T-value is 21,342, far over the 2 needed for 95% confidence. Psychological burnoutpredicts turnover. Importance (Sig): The *p*-value estimates the chance of a T-value as extreme as the null hypothesis (no link between variables). Employee turnover intentions had a 0.001 *p*-value compared to 0.05. Psychological burnout predicts turnover intentions, rejecting the null hypothesis. R: Linear correlations are measured by R. Psychological tiredness strongly predicts organisational departure (R = 0.746%). F-statistics assess regression model significance. With an F-statistic of 455.487, the model explains a lot of dependent variable variance. Regression research shows that psychological fatigue predicts staff turnover strongly, positively, and statistically. Psychological Burnout = 1.845 + (0.543 * Turnover Intentions).

Table: Multiple linear regression analysis of psychological burnout, turnover intentions, and compassion fatigue. The results:

If turnover intentions and compassion fatigue are zero, psychological burnout equals 1.335. Holding compassion fatigue constant, turnover intentions raise psychological burnout by 0.088 units. According to the unstandardized coefficient, each unit of compassion fatigue promotes psychological burnout by 0.579 units, assuming turnover intentions remain constant. Beta represents each independent variable's model contribution. Turnover intents are 0.120 Beta and compassion fatigue 0.81. Compassion fatigue influences psychological burnout more than company turnover intentions. *p*-values suggest psychological burnout is linked to turnover intentions and compassion fatigue. Turnover intentions are strongly associated with compassion fatigue and psychological burnout (R = 0.907). The model's R2 value of 0.823% demonstrates that turnover intentions and compassion fatigue explain 82.3% of psychological burnout. The model's F statistic (839,239) and significance level (Sig. = 0.001) indicate that the independent and dependent variables are not random. Psychological Burnout = 1.335 + (0.088* Turnover Intentions) + (0.579* Compassion Fatigue). Tables 6 and 7 show if compassion fatigue mediates turnover intentions and psychological burnout. As a mediator, compassion burnoutincreases the R-value from 0.746 to 0.907. Compassion fatigue mediates 26.7% of psychological burnout variance, boosting R2 from 0.556 to 0.823. Due to its high Beta value of 0.811, compassion fatigue buffers turnover intentions and psychological burnout. The model is statistically significant in both scenarios since the F statistic grows from 455.487 to 839.239 and the significance criterion stays at 0.001. Compassion fatigue greatly mediates turnover intentions and psychological burnout. Psychological burnout increases with compassion fatigue. It directly influences turnover intentions, underscoring the need of integrating compassion fatigue in nursing staff turnover intention and psychological burnout studies (Table 8).

Table 7 Psychological burnout and turnover intentions

Model		Unstandardised coefficients		Standardised coefficients	T	Sig
		B	Std. Error	Beta		
1	Constant	1.845	0.105		17.587	0.001
	Turnover intentions	0.543	0.025	0.746	21.342	0.001
R 0.746		R^2 0.556	Sig.0.001	F 455.487		

Table 8 The mediating role of compassion fatigue

Model		Unstandardised coefficients		Standardised coefficients	T	Sig
		B	Std. Error	Beta		
1	(Constant)	1.335	0.070		19.085	0.001
	Turnover intentions	0.088	0.025	0.120	3.458	0.001
	Compassion fatigue	0.579	0.025	0.811	23.301	0.001
R 0.907		R^2 0.823		F 839.239	Sig. 0.001	

4 Discussion

Psychological burnout, compassion fatigue, turnover intentions, and compassion fatigue mediation were explored in Egypt's public sector nursing profession. Psychological burnout, compassion fatigue, and turnover intentions in Egypt's public sector nursing profession are complex. All four assumptions were supported. The latest Egyptian government nursing survey confirms previous findings that psychological burnout is a major factor in nursing workers' intentions to retire. This study demonstrated a considerable positive correlation between psychological tiredness and nursing staff turnover intentions. Burnout therapies are needed to reduce nursing turnover worldwide. This study supports [27, 31], and Fronda and Labrague [32] that compassion fatigue increases nursing staff turnover intentions. Like Labrague and de Los Santos, job happiness and organisational commitment buffer burnout and the organization's burnout goals. This shows that nursing staff tiredness and turnover prevention efforts should incorporate multiple factors. Compassion fatigue mediated the relationship between psychological burnout and turnover intentions, confirming Zhang et al. [36] and [27]. This suggests that due to weariness, compassion fatigue and work engagement may lower nurse resignation. This study supports [27, 31], and Fronda and Labrague [32] that compassion fatigue increases nursing staff turnover intentions.

Several recommendations can be made to decrease the levels of psychological burnout, turnover intentions, and compassion fatigue among nursing staff in the public sector based on the findings of the current study and previous research:

Nurses need stress management and resilience training. To minimise burnout, these seminars, training, and support groups educate nurses stress management, relaxation, and mindfulness. Make nurses feel valued, respected, and recognised. Encourage teamwork and provide feedback. Maintain appropriate workloads, staff-to-patient ratios, and nursing resources. Flexible scheduling and breaks prevent compassion fatigue and burnout. To boost job satisfaction and organisational commitment, give nurses competitive pay, perks, professional development, and a sense of belonging. Counselling and mental health: Support nursing staff with employee assistance programmes, counselling, and treatment. Mentorship and peer support: Create programmes that help nursing staff learn, grow, and cope, especially newbies and those in difficult situations. To minimise emotional burnoutand preserve empathy, teach compassion fatigue, self-care, and personal and professional boundaries. Evaluate remedies for nursing staff burnout, compassion fatigue, and burnout intents. Data-driven nursing staff health strategies. These principles can reduce psychological burnout, burnout intentions, and compassion fatigue in nurses, enhancing their well-being and producing a more stable, productive, and compassionate healthcare workforce.

4.1 Theoretical Implications

The theoretical implications of the present study on psychological burnout, compassion fatigue, and turnover intentions among nursing staff contribute to the extant body of knowledge in several ways:

The study strengthens the relationship between psychological burnout and compassion fatigue, providing additional evidence to support the necessity of addressing both factors in the nursing profession. Clarifying the mediating role of compassion fatigue: The research emphasises the mediating role of compassion fatigue in the relationship between psychological burnout and turnover intentions, suggesting that addressing compassion fatigue may increase the effect of burnout on nurses' intentions to quit their jobs. Generalizability across cultures: The current study demonstrates that the association between psychological burnout, compassion fatigue, and turnover intentions in the profession is applicable across diverse cultural and healthcare contexts. This result enhances the validity of the theoretical framework.

4.2 Practical Implications

These findings can guide public sector nursing staff compassion fatigue and psychological burnout policies. Stress management courses, mindfulness training, and mental health support groups can help healthcare providers combat psychological burnout and compassion fatigue. Reduce workload, increase nurse-to-patient ratios, and provide more resources and support to improve nursing staff working conditions. Promote open communication, mutual support, and nurse recognition to reduce compassion fatigue and burnout. Nurses can better manage these problems by attending workshops or training courses on coping, self-care, and burnout and compassion fatigue. Organisations can improve their psychological depletion and compassion fatigue tactics by regularly evaluating and changing initiatives. This research's theoretical and practical implications can help healthcare organisations design evidence-based interventions and policies to prevent psychological burnout and compassion fatigue among nurses, improving job satisfaction, retention, and patient outcomes.

5   Limitations and Future Research

This study sheds light on the relationships between psychological tiredness, compassion fatigue, and turnover intentions among Egyptian government nursing personnel, notwithstanding its limitations. Cross-sectional design; this study cannot establish causality. Longitudinal studies may link psychological stress, compassion fatigue, and labour leave. Egyptian government-employed nurses were studied. Thus, international or private healthcare nurses may not be affected. Future studies could study these relationships in diverse contexts to improve generalizability.

Social desirability, memory, and other answer biases may alter self-report data in the study. Future studies may employ objective measurements or connect self-report data with supervisor ratings or other external assessments. Studying compassion fatigue, psychological tiredness, and turnover intentions. Job satisfaction, organisational support, and resilience may impact these links. These variables could be studied to understand nursing staff turnover intentions better. Egyptian culture may affect burnout, compassion fatigue, and job turnover. Cultural differences may explain outcomes. This could be studied later. Future research should overcome these constraints to understand nursing staff turnover intentions better and build on the current study's findings. This knowledge can improve nursing staff and patient well-being treatments.

6 Conclusion

This study helps us comprehend psychological burnout, compassion fatigue, and burnout intentions among government-employed nurses. Psychological burnout is linked to compassion fatigue and turnover intentions. Compassion fatigue also mediates the association between psychological burnout and turnover intentions: nursing staff burnout and compassion fatigue interventions. Healthcare organisations can support nursing staff and improve job satisfaction, retention, and patient outcomes by implementing targeted interventions, improving working conditions, fostering a supportive work environment, providing ongoing education and training, and monitoring their efficacy. Given the global nurse shortage, understanding and addressing burnout and turnover intentions is essential to maintaining a stable and resilient nursing staff. Healthcare organisations can improve nursing staff well-being and create a more sustainable and efficient system by addressing psychological burnout and compassion fatigue.

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How the Psychological Empowerment of Workers Effects the Relationship Between Ethical Leadership and Green Behaviors of Workers

Mohamed Ahmed Elbadawi Ali and Brihan Fatin Yahya

Abstract This paper contributes to the literature on ethical leadership and sustainability by highlighting the importance of psychological empowerment as a mediator in this relationship. This model has practical implications for organizations seeking to promote sustainable behaviors among their employees, and can guide future empirical research on the topic. And explores the relationship between ethical leadership, psychological empowerment, and green behaviors of workers. We argue that psychological empowerment of workers can act as a key mediator in the relationship between ethical leadership and green behaviors. Based on the self-determination theory and social exchange theory, we propose a model that highlights the psychological mechanisms underlying this relationship. Specifically, we suggest that ethical leadership can foster a sense of meaningfulness, competence, and autonomy among workers, which can enhance their psychological empowerment. In turn, this psychological empowerment can motivate workers to engage in environmentally responsible behaviors, such as Conversion, Preservation, avoid damage, influence on others, Take the initiative. We also suggest that the strength of this relationship may depend on certain individual and contextual factors. For example, workers with high levels of environmental concern may be more likely to respond positively to ethical leadership and exhibit greater green behaviors. Similarly, organizational factors such as sustainability culture, green training, and rewards for eco-friendly behaviors can amplify the effects of ethical leadership and psychological empowerment on green behaviors.

Keywords Psychological empowerment · Ethical leadership · Green behaviors of workers

M. A. E. Ali (✉) · B. F. Yahya
City University Ajman, Ajman, UAE
e-mail: e.ahmed@cu.ac.ae

B. F. Yahya
e-mail: f.brihan@cu.ac.ae

1   Introduction

Environmental pollution has become a more serious issue as a result of the exponential rise in the destruction of natural resources (Mandago 2018). People's health and living situations have suffered as a result all over the globe. To safeguard human civilization and natural resources for upcoming generations, governments and authorities from all over the globe are making significant efforts to eradicate harmful environmental effects and reduce carbon footprints (Guerci et al. 2016). People have begun requesting that organizations take measures to regulate and advance the concept of sustainability as a result of this element (Jyoti 2019). Due to their incompatibility with sustainability measures and inconsistent attitude toward turning green, manufacturing and firm growth have significantly contributed to negative environmental consequences (Pinzone et al. 2016). The fundamental research in this area, while taking into consideration the mediating effects of employee empowerment, focuses on the actions of leaders and how they affect the development of environmentally friendly behavior. One of the contemporary administrative techniques that has an influence on enhancing the effectiveness of human resources and supporting their performance is employee empowerment. Contemporary organizations have recognized the fact that, in light of the knowledge economy, there is a need for human beings with outstanding skills and potential for creative thinking and handling conditions of uncertainty and willingness to take risks (Spritzer 1995, pp. 1442–1465). Achieving this vision requires adopting an employee empowerment strategy, which is an approach to human resource development that leads to increased productivity and improved quality and profitability of the organization's products and services. The empowerment of workers has become closely related to leadership practices that seek to support the competitive capabilities of the organization, by providing the appropriate climate to enhance the empowerment of workers. Here it can be said that the green behaviors of employees may be closely related to ethical leadership, but it may be due to the organization leaders adopting leadership styles that do not follow a positive management approach that provides an opportunity to develop the capabilities of individuals and allows the preparation of distinguished cadres capable of achieving organizational goals. The concept of empowering workers is based on granting workers powers and encourage their participation in decision-making and instill confidence in their ability to achieve, so we need a leadership style with special features such as ethical leadership that emphasizes correct actions, positive behaviors, and distinguished relationships with individuals, which are supposed to have a positive role in empowering workers. Many contemporary organizations suffer from various administrative problems that exist "primarily" because of the leadership style followed, and this appears through the results of some studies conducted in this field, for example a study (Al-Jumaili 2008, p. 143), and he emphasized that one of the most important obstacles facing Employees weaken leadership ability to provide a climate that cares about workers' problems, as well as lack of evaluation and discourage innovation.

In this research focus on the specific mechanisms through which psychological empowerment may influence the relationship between ethical leadership and green behaviors. While it is clear that psychological empowerment is an important factor in promoting sustainable behaviors, more research is needed to understand the specific ways in which it influences this relationship and how it can be effectively fostered in organizational contexts.

Finally, there is a lack of research on the generalizability of these findings across different cultural and organizational contexts. While some studies have examined these relationships in specific countries or industries, more research is needed to understand how these variables interact in a variety of contexts and to determine the generalizability of the findings.

2 Ethical Leadership

Ethical leadership styles differ from other leadership styles because of their primary focus on standards and values (Abalola et al. 2018), and based on social learning theory (Bandura and Walters 1977), where it is assumed that individuals learn appropriate ways of working through the process of observing others and ethical leaders are models. Role models for normative behaviors, which can involve ethical ideas, values, attitudes, and behaviors. These leaders shape the behaviors of workers by setting themselves as role models and through psychological adjustment processes, including monitoring, imitation, and identification. Ethical leaders are project models and can address sustainability issues. Recently, with the increase in unethical issues for major international companies, the issue of ethical leadership has received great attention from researchers, managers, and politicians alike, because of its great impact on workers through values, principles, and beliefs that are based on accepted standards in organizational behavior (Alshammari et al. 2015). Brown et al. (2005) defined ethical leadership as showing appropriate leadership behavior in terms of adherence to approved and accepted standards in personal behavior and interpersonal relations, and promoting that behavior among followers and subordinates. It was defined by Saleem et al. (2005, 2020) as the intended ethical orientation by the leader when he solves issues or problems related to decision-making and action-taking, Pasricha et al. (2018) referred to it as a set of behaviors, values and standards that the leader performs through appropriate behavior that earns subordinates moral virtues to be good and beneficial to society and is viewed by Mo and Shi (2017) as implementation Stakeholders' expectations to improve the organization's environmental, social and ethical performance methods and the pursuit of commercial and ethical goals and social responsibility. Ethical leaders can provide employees with social and emotional resources and encourage environmentally friendly behaviors by successfully advocating for them, protecting them from injustice, providing them with job resources and through supervisor support and personal trust (Rahaman et al. 2020). Ethical leadership is also the indirect relationship. Between the formalization and prosperity of the employee at work through personal justice, the study

(Kalshoven et al. 2011) showed that the ethical leadership variable is represented in the following dimensions: Orientation towards individuals: It refers to the extent of focus and keenness to respect individuals and show real care for them. Justice and fairness: It is represented in equality, treatment and offering fair options.

3 Employee Green Behaviors (EGB)

3.1 Green Rating of the Five Green Behaviors of Employees

The majority of research on environmentally friendly workplace behaviors (and on environmentally friendly behaviors in general; see Kaiser 1998) focuses on predicting individual actions and frequently presents EGB as being restricted to resource conservation, material reuse, and recycling. A wide variety of employee behaviors connected to the environment must be taken into account in order to establish meaningful and generalizable research on employee green behaviors and successful organizational management of employee environmental performance. To inform perception, assessment, and intervention in organizational environmental sustainability research and practices, a taxonomy that encompasses the whole spectrum of employee green behaviors is required. The wide range of environmental activities that workers engage in while at work. The content-based categorization is what groups environmental activities together based on how similarly the actions are carried out, how similarly they serve a functional purpose, and how similarly they may have psychological foundations.

– **Conversion**

The behaviors in this descriptor category attempt to adapt and modify in order to improve the sustainability of work products and processes. Typical actions in this meta-category include utilizing a bicycle to commute instead of a car, purchasing things made locally, altering ordering processes to produce less waste, and processing paperwork on a tablet rather than a printer. The cornerstone of green employee behavior is transformational behavior. To some extent, all green behaviors demand that an individual modify their behavior and adapt to new methods of doing things (Maloney and Ward 1973). Function-specific examples include various types of green art performances. According to Wernick et al. (2016b), analysis factor and conversion behaviors are frequently the greatest indicators of the overall factor of employees' green activities.

– **Preservation**

Aiming to prevent waste and, hence, save resources, many activities fall under this descriptive category. Among these are practices often referred to as the "3Rs" (reduce, reuse, and recycle). We discovered that the "meta-save" category includes around half of all behavioral events throughout our investigation. Water, electricity, gas, and

other natural resources, as well as supplies and raw materials, are all included in conservation. Conservative actions may focus on different resources, but they all have the functional objective of preventing waste and the psychological principles of responsibility, thrift, and responsibility.

– **Avoid damage**

This descriptive category comprises actions taken to prevent and deter harmful environmental behavior, lessen negative effects, and mitigate or repair environmental damage. Behaviors that damage the environment by impairing ecosystem health and interfering with the normal biological, chemical, and physical processes that assist the planet in recovering from distress fall under the negative pole of this descriptive category. Polluting or, on the plus side, aggressively avoiding contamination are the most frequent actions in this category. The majority of the behaviors in this descriptive category were unfavorable in our critical incident databases. "Damage avoidance" is supported by the other two divisions, the main goal of protecting the environment. Monitoring environmental effects entails reviewing actions, procedures, and results to foresee the potential for long-term damage (e.g., estimating a person's carbon footprint, evaluating the water quality near industrial sites).

Influence on others: This categorization focuses on actions meant to spread sustainability-related habits among people. By taking advantage of economies of scale, influencing other people's behavior may increase sustainability; one person's pro-environmental actions can encourage others to behave in a more sustainable way. Because influencing others falls within the social category by nature, extraversion, agreeableness, and interpersonal abilities serve as its psychological foundations. The behaviors described in this descriptive category are constructed in a way that is compatible with general work performance behaviors related to management, leadership, and communication [1]. Leadership, empowerment, and support (or simply, green leadership) personal influence includes both behaviors that serve as effective environmental performance for others as well as behaviors that encourage, support, motivate, empower, and direct others to act more responsibly toward the environment.

– **Take the initiative**

This descriptive category comprises actions that defy convention, take chances, and contradict social norms. Due to their performance, these behaviors also call for a readiness to give up certain advantages and accept probable drawbacks (such as monetary loss, discomfort, and social repercussions). A more sustainable future is promoted by proactive actions such as actively altering the setting and rejecting the (unsustainable) status quo. Proactivity is the psychological foundation of taking initiative [2, 3]. The actions involved in taking the initiative, as opposed to those engaged in persuading others, may or may not be social in character and may be focused on conservatism, damage avoidance, or distraction. The extreme effort, self-sacrifice, and proactiveness required to succeed are the qualities that distinguish a person who takes initiative (see Campbell and Wernick's [1] Job Performance Model, Factor Effort, Perseverance, and Initiative). "Putting environmental interests first" is the last subcategory of "taking initiative." This subcategory refers to putting one's

own interests (personal, comfortable, convenient, economical, social, etc.) above the sustainability of the environment.

– **Psychological empowerment**

Psychological empowerment is an important and effective entry point in achieving self-efficacy, self-motivation, and building trust between superiors and subordinates. It is also an important means that can be exploited and invested in unleashing the distinguished skills and creative abilities of workers, providing more satisfaction, and positive orientation for the worker's view of the future life. A sense of the value and importance of work, along with a sense of freedom of action, independence and participation, leads his society to a sense of contentment, optimism, hope and happiness. Psychological empowerment encourages employees to think independently, to be able to accomplish their tasks, derive meaning from them, and make an impact in their work environment (Kumar et al. 2017). The studies of each of Spreitzer (1995), Spreitzer et al. (1997, 1999) and Kanungo and Conger (1988) contributed to the enrichment and crystallization of the concept of psychological empowerment, which focuses on the self-motivation of workers instead of focusing only on the management practices used by the organization's management to increase the level of authority Workers and their independence in performing the work assigned to them. Psychological empowerment can be defined as "that motivational tool that includes concepts of meaning, worthiness, autonomy, and a sense of influence" (Spreitzer 1995). It is an "internal motivation that arises through a number of variables that reflect the attitudes of individuals towards the tasks that they perform in the exercise of their jobs". Meyserson and Kline (2008) defined it as those feelings and feelings that organizations must arouse in workers to complete and accomplish what is assigned to them, tasks to them. Psychological empowerment arises through the awareness of workers, as they see it as something tangible through their psychological dimension, and in this regard he defines it (Carole 2006, p. 12) as "directing the activity of workers towards various challenges through their internal feeling of the ability to control and their sense of the existence of a meaning related to their goals psychological empowerment is not just an individual feeling that the worker feels individually, but rather it needs appropriate organizational and structural elements and factors, as well as appropriate relationships between managers and workers on the basis of support, trust and communication and providing workers with the necessary information in order for workers to feel responsible for the desired performance results achieved" (Crane 2013, p. 338). Thomas and Velthouse (1990) explained that psychological empowerment has four basic dimensions: a feeling of the meaning of work, a sense of influence, a sense of worthiness, a sense of independence. That this work really deserves the effort that is made to achieve it and that it performs a work with a noble message, and this was emphasized by Dickson and Lorenz (2009), in that the individual feels the meaning of the work he does according to his feeling and view of the importance of this work, and that It can be achieved if the individual expresses himself through the work he does, and this will only be achieved through psychological empowerment (Alkerdawi 2014). The second dimension comes from the dimensions of psychological empowerment, which is the feeling of influence, and

reflects the extent to which the individual feels and feels that he has a tangible influence in the work environment and on the work of others, and that he is influential in the work outputs, whether at the administrative or strategic level in the organization, and he also has an impact on the work of others. Third comes the sense of worthiness, and this dimension reflects the degree of performance of the individual's tasks and activities assigned to him by his wall, and both (Gist and Mitchell 1992) believe that merit is related to the degree of the individual's internal motivation, which in turn affects the individual's behavior at work. As for the fourth and final dimension, according to Thomas and Velthouse (1990), it is the feeling of independence, that dimension that reflects the individual's sense of his ability to control the actions he performs.

– **Relationship between ethical leadership and green behaviors of employees**

All leadership behaviors focus on encouraging pro-environmental initiatives (Barling 2013), and a large number of studies have documented the important role that leadership styles play in shaping employee behaviors that are pro-environmental, according to the study (Robertson and Barling 2013), where the leadership dimensions coefficients were applied consistently and influential, this positively affects the green behaviors of workers, and Afsar et al. (2016) indicated that spiritual leadership positively affects the behaviors of workers that are pro-environmental through self-directed moral values, and the formation of a spiritual work environment, While the study (Zhao and Zhou 2019) confirmed that inspirational leadership helps mobilize workers to achieve environmentally friendly goals, while my studies (Wang et al. 2018; Barling 2017 and Robertson) proved that green transformational leadership constitutes the harmonious passion of workers for pro-behaviours environment, which positively influences their engagement in these behaviors. While Tuan (201) showed that charismatic leadership has positive relationships with employees' pro-environmental behaviors, Lun (2019) added that servant leadership has a positive role in those behaviors. The book Administrative Thought paid great attention to ethical leadership due to its focus on ethics. Ethical leadership also positively affects many attitudes, behaviors, and work-related performance outcomes of employees, such as ethical behavior, organizational commitment, work engagement, knowledge sharing, learning, psychological well-being, emotional commitment, and job satisfaction (Chughtai 2019). He explained (Ahn et al. 2018; Bavik et al. 2018) that honesty, fairness, altruism, two-way communication, ethical accountability, collective response, and a sense of responsibility towards subordinates, clients, organizations, the environment, and society are the most important attributes of an ethical leader, in addition to that he considers protecting the natural environment a moral duty and is keen to show and encourage followers to adopt pro-environmental behaviors such as recycling and waste reduction (Wu et al. 2015). And to engage in those behaviors that are appreciative that protect the natural environment and those behaviors that are environmentally oriented are viewed as green behaviors. A study (Paille and Boiral 2013) showed that green behavior in the workplace and green behavior outside the workplace has surprisingly attracted the attention of researchers. Moreover, previous studies of green behavior in the workplace have monitored the impact

of organizational sustainability programs and the impact of leaders on those green behaviors (Norton et al. 2014; Paille and Boiral 2013).

– **Relationship between ethical leadership and psychological empowerment**

The study conducted by Muhammad and Ahmed (2013, pp. 160–186) on a sample of 40 people working in a wool company in Baghdad revealed that there is a positive relationship between empowering workers and developing organizations. Muhammad and Ahmed (2013, pp. 67, 124) presented his study to a sample of 300 employees of international civil institutions workers in the Gaza Strip, and the study found a strong direct relationship between administrative empowerment and the effectiveness of work teams. From Al-Buhaisi (2014, pp. 77, 130) an explanation of a statistically significant relationship with the effect of empowerment in achieving institutional excellence due to the variables (college, educational level, years of experience and age), and the study (Bukholwa and Karina 2015, pp. 103–119) aimed to reveal. The effect of empowering employees on job satisfaction in Al-Matahen Corporation in the state of Algeria for a sample of 84 individuals, and it was found that there is a statistically significant effect of all dimensions of the empowerment variable on job satisfaction. Miraj conducted (2015, pp. 62, 93) a study on 60 Sonatrach employees, where it was found that administrative empowerment in its dimensions has an effect on enhancing organizational creativity, and that the concerned organization supports employee empowerment through their trust in them. Boubaker found in his study (2016, pp. 143, 237) that there is a positive relationship between employee empowerment and organizational trust, as well as between employee empowerment and the quality of work life and the relationship between employee empowerment and the quality of professional life varies according to the organizational trust variable as a mediating variable. The study (Abdul Rahim 2016, pp. 56, 95) sought to determine the impact of job empowerment on the creative behavior of workers at the Tourism Promotion Authority in the State of Jordan. The sample size was 65 individuals, and the study. I reached several results, including that the effect of job empowerment on creative behavior was positive. For foreign studies and regarding the relationship between organizational learning and employee empowerment, a study of Ravangard et al. (2014, pp. 1–6) examined a sample of 100 medical science leaders at Shiraz University, and the results showed that there is a positive relationship between Dimensions of empowerment and organizational learning among sample members. Al-Hussain (2015, pp. 978–989) showed that empowerment in its behavioral, psychological, structural and social dimensions has a significant impact on innovation among employees (Ukil 2016, pp. 178–189). People working in financial institutions in the state of Bangladesh, I concluded that employee satisfaction and the quality of service provided are affected by the extent to which workers are empowered, a study (Sharma et al. 2018, pp. 1–6) conducted on a sample of 100 people in higher education institutions in the state India, it has shown a positive correlation between worker empowerment and the retention of informed workers. Finally, his study (Ulutas 2018, pp. 589–600) aimed to investigate the relationship between job satisfaction and employee empowerment. The study was applied to 19 industrial companies in Turkey, and the results were shown. There is a positive and

meaningful relationship between empowerment and job satisfaction among workers. Khadharmy and Aghawsini (2014, pp. 279–293) researched the relationship between ethical leadership and empowerment, a sample size of 722 people working in the tax administration in the city of Isfahan in the State of Iran was chosen, and it was found that there is a positive and meaningful relationship between ethical leadership and employee empowerment.

Previous studies on empowerment agreed on the positive impact of empowerment in promoting and supporting some organizational variables such as creativity, organizational development and job satisfaction, in addition to its role in improving the quality of professional life. As for ethical leadership, previous studies focused on researching the level of ethical leadership practice in addition to its relationship to organizational values, loyalty, organizational commitment, and organizational citizenship. These studies show a positive relationship between moral leadership and these variables, and the current study has benefited from previous studies in defining the dimensions of the study and designing the measurement tool, as well as interpreting the results of the study using it in relation to results of previous studies. In addition, the current study focuses on examining the relationship between moral leadership and employee empowerment, which was addressed in only one study conducted in a foreign work environment that differs from the reality in which our Arab institutions operate, which means the need to conduct such studies in the environment of Arab organizations and test Relationships, and results that express the conditions of those organizations, and the current study's contribution in this field. Therefore, the first hypothesis can be formulated as follows.

– **Relationship between green behaviors of workers and the psychological empowerment of workers**

In recent years, it has been observed that the idea of green HRM practices has gained a lot of importance among the masses due to the increasing interest and awareness of people about environmental sustainability (Dumont et al. 2017). Green HRM practices have the potential to influence employee behavior at the individual level and enable them to perform their work-related tasks and activities while observing environmental sustainability measures (Shen et al. 2018). The idea of green human resources management includes adopting environmentally friendly human resource initiatives that help the company achieve greater efficiency and lower cost. The study by Upatha and Arulraja (2014) identified that less paperwork, recruitment through the online platform, use of electronic documents, virtual interviews, bans on plastic bags and lunch boxes in the workplace, a policy of turning off non-essential devices at charging points and encouragement. Employees to use sustainable vehicles for transportation. Employee empowerment regarding environmental sustainability influences their positive behavior towards employees' behavior (Nejati et al. 2017).

However, there are various factors of ethical leadership practices that influence green employee behavior and employee empowerment in the organization. Environmental training for employees is one of the main factors influencing green employee behavior in an organization and developing their knowledge regarding environmental

sustainability (Wu and Chen 2020). Pham et al. (2019) stated that environmental trainings can help the employee understand how they can play their role in improving the environment of the organization and society that will influence their behavior towards environmental sustainability. Green rewards are a critical factor in human resource management practices that influence employee behavior, empower and motivate them to play their active role in environmental sustainability (Yusliza et al. 2017). The study contemplated by Zaki and Norazman (2019) determined that green rewards such as a cash discount card for purchases from any outlets of organic and eco-friendly products and compensation package consist of green skills acquisition trainings (Al-Masry and Jarun 2017). Green rewards motivate employee commitment towards environmental responsibility (Tarek et al. 2016).

In this regard, the hypothesis was formulated.

4   Summary of Key Findings

1. Ethical leadership and psychological empowerment have a good link.
2. There is a good correlation between ethical leadership and workers' environmental habits.
3. Employees' green practices and their psychological emancipation are positively correlated.

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Effects of New Medical Regulations on Organization's Performance—Empirical Evidence for Medical Industry in Germany from the Lens of Public Interest Theory

Hosam Azat Elsaman, Genaro Verador Japos, Dina Sabry Said, Suriya Kumaran Kousihan, and Liza Gernal

Abstract The European Union's regulatory system underwent a significant modification on May 26, 2021, with the implementation of updated regulation (EU) 2017/745 for medical devices MDD. This study is the first to conduct empirical and statistical research with primary data collection to assess the implementation of a new MDR and uncover the necessity of further investigation into these regulations. The methodology utilized by the researcher was a cross-sectional and correlational research design with the use of random sampling methods. The study finding has been validated statistically by exploratory factor analysis and descriptive and inferential data analysis techniques using SPSS 26 and SPSS Amos 26. The primary study variables are SME Organisational Performance, SME financial condition, and MDR implementation process. The study statistically highlighted and approved the

H. A. Elsaman (✉)
School of Business Management, College of Business, University Utara Malaysia, 06010 Sintok, Kedah, Malaysia
e-mail: hosam_azat_e@cob.uum.edu.my

G. V. Japos
Postgraduate College, Polytechnic University of Philippines, 1016 Manila, Philippines
e-mail: gvjapos@pup.edu.ph

D. S. Said
College of Business Administration, American University of Middle East, 250 Egaila, Kuwait
e-mail: dina.said@aum.edu.kw

S. K. Kousihan
York Business School, York Saint John University, York YO31 7EX, UK
e-mail: kousi80@gmx.de

L. Gernal
Westford University College, Sharjah, UAE
e-mail: liza.g@westford.org.uk

negative impact of applying the MDR EU (2017/745) on SME financial performances, environmental processes, and business growth opportunities due to impractical implementations. Additionally, the study spotted the efficiency of the transparency monitoring process of MDR as an advantage for the medical devices industry. Ending by developing a practical model and recommendations for better business practice.

Keywords Medical devices regulation · Public interest theory · Inferential statistics · Structural equational modeling · Germany

1   Introduction

The Healthcare industry, especially the medical device business, realizes the importance of most people. This sector has been seriously affected by the occurrence of the recent pandemic that plagued the world. Therefore, SMEs need to introduce modifications and maintain competitive advantages. With the advent of globalization, the international medical device market is developing to provide suitable healthcare services and search for new sales channels for their products [1]. In this study, the author examined public interest theory and regulatory evidence from various studies and discussed the implications of these theories on the nature of regulation in the medical devices industry in Germany. The researcher analysed how public interest theory has been used to address certain problems and how certain special interest groups have challenged it. Additionally, demonstrate that public interest theory is an essential concept for understanding the way governments function, as well as the various challenges and implications it presents on [2]. More and above, the author discussed the history, principles, and implications of public interest theory, as well as its relevance to current issues of the decree the MDR (2017/745) and claiming the absolute benefits of this new regulation for the patients and the businesses.

The new European legislation (explained in this research) may result in disproportionately higher costs for SMEs and an amplified administrative burden, possibly leading to the incapability of certain companies to continue creating new products and, consequently, hamper for the development of MDs. Meanwhile, Elsaman and Sergio [21] states that the organization's senior management attempted to discover new tactics and take steps to make the most of new markets or take on new market trends at the international level. According to a study by [3, 4], economic conditions have changed drastically in recent years, so medical device firms should adjust to these changes. Thus, more-oriented initiatives are needed to find solutions that reduce healthcare expenditures while boosting health quality [5]. The leadership role is regarded as the most significant in this regard, as the plans applied to medical SMEs only sometimes provide the best interests of individuals.

2   Review of Literature

2.1   *Public Interest Theory Overview*

The basis of the theoretical research background is the "Public Interest Theory" of regulation, which argues that government regulation works for the benefit and protection of the public. The public interest is the benefits of the community and society. In this context, regulation refers to the use of legal instruments (rules and regulations) to achieve political goals [1]. Public interest theory combats public choice and regulation capture by explaining regulation and its impact on the common good. In today's economies, resources are predominantly allocated via markets. Theoretically, this allocation is optimal, but the necessary conditions to achieve this optimum are often lacking. The restriction creates the possibility that some interventions could improve the situation. One such intervention is government regulation [6]. According to public interest theory, government regulation can strengthen markets by compensating for poor market performance, erratic market performance, nonexistent markets, and unfavourable market performance. Regulation can facilitate, maintain or mimic markets. This theory is part of welfare economics. It emphasizes that regulation must maximize the public good and be based on a cost–benefit analysis to decide whether the increase in public good outweighs the costs of regulation [7].

The concept of Public Interest Theory plays a crucial role in the study of government and politics, as it is based on the classical notion of representative democracy and the government's responsibilities. This theory asserts that civil servants should carry out their duties in a well-organized and specialized hierarchy, making decisions that balance the means and ends while following the exact policy set by lawmakers [8].

Since the 1960s, the Chicago School of Economics has been a significant major contributor to the development of theories that challenge the idea of benevolent regulators. This school of thought has proposed public choice and regulatory capture as counterpoints to public interest theory, which suggests that regulators look out for the public's best interests [9].

According to his research paper, Hantke-Domas [9] argued the Public Interest Theory of regulation and assumed this theory might not be accurate. Moreover, Stigler's and Posner's definition of Public Interest Theory resembles the welfare economics basis for regulation. The resemblances do not necessarily prove or refute a correlation between the public interest and the welfare economics rationale for regulation. Microeconomic literature suggests the existence of two competing theories of regulation. The first, the Public Interest Theory, posits that regulation works to protect and benefit the public. The second, the Chicago theory, argues that regulation does not benefit the public but only serves to protect the interests of groups [10].

2.2   Public Interest and Health Regulations

Public interest theory is a framework for understanding and analyzing the health policy landscape. It focuses on the interests of the public and seeks to identify the best policies to protect and promote public health. It examines the underlying factors contributing to health disparities, such as access to health care, environmental hazards, and socioeconomic conditions, and how they interact with and influence public health outcomes. Public interest theory aims to identify and implement policies that will benefit the most significant number of people, aiming to improve overall public health. Health policy action is the practical application of public interest theory to create and implement policies that will provide the best health outcomes for the public [11]. It involves assessing the current health policy landscape and developing initiatives to address the underlying issues.

2.3   Medical Device New Regulation (MDR)

The EU (2017/745) new medical device regulation is a significant development around medical device regulation, as it introduces a new set of requirements and standards which must be met before a device is allowed to be sold in the EU [12]. This new regulation aims to improve the safety and quality of medical devices and is expected to have a major impact on the industry. It covers a wide range of aspects, from design and manufacturing to labeling and traceability, post-market surveillance, and more. The regulation also requires manufacturers to create and maintain technical files, which must be made available to the competent authorities for review [13, 14]. In addition, it includes requirements for clinical evaluation and medical device vigilance systems, which are intended to ensure that devices are safe and effective for their intended use. By introducing these new requirements, the EU hopes to ensure that medical devices are of the highest quality and safety for patients and healthcare professionals alike [15].

2.4   Organizational Performance

The manufacturing of medical devices is different from other industries in several ways. The manufacturing industry accelerated the development of new medical devices for the past 25 years, driven by the rapid advancement of scientific and technical knowledge [16]. However, developing new products and processes is relatively risky and typically requires more resources than some other sectors of the economy. Barriers to entry exist in the form of applicable regulations, especially for newly developed products, which provide specific relief from competition [14]. Government regulations limit the competitive conditions in which companies can operate

with an acceptable return on investment. These regulations define the structure of medical devices, development, pre-clinical and clinical studies, pre-market approval, registration, production, storage, advertising and promotion, sales and distribution, export and import, and market control. Medical researchers and potential users of new medical products play a vital role in this process.

2.5 Research Objectives

The medical regulation (2017/745) has been implemented in Germany "to ensure the safety and efficacy of medical devices" in the market. The research investigated the impact of the regulation on the stakeholders involved and analysed the effects of the regulation on the performance of the medical device sector. The research also crafted the possible solutions and recommendations for further improvement of the regulation.

1. To investigate the relation between the EU's new MDR implementations and SMEs' financial situation for both dimensions (financial burdens and commercial performances).
2. To test the MDR execution model through the lens of the theory of public interest.
3. Develop a practical model and craft recommendations for better practices in the medical devices sector.

2.6 Research Questions

1. Is applying the new MDR regulations improve the SMEs' financial situation?
2. To what extent are the SME's Organisational Performances affected by the MDR implementation?

2.7 Theoretical Framework

At present, health policy plans are put to trial. Given mounting costs and monetary shortfalls, well-being affect appraisal and cost–benefit-investigation of various well-being approach has gotten fundamental issues for well-being framework changes in numerous nations. In this situation, specialists and representatives repeatedly emphasize the restricted developments offered through clinical consideration and accentuate the significance of anticipation and wellbeing advancement approaches. Ironically, up until now, in the more significant part of nations, just restricted endeavors have been made to execute such approaches. The theoretical flow chart shows the potential relations between MDR implementations and SME business, financial performance (Fig. 1).
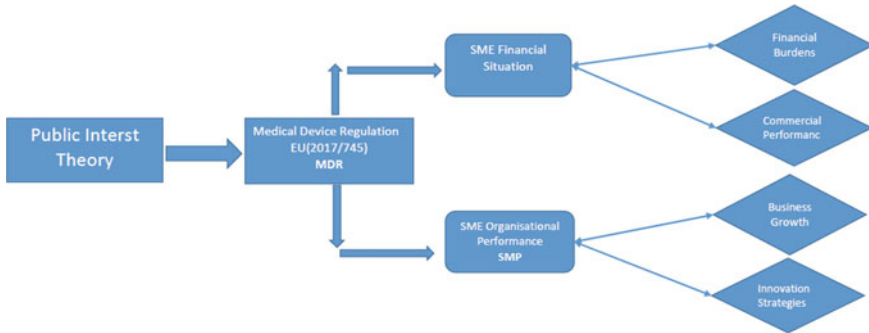
Fig. 1 Theoretical background and research flowchart developed by author

2.8   Conceptual Framework

The researcher illustrated the research variables by applying the input–output process model. This research presents an "Input–Process–Output (IPO) model" as the framework to conduct lifecycle examination and to spot operation standards for assessing the implementation of EU MDR on Organizational Performances. To classify and explain the phases of the procedure and system lifecycle described in this framework, the researcher uses an IPO (Input–Process–Output) model. This model offers several advantages.

2.8.1   Dependent Variable

The first dependent variable is the SME's financial situation. After implementing the MDR, the researcher refers to this variable by SMF, and it consists of two: factor of financial burdens as the organization's financial situation and burdens, and the second is commercial performance, such as sales capacity and trading exchange process. Meantime the other dependent variable is SMP which stands for SME organizational performance. This also includes two factors: SME strategies and Business growth.

1. SME's financial situation (SMF) includes two factors:

   - Financial Burdens
   - Commercial Performance.

2. SME's organizational performance (SMP) with two factors:

   - SMEs Strategy
   - Business Growth.

2.8.2 Independent Variable

The study's independent variable is the Implementation of Medical device regulation (MDR) which consists of two factors. The first is the MDR implementation process includes the time of the process and the restricted clauses more and above the regulation updates in this law. The second factor of MDR is the transparency enhancement regulation, a new addition to the draft of the new regulations law.

- MDR Implementation
- Transparency Enhancement.

2.9 Research Hypothesis

In this section, the researcher will elaborate on the central study hypothesis, how it developed, and justify the reasons for formulating this research assumption. The central research hypothesis is: There is an effect of adopting the current MDR process on SME performance.

H1: Investigate the relationship between SMEs' financial performances (SMF) and regulation implementations (MDR).

H2: Investigate the relationship between SMEs' organizational performances (SMP) and regulation implementations (MDR).

3 Methodology

Research involves systematically discovering new information previously unknown to the researcher [17]. Methodology refers to the philosophical framework that guides research or the foundation on which the research is based [18]. This study thoroughly explains the methods, strategies, and designs used throughout the research in the research methodology chapter. The chosen approaches and designs are justified by detailing their advantages and disadvantages, considering their practical application for the research.

3.1 Research Design

The research design is based on cross-sectional and correlational design. A cross-sectional study design measures the outcome and effects of study participants at the same time. Participants are selected based on specific criteria, and this design is commonly used for population surveys and to evaluate the implications of MDR regulations on SMEs. Cross-sectional studies are quick and cost-effective and can be

used as a baseline for correlational studies. The author applied the descriptive cross-sectional research with an inferential correlational step. The objective of correlational research is to explore 'the degree to which distinctions in one study variable are identified with changes in one or more different significant variables' [19]. This paper examines three key topics: the use of correlational research, analyzing and interpreting data from correlational research studies, and the implications of MDR on SME business and financial performance. The discussion around the use of correlational research focuses on the need to quantify the number of respondents using a particular survey to measure the presence of a specific characteristic in a population. The primary purpose of these studies is to assess the number of SMEs affected or needing regulation changes.

3.2 Research Population

The study geographically focused on the significant companies in the Bavarian region represented in Munich and Stuttgart, Nürnberg, and Frankfurt, mainly south of Deutschland territory. The reason behind choosing this region is that most medical device companies are located within this area. The number of medical device companies in Bavarian and Baden-Württemberg territories is 202, 274, respectively. Therefore, the total number of medical device companies' population is 476. These two regions were chosen to conduct the study because most SMEs working in the healthcare and medical devices sector are centralized in these areas. Likewise, they are easily accessible, well-staffed, and organized premises. The other corporates in the different provinces have very few censuses to warrant consideration for inclusion in this study.

The researcher will follow the probability sampling approach by choosing a simple random technique that helps select the participant within the sampling frame of the population. In a simple random sampling method, every population company has an equal chance to be included in the sampling frame. The sampling size is calculated by the probability factor for population (P) formula $[P = 1 - (1 - (1/N))\,n]$, in which N is the main population and n is the sampling size. For a simple random technique in this formula, $P = 0.10$, $N = 476$, by running the equation $n \approx 47$. The list of 47 companies is randomly selected from the 476 SMEs in medical devices in Germany. The purpose of selecting this method is because it is the most reliable technique among probability approaches, as it performs a single random selection step and needs some awareness about the general population. Moreover, the randomization in the sampling technique requires a high value of the validation process for the collected data [20].

3.3 Research Respondents

The questionnaire was circulated for the randomly selected forty-seven SMEs, especially for these companies' management and regulatory departments, who were available at the time of data collection to function as research respondents. The researchers received only 112 responses from twenty-three companies out of a total of 47 populations. All study participants for this sample were asked to answer a question constructed for them to describe their experience and positions in medical devices SMEs to monitor the quality of the survey and assure those participants related to the specific sectors of organizations. The author excluded several two organizations as the result of being irrelevant to the research inclusion criteria.

3.4 Instrumentation

The research instrument was formulated of three (3) sets of variables with 29 factors. The first part of the questionnaire dealt with the new medical device regulation variables, including, environment, transparency, and implementations. The second part of the questionnaire focuses on SMEs' organizational performance and corporate development context, including any existing challenges. The third part of the survey related to the financial difficulties and marketing burdens for SMEs. The survey adopted a Likert pattern of five points rating scale starting from completely agree to end with completely disagree. The numerical system for responses facilitates the interpretation of collected data.

3.5 Survey Construct Reliability

The researcher used composite reliability to evaluate the consistency of the construct's internal components. This approach examines the relationship between a group of items in a dataset or measurement [22]. A factor is an unobservable variable that affects multiple known indicators and explains their connections. Composite reliability assesses the internal consistency of scale items, like Cronbach's alpha [23], and measures the total actual score variance with the total scale score variance, as described by Brunner [25]. It is a practical statistical method that indicates how well a set of measurements or data can represent a small number of variables (Table 1).

One more test for construct validation is KMO test. The Kaiser–Meyer–Olkin (KMO) measure is a statistical tool used to determine the relevance of data for factor analysis. The test measures how well each variable in the model and the entire model itself are represented in the sample. The statistic represents the shared variance among variables. To guarantee precise outcomes, it is essential to supplement the Bartlett test with a measure of sampling adequacy, as even slight deviations from randomness

Table 1 Composite reliability results computed using Excel and SPSS 26

No	Variables	Composite reliability coefficient
6	SMP	0.82
6	SMF	0.77
8	MDR	0.83

Table 2 KMO and Bartlett's test results computed using IBM SPSS 21

KMO and Bartlett's test computed by author using IBM SPSS 21		
Kaiser–Meyer–Olkin measure of sampling adequacy		0.883
Bartlett's test of sphericity	Approx. chi-square	144.905
	df	21
	Sig.	0.000

can significantly affect the test's sensitivity due to the large sample size. KMO tests for the appropriateness of the data for factor analysis. It assesses the extent to which the indicators of the construct belong together. According to [25], the KMO measure should ideally be above 0.80, but a measure above 0.60 is still acceptable [26].

Bartlett's Test of Sphericity

A statistical method can objectively test if a correlation matrix can be factored in. The theory being tested is that the matrix has ones on its main diagonal and zeroes in all other positions (Table 2).

The result of the KMO test was 0.883 more than 0.80 which is significant, also for Bartlett's test $P = 0.000$ less than 0.05, the values refer to the adequacy of the sample for the KMO test and the applicable factors correlation matrix to be tested for the Bartlett's test.

4   Findings and Results

The results revealed that the mean score for agreeableness for financial performance variables was 1.85. The employees were willing to acknowledge the adverse effects of implementing MDR on the financial status of SMEs, which resulted in additional expenses for these businesses. The SD was 0.757, which indicates that the data was less scattered and thus more reliable because a higher standard deviation means data is dispersed more widely and is less dependable. However, in this case, the SD was under 1. The skewness and kurtosis values (0.984 and 3.464, respectively) were lower than ± 1.0 and ± 3.50, indicating that the data was normally distributed. The skewness value suggested the data was right-skewed, while the kurtosis value indicated the data was slightly extended compared to average distribution data. In

the same way, the mean of commercial performance was 2.11, correlating with the notion that the new MDR harmed SMEs by decreasing their market share and sales capacity in Germany and Europe. The fact that the standard deviation was less than one implies that the data was clustered close to the mean. Furthermore, the skewness and kurtosis values (0.807 and 1.680, respectively) were near the cut-off points of 1.0 and 3.50, confirming that the data was normally distributed.

The analysis of the factor revealed a mean of 2.05, suggesting that the respondents agreed that the new MDR did not encourage or creativity in the German medical device industry in Bavaria and the south of Germany. The standard deviation, skewness, and kurtosis values (0.656, 1.117, and 1.680) indicated that the data was closely spread around the mean and followed the normal distribution. The research indicated that several firms began to enact exit plans from the market due to new regulations for the MDR. The business growth variable revealed a mean (1.70) that demonstrates the substantial agreement of respondents regarding the new MDR implementation diminishing the SME's business growth strategies. Additionally, the SD, skewness, and kurtosis results are (0.919), (0.610), and (2.691), respectively, which explained the dependability of little spread of data to mean and the regular distribution pattern of data for skewness and kurtosis. The study's independent variable MDR implementation finding highlighted the sample's strong rejection and negative feedback for implementing new MDR and the number of regulatory bodies plus additional restrictions. The mean is (4.07), which refers to the respondents' disagreeableness attitude. While the outputs (0.869), (0.565), and (3.250) for SD, skewness, and kurtosis in a consecutive way explained the nature of normality data distribution of skewness and kurtosis. The value of skewness indicated the data distribution was right skewed, and the kurtosis value referred to data distribution was slightly tailed in comparison with average distribution data, SD value interprets the clustered distribution of data for mean value. On the other hand, the feedback about this point for the efficiency of applying new MDR for transparency factor in the medical devices industry is close to neutral with a mean of (2.48). Further inferential analysis between research variables is suggested to shed light and explore this factor. The significant data set skewness proportion is slightly skewed, which indicates that it is suitable for parametric data tests like Pearson correlation since the number of responses is more than 100.

4.1 Hypotheses Investigations

Hypothesis 1

The test outcome examination detected a strong negative connection between MDR execution and money-related weights, as appeared in. The revelation of Pearson correlations is -0.55^{**}, P value $= 0.000 < 0.01$, which affirmed the elective speculation H1.1a and dismissed H1.1o null theory. As indicated by an investigation finding, the impractical usage of the new MDR adds an extra monetary burden for SMEs in the medicinal health industry in Germany. The quantity of informed bodies

needs to be improved to apply the new MDR adequately. Besides, the huge item list that included 500.000 things included additional limitations and boundaries to applying the guideline.

Arrive at this result − 0.26**, *P* value = 0.000 < 0.01 in Pearson correlation and < 0.05 in the Spearman correlation matrix, which validated the alternate hypothesis H1.4a and rejected H1.2o null hypothesis. The exploration results recognized the connection between transparency improvement and SMEs' Organisational Performances by incorporating extra conventions and applying for UDI numbers with improper systems that caused a severe decrease in item portfolios in many organizations and will adversely affect the business competitiveness capacities of organizations.

Hypothesis 2.1

The correlation matrix results detected an apparent negative relationship between MDR implementation and SMEs strategy (IST), as shown in Table 1. The finding of the Pearson correlation is − 0.41**, *P* value = 0.000 < 0.01, which approved the alternative hypothesis H2.1a and rejected H2.1o null hypothesis. A study result has concluded that restrictions put in place by the MDR have stifled strategies in SMEs. Notifying body approval has been extended from 13 to 18 months, which has harmed businesses. The limited two-year validity of certificates has also been seen as an impractical limitation.

(CFA) or Confirmatory factor analysis is a statistical tool applied to validate and confirm the observed variables factor structure. With structural equation modeling SEMs, the author can examine and evaluate multivariate causal relationships and detect the direct and indirect effects they have. According to Fan, SEM is a highly effective tool for uncovering cause-and-effect relationships.

As depicted in Fig. 2, the model was fitted according to that. According to [26] conventional thresholds, the fit indexes of this CFA model are acceptable and indicate a good fit with the data. Specifically, the chi-square is 300.605 with 207 degrees of freedom, resulting in a CMIN/df of 1.452. The root mean square error of approximation (RMSEA) is 0.066, the comparative fit index (CFI) is 0.929, and the standardized root mean square residual (SRMR) is 0.055. According to Fig. 2, the Estimate value indicates the effect of MDR implementations on SMEs' Organisational Performance and the link between dependent (SMEP) SMEs' Organisational Performance and independent variables (MDR implementation). The *p*-value for MDR is 0.000, which is incredibly significant. Additionally, the *p*-value of SMF is 0.001 also shows the significance of this SEM model. Estimate values explain the degree of variations that happens in dependent variables (SMP) and (SMF) as the results of the independent variable (MDR). As shown in Fig. 2, for each 1% MDR implementation increase, the SMP business growth will decrease by 2.253%. Similarly, for commercial performance, the results detected the relation with MDR as below: for each 1% MDR implementation increase, the SMP strategies will decrease by 1.935%.
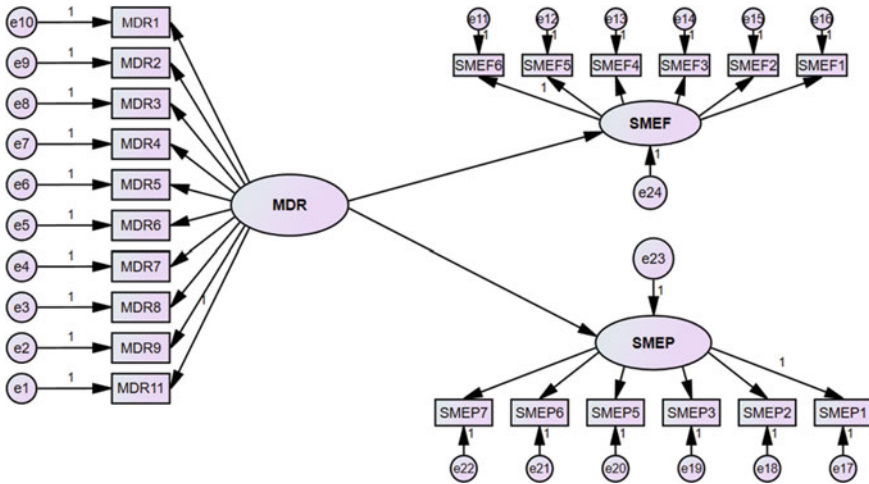
Fig. 2 SEM structure computed using SPSS AMOs 26

4.2 Study Finding Summary

The research's main objective was to figure out the effect of new MDR enforcement on the SME's business and financial performance. After reviewing the study findings and results plus conducting the validation and statistical equation both descriptive and inferential analysis with different tools and patterns, the researchers highlighted the research outputs as below:

1. The results detected a significant negative relationship between MDR implementation and SMEs' financial performance. According to the study, the impractical implementation of the new MDR adds an extra financial burden for SMEs in the medical devices industry in Germany. There needs to be more than the current number of notified bodies to apply the new MDR effectively. Moreover, the extensive product portfolio that included 500.000 items added additional restrictions and barriers to applying the regulation.

2. Research findings have uncovered a significant negative effect of the MDR implementation on SME commercial performance. We found a strong connection between the MDR and decreased sales for SMEs operating in the medical device industry in Germany. Companies must first obtain EU 2017/745 conformity permission and approval before they are allowed to sell products in European markets, which has substantially impacted sales. Furthermore, many niche products have been taken off the market due to the more specific and extensive regulatory requirements.

3. The results showed the efficacy of enhancing transparency by adding different protocols and applying a Unique Device Identifier number. The new protocol for transparency processes, such as the Unique Device Identifier number, did not harm financial or Organisational Performance for SMEs; rather, it was seen as a

strength for complying with Medical Device Regulations (2017/745), specifically with regards to post-market surveillance articles [83–86–92, Annex III].

4. According to the study, the enforcement of new regulations and the application of the MDR negatively impacted the strategies of SMEs, resulting in a delay in notification of body approval from 13 to 18 months, which had a detrimental effect on businesses. Additionally, the two-year validity of the certificate could be more practical, especially considering the current COVID-19 pandemic and its consequences for SMEs in the medical field.

5. The restrictions in the industry, coupled with the incorrect application of the MDR that caused a drastic reduction in product portfolios, hampered the commercial competitiveness of companies, which may lead to the cessation of some firms in the medical devices sector or the conversion to non-medical activities. Additionally, different interpretations of the MDR Regulations between manufacturers and notified bodies could result in unequal treatment of manufacturers due to ambiguous circumstances.

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Healing the Negative Consequences of Working from Home During the COVID-19 Pandemic: Strategies for Employee Well-Being and Productivity

Mahmoud Mohamed Elsawy

Abstract The COVID-19 pandemic has precipitated a rapid and pervasive shift towards remote work, upending traditional work arrangements and introducing new employee challenges. While working from home provides employees flexibility and security, it also negatively affects their health and productivity. This paper examines the numerous negative effects of remote work and proposes strategies for reversing and mitigating their effects on employees. By understanding these obstacles and instituting effective interventions, organisations can support the health and productivity of their employees during and after the pandemic.

Keywords COVID-19 pandemic · Negative consequences · Working from home · Employee well-being and productivity

1 Introduction

The COVID-19 pandemic has changed how we work dramatically, with remote work becoming the new norm for many firms worldwide. Businesses were forced to react quickly by enabling staff to work from home while governments and health authorities introduced social distancing measures to prevent the virus's spread. While remote work provides numerous benefits such as flexibility, reduced commuting time, and increased safety during the pandemic, it also has several negative consequences that can negatively impact employees' well-being and productivity [8, 11, 34].

Once considered a luxury or occasional arrangement, working from home has become a prevalent and sustained practice across various industries and job roles. This dramatic shift has introduced a range of challenges that can adversely affect

M. M. Elsawy (✉)
City University Ajman, Ajman, UAE
e-mail: R.elsawy@cu.ac.ae

Sadat Academy for Management Sciences, Cairo, Egypt

employees' professional and personal lives. It is crucial to understand these negative consequences to implement targeted interventions that address them effectively [18].

One of the primary challenges posed by remote work is social isolation and loneliness. The absence of daily face-to-face interactions and informal conversations in a traditional office setting can lead to feelings of isolation and disconnect. This can have a detrimental impact on employees' mental health, job satisfaction, and overall well-being. Combatting social isolation and promoting social connections among remote employees is thus a crucial aspect of healing strategies [32].

Another significant challenge associated with remote work is the blurred boundaries between work and personal life. Employees may find it challenging to establish a healthy work-life balance without the physical separation provided by a traditional office environment. The constant accessibility to work-related tasks and the lack of clear delineation between work and personal time can lead to longer working hours, difficulties in disconnecting from work, and an increased risk of burnout. Therefore, establishing clear work-life boundaries is essential for employees' well-being and long-term productivity [25].

The pandemic-induced remote work arrangements have also contributed to increased stress levels and burnout among employees [28]. Dealing with technology issues, juggling personal and professional responsibilities, and lacking social support and in-person collaboration can intensify stress levels [21]. Prolonged exposure to these stressors can lead to burnout, negatively impacting employees' overall well-being and productivity. Thus, addressing stress and burnout through well-being initiatives is critical for healing [29].

In addition, remote work can result in reduced collaboration and communication among teams. The absence of spontaneous discussions, brainstorming sessions, and in-person interactions can hinder idea generation, teamwork, and problem-solving. Effective virtual collaboration and communication strategies must be implemented to ensure employees remain connected, engaged, and productive in their remote work environments [23].

Furthermore, remote work can lead to decreased motivation and engagement among employees. The absence of a physical workspace, limited social interactions, and reduced opportunities for recognition and feedback can erode an employee's sense of purpose and intrinsic motivation. Motivation and engagement through various means, such as providing meaningful work, setting clear goals and expectations, and recognising employees' achievements, is vital for their well-being and sustained productivity [20].

The researcher suggest that organisations must provide various organisational support and policies to support employees in healing the negative consequences of working from home. Flexible work arrangements and scheduling options allow employees to manage their personal responsibilities and achieve a better work-life balance. To ensure that employees have the necessary tools and resources to execute their remote work effectively, a sufficient technological infrastructure and support are required.

Training and development opportunities are essential for employees to adapt to a remote work environment and acquire the required skills for success. Additionally,

organisations should provide resources for mental health and well-being, such as counselling services and employee assistance programmes.

This paper aims to examine the negative effects of telecommuting during the COVID-19 pandemic and suggest strategies for treating and mitigating their effects on employees. By identifying these challenges and providing practical solutions, organisations can assist employees in overcoming the difficulties associated with remote work and improve their well-being and overall productivity.

2 Background and Significance of Remote Work During the COVID-19 Pandemic

Remote work, which refers to working outside of a regular office setting, has grown in favour during the COVID-19 pandemic [4]. Employees have been able to continue working while reducing the danger of pathogen transmission and assuring their safety. This transition has not only touched a single industry or a limited number of organisations, but it is a worldwide phenomena affecting a wide range of industries and occupations [13].

Employees have reacted positively and negatively to the abrupt transition to remote work. On the one hand, it has enabled flexible working hours, shorter commutes, and the development of a pleasant work atmosphere. On the other hand, it has brought a variety of challenges that can have a negative impact on employee well-being and productivity [12].

3 Purpose of the Paper

The goal of this study is to look into and address the negative consequences of telecommuting during the COVID-19 epidemic, as well as to propose solutions for healing and minimising the effects on employees. Organisations may support employees in overcoming these obstacles and improving their well-being and general productivity by understanding the issues connected with remote work and giving practical solutions.

This study attempts to shed light on the employee-impacted areas by conducting a complete examination of the negative repercussions, such as social isolation, confused work-life boundaries, increased stress and burnout, decreased collaboration and communication, and lower motivation and engagement. Organisations can employ focused healing methods to lessen the effects of these hurdles and build a healthy workplace by recognising them.

Furthermore, this study will emphasise the importance of organisational support and policies in fostering recovery. It will look into the role of flexible work arrangements, technical infrastructure, training and development opportunities, mental

health services, and performance evaluation practises in creating a welcoming work environment for remote workers.

By addressing the negative consequences of remote work and providing practical strategies for healing, this paper intends to guide organisations in supporting their employees' well-being and productivity during the COVID-19 pandemic and beyond. Ultimately, it aims to contribute to developing a sustainable and positive remote work culture that enhances employee satisfaction, engagement, and organisational success.

4 Negative Consequences of Remote Work

The transition to remote work during the COVID-19 pandemic has brought about several negative consequences that can impact employees' well-being and productivity. It is crucial to understand these challenges to address and mitigate their effects effectively. The following are some of the critical negative consequences associated with remote work.

4.1 Social Isolation and Loneliness

Working remotely can lead to social isolation and feelings of loneliness, as employees may lack the daily face-to-face interactions and informal conversations that occur in a traditional office setting. The absence of social connections can negatively impact employees' mental health, job satisfaction, and overall well-being [15, 19, 33].

4.2 Blurred Work-Life Boundaries

Remote work often blurs the boundaries between professional and personal life. Without clear physical separation between work and home environments, employees may find establishing a healthy work-life balance challenging. This can result in longer working hours, difficulty disconnecting from work, and an increased risk of burnout [2].

4.3 Increased Stress and Burnout

The remote work arrangements necessitated by the pandemic have introduced new stressors for employees. Dealing with technological issues, juggling personal and professional obligations, and a lack of social support and face-to-face collaboration can increase stress levels. According to Murat et al. [24], prolonged exposure to these

stressors can result in fatigue, negatively affecting the well-being and productivity of employees.

4.4 Reduced Collaboration and Communication

Physical separation can hinder remote teams' ability to collaborate and communicate effectively. Idea generation, collaboration, and problem-solving can be hindered by the absence of impromptu conversations, brainstorming sessions, and in-person interactions. Consequently, employees may experience feelings of disconnection and find it difficult to maintain effective communication channels [7].

4.5 Decreased Motivation and Engagement

Al-Maskari et al. [3] suggest that a remote work environment may result in decreased employee motivation and engagement. The lack of a physical workstation, limited social interactions, and fewer opportunities for recognition and feedback can have a negative impact on an employee's sense of purpose and intrinsic motivation. This can have a negative impact on efficiency and overall job satisfaction [14].

Understanding these negative consequences is critical for developing measures to lessen their impact on personnel. Businesses can assist remote workers in recovering and flourishing by addressing social isolation, establishing clear boundaries, controlling stress, encouraging collaboration and communication, and increasing motivation and engagement [31].

We will look at specific healing tactics and organisational support mechanisms that might effectively address these negative impacts and enhance employee well-being and productivity in the setting of remote work in the following sections of this study.

5 Healing Strategies for Employee Well-Being

Organisations might use particular restorative measures to counteract the negative effects of remote work and enhance employee wellness. While working remotely, the following practises can help employees maintain their well-being and productivity.

5.1   Promoting Social Connections and Combating Isolation

Organisations can give possibilities for social engagement and connection to remote employees. Virtual team-building exercises, regular check-ins, and informal communication channels, such as virtual coffee breaks and online social gatherings, can help achieve this. Encourage employees to participate in online groups or forums relating to their profession or interests [17, 22].

5.2   Establishing Clear Work-Life Boundaries

The well-being of employees needs to assist them in establishing distinct boundaries between work and personal life. Organisations can provide guidelines and resources for time management, encourage employees to establish a designated workspace at home, and promote the value of taking pauses and disconnecting from work outside of normal working hours. Managers can demonstrate leadership by respecting these boundaries and promoting a healthy work-life balance [16].

5.3   Addressing Stress and Burnout Through Well-Being Initiatives

Employers should prioritise employee well-being by implementing a variety of initiatives. These may include virtual wellness programmes, sessions on mindfulness and stress management, access to mental health resources, and flexible work arrangements. Providing employees with the resources and support they need to manage stress and avoid burnout can substantially improve their overall well-being and job satisfaction [26].

5.4   Enhancing Virtual Collaboration and Communication

Organisations should leverage technology and implement effective virtual collaboration tools to overcome the challenges of reduced collaboration and communication in remote work. This includes video conferencing platforms, project management software, and instant messaging tools. Organisations should encourage regular virtual team meetings, establish clear communication protocols, and provide training on remote collaboration to ensure effective teamwork and information sharing [27].

5.5 Fostering Motivation and Engagement

Organisations can foster motivation and engagement among remote employees by providing meaningful work, setting clear goals and expectations, and recognising employees' achievements. Regular and constructive feedback from managers is crucial for employee growth and development. Additionally, offering professional development opportunities, virtual learning programs, and career advancement prospects can help employees stay motivated and engaged in their remote work roles [6].

By implementing these healing strategies, organisations can actively support their employees' well-being and mitigate the negative consequences of remote work. It is important to customise these strategies based on employees' unique needs and preferences and regularly assess their effectiveness to ensure continuous improvement and adaptation to changing circumstances.

In the next section, we will explore the role of organisational support and policies in facilitating employee healing and well-being in remote work during the COVID-19 pandemic.

6 Organisational Support and Policies

During the COVID-19 pandemic, organisational assistance and policies are critical for assisting employees working remotely in recovering. Organisations can cultivate an environment that fosters employee well-being and productivity by implementing particular measures and providing the required resources. The sections that follow highlight critical organisational support and policy components.

6.1 Flexible Work Arrangements and Scheduling

Businesses should explore creating flexible work arrangements to meet the different needs of remote employees. This could include things like flexible working hours, shorter workweeks, and remote work choices. Employees can better manage their obligations and establish a better work-life balance with more flexibility, which decreases tension and increases their general well-being [30].

6.2 Technological Infrastructure and Support

Companies must provide employees with the necessary technological infrastructure and support for remote work. This includes reliable Internet access, remote access

to enterprise systems, and related software and tools. IT assistance should be easily accessible to fix any technological concerns and help employees optimise their remote work settings [1].

6.3 Training and Development Opportunities

Remote employment may entail the acquisition of new skills as well as the adoption of new work methods. Organisations should provide training and development opportunities to help employees navigate the remote work environment efficiently. This could involve instruction in remote collaboration tools, time management, communication skills, and the formation of virtual teams. Companies can boost their employees' confidence, competency, and overall job satisfaction by investing in employee development [10].

6.4 Mental Health and Well-Being Resources

Employee well-being should be prioritised by organisations, especially while working remotely. Businesses must make mental health resources available to their employees, such as counselling services, employee assistance programmes (EAPs), and online well-being platforms. Employees who are regularly informed about available services and support networks are more likely to seek help and manage their mental health successfully [9].

6.5 Performance Evaluation and Recognition

Organisations should adapt their performance evaluation and recognition practices to the remote work context. Clear and measurable goals should be set, and regular feedback sessions should be conducted to support employee growth and development. Recognising and appreciating employee achievements and contributions through virtual team celebrations or individual acknowledgements can foster a sense of value and motivation among remote employees [5].

By implementing these organisational support mechanisms and policies, organisations can create an environment that promotes employee well-being, productivity, and satisfaction in remote work. It is important to regularly assess the effectiveness of these initiatives and gather feedback from employees to ensure continuous improvement and adaptation to their evolving needs.

In the next section, we will explore best practices and case studies highlighting the successful implementation of healing strategies in organisations addressing the negative consequences of remote work.

7 Lessons Learned from Organisations Prioritising Employee Well-Being

Lesson 1: Communication and transparency are vital. Organisations that prioritise employee well-being during remote work emphasise frequent and transparent communication. Regular updates from leadership, sharing of resources and tools, and open channels for feedback contribute to a culture of trust and support. This transparency helps employees feel connected and informed, reducing feelings of isolation.

Lesson 2: Adapt initiatives to specific requirements. Organisations recognise that each employee's circumstances and requirements are unique. They provide a variety of wellness initiatives and resources to meet a variety of needs. Some employees may benefit from mindfulness sessions, while others may find value in fitness challenges or virtual social events. Organisations can better support employees in their healing journey by providing various options.

Lesson 3: Continuously assess and adapt strategies. Successful organisations regularly evaluate the effectiveness of their healing strategies and make adjustments as needed. They gather employee feedback through surveys, focus groups, or one-on-one conversations to understand initiatives' impact and identify improvement areas. This iterative approach ensures that strategies align with employee needs and evolve as the remote work landscape changes.

By learning from these best practices and case studies, organisations can gain insights into successfully implementing healing strategies and the importance of prioritising employee well-being. Customising initiatives, maintaining open communication, and regularly assessing strategies are critical factors in creating a supportive remote work environment.

In the concluding section of this paper, we will summarise the key findings and provide recommendations for future research and practice in healing employees' negative consequences of working from home during the COVID-19 pandemic.

8 Summary of Key Findings

This paper has explored the negative consequences of working from home during the COVID-19 pandemic and proposed strategies for healing employees' well-being and productivity. The key findings can be summarised as follows:

- Remote work during the pandemic has brought about negative consequences such as social isolation, blurred work-life boundaries, increased stress and burnout, reduced collaboration and communication, and decreased motivation and engagement.

- Promoting social connections, establishing clear work-life boundaries, addressing stress and burnout, enhancing virtual collaboration and communication, and fostering motivation and engagement are crucial healing strategies for employee well-being.
- Employee rehabilitation and well-being require organisational assistance and policies such as flexible work arrangements, technological infrastructure, training and development opportunities, mental health services, performance evaluation and recognition.

9 Recommendations for Future Research and Practice

While this study has provided insights into healing strategies for employees working from home during the COVID-19 pandemic, a few issues require additional research and attention. The following suggestions are made for further research and practise:

- Long-term effects: Investigate the long-term effects of remote work on employees' well-being, job satisfaction, and career development beyond the immediate context of the pandemic.
- Sustainable remote work practices: Explore sustainable remote work practices and policies that can be implemented even after the pandemic, considering the hybrid work models that are likely to emerge.
- Managerial support: Examine the role of managerial support and leadership in facilitating employee healing and well-being in the remote work environment.
- Employee perspective: Gather in-depth insights from employees to understand better their experiences, needs, and preferences about remote work and healing strategies.
- Cultural differences: Explore the impact of cultural factors on the negative consequences of remote work and identify culturally sensitive healing strategies.

Organisations can better understand the problems and opportunities connected with remote work by undertaking additional study in these areas and refining their strategies for mending and supporting employees' well-being.

To summarise, resolving the negative repercussions of working from home during the COVID-19 epidemic necessitates a multifaceted approach that addresses social, psychological, and organisational elements. Organisations may build a supportive remote work environment that fosters employee well-being, engagement, and productivity by applying the offered measures.

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Understanding Public Value Creation Through the Interaction Effects Between Entrepreneurship and Corruption

Abu Elias Sarker ⓘ**, Syed A. Tipu, Panagiotis Zervopoulos, Azaddin Khalifa, Dima Jamali, Alaa Aldin A. Al Athmay, and Rabiant Ali Sultan**

Abstract Entrepreneurial activities and level of corruption largely determine the creation of public value. Corruption may affect a society in various ways, however, its relationship with entrepreneurship is crucial. The current paper highlights the interaction effects between entrepreneurship and corruption in order to better understand the dynamics of public value creation. In doing so, it reviews the literature on the entrepreneurial ecosystem, emerging debates on public value creation, government services for entrepreneurial development and the resulting public service corruption. Drawing upon the available literature, the current study proposes a set of research propositions which will potentially guide future empirical research in the field.

Keywords Entrepreneurship · Ecosystem · Public value creation · Corruption

1   Introduction

Entrepreneurship is considered an engine of economic development [1]. An entrepreneurial ecosystem incorporates various entities including government, academia, industry, investors, community etc. Government services related to entrepreneurial initiatives are at the heart of public service ecosystem [2]. A wide range of support services for starting and managing new ventures are considered an integral component of a public service ecosystem. These services include starting a business (time, cost, and procedures required for registering new businesses), dealing with construction permits, getting electricity, registering property, getting credit, paying taxes, enforcing contracts, and resolving insolvency. An efficient and effective delivery of these services is considered highly valuable for entrepreneurs. These provisions are considered salient for public value creation not only for entrepreneurs but also for prospective customers of the new ventures. In addition, there are

A. E. Sarker (✉) · S. A. Tipu · P. Zervopoulos · A. Khalifa · D. Jamali · A. A. A. Al Athmay · R. A. Sultan
University of Sharjah, PO Box, 27272 Sharjah, UAE
e-mail: elias@sharjah.ac.ae

also implications for wider society in terms of ensuring a better quality of life, environmental protection, and economic security [3].

Governments across the globe have taken steps to streamline the steps to provide more value for the clients in terms of registering the business and reducing the number of procedures required to register a business thereby enhancing public value [2]. However, the availability of these services is often hampered due to corrupt practices in different contextual settings. It is also equally possible that these services also open the opportunity for the government officials and entrepreneurs to indulge in corrupt practices. This is particularly relevant in a developing country context.

Public value is a broad concept and variously defined in the literature. Given the ambiguity surrounding the notion of public value, the current paper offers some insights regarding public value creation through shedding some light on the processes related to registering and managing new ventures and how the public value is affected due to prevailing corruption levels in a country. This paper argues that public services related to registering and running businesses often experience high rate of corruption particularly in developing and emerging economies context. This adversely affects the public value creation. Most of the literature examines the effects of corruption on entrepreneurship [4]. However, the current paper argues that entrepreneurs are also involved in unethical businesses practices and often offer bribes to get business permits. This nullifies any value creation which is expected because of any business activity. This underlines that corrupt practices adversely affect public value creation even though it appears that entrepreneurial ventures create employment opportunities and contribute to economic development. Therefore, it is pertinent that policy makers ensure to reduce the adverse effects of corruption as it may devalue any public service value creation.

The current paper underpins the need to explore the relationships between public value creation, entrepreneurship, and corruption. For this purpose, the review of the relevant academic literature was conducted to identify different strands in the literature. The remainder of the paper is structured as follows. First, it presents the literature on entrepreneurial ecosystem followed by the emerging debates on public value creation. Second, the discussion is presented on government services for entrepreneurial development and the possibility of resulting public service corruption. Third, the synthesis and way forward are outlined by proposing the research propositions followed by conclusions.

2 Review of Literature

2.1 Entrepreneurial Ecosystem

The entrepreneurial ecosystem is variously defined in the literature [5]. The term is defined as a relationship that reflects interdependence between organizations and institutions performing different yet complimentary processes that lead to

a successful entrepreneurial activity of delivering products or services [6]. The entrepreneurial ecosystem has revolutionized, and its elements constitute formal institutions, culture, and networks which are grouped as institutional arrangements, in addition to its constitution of physical infrastructure, demand, intermediaries, talent, knowledge, leadership, and finance which are grouped as resource endowments [6]. Theodoraki and Catanzaro [7] considered four dimensions of an entrepreneurial ecosystem including structural, systemic, evolutionary, and spatial. This approach also underpins global integration and local specificities.

The entrepreneurial ecosystem can be studied from different perspectives. Sheriff and Muffatto [8] studied the entrepreneurship ecosystem in terms of six main factors which are policy, culture, finance, support, market, and human capital. Cavallo et al. [9] explored the entrepreneurial dynamics and governance, which cover the start, process, and potential end of an entrepreneurial project along with the institutions that are involved during the process. Cavallo et al. [9] have explained how the emergence of the entrepreneurial ecosystem is influenced by investors, incubators, and new ventures and can be governed by policymakers, universities, and large corporations. All of which needs to be jointly regulated through government regulations and procedures. In addition, [10] further studied the entrepreneurial ecosystem in terms of resource, interaction, and governance logics to explore resource allocation targets, improved dynamics of digital interaction, and adaptive governance.

Sheriff and Muffatto [8] comprehensively studied the entrepreneurship ecosystem in selected African countries and found a common gap that slows down the process and its efficacy. They contend that some institutions may be present, but their roles are not well managed due to a lack of coordination which leads to a loss of entrepreneurship opportunities. In addition, the absence of entrepreneurship policy and strategy and inadequate infrastructure for entrepreneurship leads to a loss of national competitiveness. The authors have mentioned that both governmental and non-governmental entities contribute to this which affects sustainability.

In addition, in emerging economies, digitalization was found to be an important driver for the structure and growth of the entrepreneurial ecosystem [11]. Xie et al. [12] found a conceptual framework to demonstrate the entrepreneurial ecosystem in the digital world including the government as an internal factor. A recent study explored the interactions of ecosystem actors that contribute towards the entrepreneurial process in the financial technology aspect [13].

The entrepreneurial ecosystem is challenging to monitor from different aspects due to the unseen interconnections between individuals and institutions [14]. In the entrepreneurial world, monetary transactions may not be fully reported or provided through banks or venture capitalists [15] which affects a country's economic state. Therefore, monitoring systems should function on a quarterly basis [16].

2.2 Linking Entrepreneurial Ecosystem and Public Value Creation/Emerging Debates

An entrepreneurial ecosystem leads to public value creation by solving problems in novel ways [17], creating job opportunities [18], and stimulating economic growth [19]. An entrepreneurial ecosystem also refers to a business ecosystem that focuses on value capture, yet value creation emerges from the adoption of an innovative ecosystem [20]. For sustainable public value creation, it should create, lead to gain, and spread mutual value across collaborators [21]. Social conditions such as formal and informal institutions along with physical conditions, and access to goods and services are seen as fundamentals of value creation in the entrepreneurial ecosystem [22]. Creating strategies to highlight the interdependence between elements of entrepreneurial ecosystem determines the success of such an ecosystem [23]. The entrepreneurial ecosystem presents itself as a non-linear value-creation process [24]. Innovation is highly valued with processes in technology that improve a firm's performance. Innovation in technology majorly contributes towards value creation if applied to processes of firms rather than directly to customers [25].

Value creation due to a productive entrepreneurial ecosystem can be seen through job creation [18, 26]. Value creation is not only limited to monetary measures, but rather job creation to the society which improves economic wealth [27]. The entrepreneurial ecosystem looks for wealth and through effective governance, leads to job creation [28]. Universities supportive of a healthy entrepreneurial ecosystem open door for bright students and create jobs in the community [29–31]. In Saudi Arabia, the government has been focusing on increasing job employment, especially for Saudi locals instead of hiring foreigners [32].

The entrepreneurial ecosystem contributes towards entrepreneurial activities, growth, and increasing regional economic value [31, 33, 34]. An entrepreneurial ecosystem increases job creation and positively contributes towards the regional economic state [26]. Public value creation in business-to-business interaction can be sought by allowing the availability of complementary assets and ensuring business-to-consumer platform readiness which contributes to the economy [35]. The interdependence and strong interrelationship within the entrepreneurial ecosystem led to high-growth firms and shows how systems are important in the economics of entrepreneurship [6, 23].

Value creation through an entrepreneurial ecosystem comes from strategic management and regional development by increasing productivity through competition and collaborations [20, 23, 36], in addition to resources and commercial infrastructures [24], and promoting innovation with educational institutions [30, 37, 38]. Theodoraki and Catanzaro [7] mentioned how the presence of sub-ecosystem interactions leads to positive, consistent, and long-term effects in the entrepreneurial ecosystem and in the international perspective. Although an entrepreneurial ecosystem needs the collective effort of resources and strategic management, the entrepreneur is a central actor in the value creation especially

when network interactions, powerful relationships, and cultural or social fit are all a part of the entrepreneur's character [36].

2.3 Government Services for Entrepreneurial Development and Public Service Corruption

Corruption is the act of using authority for personal advantage [39]. Activities of corruption in the entrepreneurial ecosystem include bribes at the administrative level, authorization of import and export operations, and avoiding the payment of taxes through VAT mechanisms [40].

Corruption leads to slow entrepreneurial activities, increasing the unproductive entrepreneurial ecosystem and the government plays an important role in monitoring such actions [31, 41, 42]. Corruption negatively affects the regional performance, the economic state of the country [33, 43], and the sustainability of the entrepreneurial ecosystem [40]. In addition, even though corruption can encourage the flow of entrepreneurial activity, to be specific, in less transparent economies, it reduces innovation and the will to find ethical solutions [44]. Corruption may even discourage new entrepreneurs in launching their ideas due to the lack of safety and trust [45]. With the lack of trust, [46] discussed how it also negatively affects immigrant entrepreneurs.

2.4 Government Services Related to Entrepreneurial Development

Sheriff and Muffatto [8] noted that government actors and institutions play the most important role in the creation of a successful entrepreneurial ecosystem. Government policies positively contribute to the entrepreneurship ecosystem through encouraging entrepreneurship [47]. In addition, [12] mentioned how the political environment is a crucial factor affecting the entrepreneurial ecosystem performance, and the government having a higher impact compared to enterprises and industry associates, thus stating the importance of improving governance.

Government positively contributes towards the entrepreneurship ecosystem through the internalization of activities using the country's resources such as public firms [48]. Internalization employed by the government supports firm performance [48] and the country on an international level [7]. In addition, [49] investigated entrepreneurship ecosystem conditions that affect entrepreneurship and found that financing entrepreneurship, government policies, and government programs have a positive influence on the entrepreneurial rate. The study also reported that culture and social norms and physical infrastructure have a positive and significant effect on the entrepreneurial rate and innovation. The integration of different modalities of

procedures by the government leads to a successful entrepreneurial ecosystem flow [48].

Governments provide a wide range of public services when entrepreneurs decide to register their businesses and become the part of a formal economy. Some of these services include regulations for starting a business, construction permits, procedures for getting electricity, registering property, and contract enforcement [50]. There is a possibility that entrepreneurs may have to bribe government officials to speed up these procedures [51].

2.5 Synthesis and Way Forward

Controlled corruption has a positive effect on the government, market management, and administrative law enforcement [52]. Although corruption affects the government, the government has a role in the level of corruption as well. Governments that care about the effective execution of business activities have led to increased financial development [53] and higher social and economic impacts [54]. In addition, [55] indicated how good governance and quality regulations significantly increase economic growth in developing countries. In addition, institutions that maintain good quality operations to control corruption enhance foreign direct investment thus leading to economic growth [56]. Zhang et al. [57] concluded that effective government actions lead towards reduced excessive investment behavior. Alfada [58] notes the harmful impact of corruption on government investment expenditure. It also affects economic growth, foreign direct investment, and inflation [59].

Cunningham et al. [16] suggested a monitoring mechanism of an ecosystem by the government through identifying problems related to costs, value creation, and highlighting issues related to the stakeholders of the business. Cunningham et al. [16] mentioned such activities are expected to increase public value creation.

The implementation of e-government services has shown to increase public value through improved public services, administrative efficiency, ethical behavior and professionalism, trust and confidence in government, social value and well-being, and open government capabilities [60]. Additionally, policymakers in the government can contribute towards reducing the unproductive entrepreneurial ecosystem through establishing focused institutional reforms [31, 41, 42, 61]. In the context of Industry 4.0, new opportunities are presented for better integration between industry, academia, and government [62].

Drawing upon the above literature and relevant discussion, the current paper proposes the following research propositions:

Proposition 1 Entrepreneurship positively relates to public service corruption.
Proposition 2 Public service corruption negatively affects public value creation.
Proposition 3 Government services related to entrepreneurial development may negatively affect public value creation in case of high corruption level.

3　Conclusion

It is both timely and relevant to consider the interaction effects between public value creation, entrepreneurship, and corruption. Most of the literature examines the impact of corruption on entrepreneurship. However, it is also pertinent to examine how entrepreneurs are likely to be involved in corruption which may adversely affect public value creation. It is suggested that future empirical studies should be conducted to test the above-mentioned research propositions. In particular, cross-country studies in varying contextual settings will further shed light on the proposed relationships which will potentially guide policy for minimizing public service corruption giving the impetus to public value creation.

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Mixue Ice Cream and Tea: The Abandoned Shop Seeker

M. Syamsul Ma'arif and **Ratna Roostika**

Abstract Last year, the public was shocked by the emergence of a business phenomenon in cyberspace. There is a Food and Beverage company originating from China expanding its business in Indonesia and has attracted public attention quickly. This phenomenon reminds the writer of an episode of the Spongebob series which tells about the emergence of green drink outlets in every corner of Bikini Bottom City in a short time. In that episode, this drink immediately changed the behavior of bikini bottom residents who first liked Krabby-Patty to become connoisseurs of this green drink. The research object is Mixue Ice Cream and Tea, using a case study with a descriptive approach and secondary data, such as journals, books, internet scientific articles and other sources related to the topic. Overall, Mixue Ice Cream and Tea has disrupted its business strategy by innovating its business operating system (supply-chain). Based on this, Mixue Ice Cream and Tea can make low-cost products but with quality on par with its competitors. There, Mixue Ice Cream and Tea can sell its products at low prices and can enter most market segments and are in great demand from customers.

Keywords Mixue Ice Cream and Tea · Supply-chain · Innovation

1 Introduction

The emergence of a business phenomenon in cyberspace shocked the public last year, where a Food and Beverage company originating from China expands its business in Indonesia and has attracted attention in a short span of time. The brand is called Mixue Ice Cream and Tea. Thanks to technological developments, especially social media, this brand is quickly recognized by the public because it offers quality products but at very affordable prices when compared to similar brands.

M. Syamsul Ma'arif · R. Roostika (✉)
Management Department, Universitas Islam Indonesia, Yogyakarta, Indonesia
e-mail: ratna.roostika@uii.ac.id

This has made the Mixue Ice Cream and Tea market grow fast, as shown by the emergence of its outlets in various corners of cities in Indonesia. As reported by the official website, Mixue Ice Cream and Tea targets to have 30,000 outlets worldwide by the end of 2022. There is a joke from the public stating that every empty shop will be inhabited by the spirit of Mixue Ice Cream and Tea and it has been proven to be more than a fantasy. It can easily be proven by typing the word "Mixue Ice Cream and Tea" on Google Maps and it will show more than one Mixue Ice outlet near the area.

This phenomenon reminds the writer of an episode of the Spongebob series which tells about the emergence of green drink outlets in every corner of Bikini Bottom City in a short time. In that episode, this drink immediately changed the behavior of bikini bottom residents who first liked Krabby-Patty to become connoisseurs of this green drink or, as it was revealed later, a Kelp Shake. The Kelp Shake phenomenon in the Spongebob series makes the writer feel *de ja vu* at the current state of Mixue Ice Cream and Tea. What happened in the Kelp Shake episode of the Spongebob series also happened to the Mixue Ice Cream and Tea phenomenon where the public's behavior changes instantly, and their eyes are fixed on Mixue Ice Cream and Tea. Many customers have queued for a long time just because of their high curiosity.

According to Chin, CEO of "Ternak Uang" on his YouTube channel, Mixue Ice Cream and Tea is not an ice cream company, but a supply-chain company. This was not without reason, because he explained that based on Mixue Ice Cream and Tea's financial reports, revenue from ice cream selling was less than one percent while the majority came from selling raw materials and packaging [1].

According to Nugroho, CEO of CIAS (Corporate Innovation Asia) on his YouTube channel said that the secret to the low price of Mixue Ice Cream and Tea lies in supply chain innovation. Mixue Ice Cream and Tea had successfully started a supply-chain strategy by becoming the first beverage company in China with free logistics delivery [2].

Meanwhile, according to Chen, in his research titled Analysis on the Marketing Strategy of Mixue Bingcheng (MXBC) Milk Tea, he concluded that it was easy to see the MXBC franchise business model, which was like a double-edged sword that saved the company's past but could damage the company's growth. This was because it was difficult for MXBC to manage franchisees and good management on a larger scale [3].

According to Tang, in his research entitled Analysis of Management Strategy of MXBC, he concluded that overall, even though the profits were small, the turnover management mode and rapid expansion of its outlets made MXBC had its own position in the milk tea market and were liked by customers. But such operations management would have many negative effects. For example, branch operating pressure for outlets became greater, requirements for regional administrators became tighter, and lack of enough traffic would be the main problems faced by MXBC [4].

Based on the descriptions above, the authors are motivated to conduct this research because of the phenomena and differences in research results that occurred. The authors want to dig deeper into the supply-chain strategy and innovation carried out by Mixue Ice Cream and Tea based on the data the authors find. The author realizes

that this research is far from perfect, but this research is expected to provide benefits to all parties and add insight and knowledge to readers.

2 Research Method

In this study the authors use qualitative research method with a descriptive approach. Qualitative research is a type of research that produces findings that cannot be achieved using statistical procedures or other quantitative methods. Case study approach is chosen as a qualitative method in this study. A case study is a method of research that focuses on a particular object and considers it a case with a specific time and location limitation. The case study method is used because it is appropriate to explain how Mixue Ice Cream and Tea determines supply-chain and innovation strategies so they can develop. Case study research aims to create a systematic, actual, and accurate representation of the facts and the relationships between the phenomena studied [5].

An in-depth discussion about the supply-chain strategy and innovation is carried out to managers in some of the Mixue Ice Cream and Tea Branch. Mixue Managers in three big cities in Java (Jogjakarta, Surakarta and Semarang) will be further interviewed to complete the review from secondary data. The uses of secondary data consisting of research journals, scientific articles, the internet, and other sources related to the topic is also of equally important to understand and support the issues on food and beverage industry.

3 Analysis and Results

3.1 The History of Mixed Ice Cream and Tea

Mixue Ice Cream and Tea was founded in 1997 in Zheng Zhou, China. This business was founded by a student named Zhang Hongchao. He set his business DNA to bring high-quality products at affordable prices to people around the world. His business journey started by selling shaved ice with a capital of 4000 yuan or around Rp 7 million, which came from his grandmother. In 2000, Mixue Ice Cream and Tea opened its first shop and sold shaved ice at affordable prices below market prices. In 2007, Zhang Hongchao franchised and in less than a month, he had 27 new branches in China. Then one year later, he had 180 branches and was registered as a company. Around 2012–2014, Mixue Ice Cream and Tea built many of its own production and logistics centers to meet market demand which increased. The expansion carried out by Mixue Ice Cream and Tea targeted the number of outlets worldwide to reach 30,000 by the end of 2022. Based on this success, Mixue Ice Cream and Tea has

Fig. 1 Top 7 FnB chains around the world according to the number of outlets
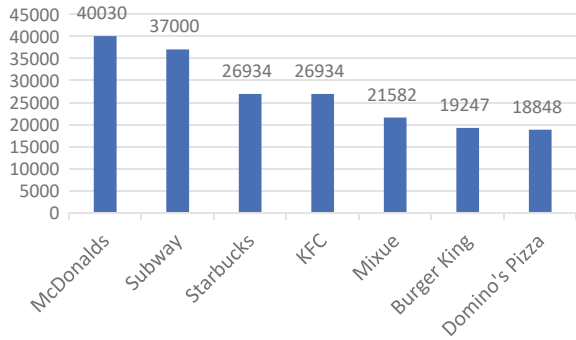
made it the Food and Beverage company with the most franchised outlets in the world after McDonald's, Subway, Starbucks, and KFC [6].

Thanks to his persistence and ability Mixue Ice Cream and Tea has thousands of outlets in various countries and one of them is in Indonesia. Based on Pandaily data, the number of outlets in Indonesia in March 2022 reached 317 outlets [7] (Fig. 1).

3.2 The Business Model of Mixue Ice Cream and Tea

Quoting from the official website of Mixue Ice Cream and Tea, they have several business models, namely:

1. Business to Consumer (The Retail Outlet)
   Mixue Ice Cream and Tea opens outlets and offers its products to consumers. Products offered: Ice cream, smoothies, tea, Boba and coffee.
2. Business to Business (The Franchise)
   Mixue Ice Cream and Tea offers a franchisor to open Mixue Ice Cream and Tea outlets with predetermined Terms of Service and Agreements. Products offered: Franchising License, raw materials for production, packaging, and other outlet needs.

3.3 The Franchising Scheme

Based on the scheme of the Mixue Ice Cream and Tea franchise above, it can be elaborated as followed (Fig. 2):

1. Submission of a point where to open an outlet
   Prospective franchisees who want to open a Mixue Ice Cream and Tea cannot freely choose a place to open this business. This is because Mixue Ice Cream and Tea has certain criteria in determining the location. The prospective franchisor

Fig. 2 Franchising scheme
of Mixue Ice Cream and Tea
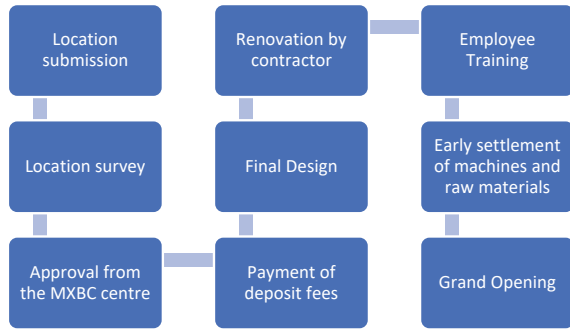
must ask for a place first and then it will be confirmed after a survey is carried out by Mixue Ice Cream and Tea.

2. Location survey from the Mixue Ice Cream and Tea team
   After the prospective franchisee submits the location where the business will be run, a survey will be carried out first by the Mixue Ice Cream and Tea team to make sure the selected location meets the predetermined criteria.

3. Approval from the Mixue Ice Cream and Tea center
   After conducting the survey, the central Mixue Ice Cream and Tea team will analyze whether the proposed location is possible to open a Mixue Ice Cream and Tea outlet.

4. Payment of deposit fees to the finance section
   The next stage, after obtaining approval from the central Mixue Ice Cream and Tea. The prospective franchisee must make a deposit to the finance department which aims to finance the operational needs of the outlet.

5. Final design of Mixue Ice Cream and Tea
   At this stage, the design and layout of the outlet is handled by Mixue Ice Cream and Tea so that the franchisor need not pay for decorating the outlet design.

6. Renovation by contractor from Mixue Ice Cream and Tea
   After the final design has been agreed upon, the next step is to renovate or prepare the design.

7. Employee training during renovation reaches 80%
   At this stage, Mixue Ice Cream and Tea will conduct training and development for employees at the outlets that will be opened while waiting for the renovation process to be nearly finished. The hope is that when the renovation is complete, the outlet will run its business.

8. Early settlement of machines and raw materials
   The final process before carrying out the outlet's grand opening. The franchisor must make payments for the initial machine and raw materials. This is because Mixue Ice Cream and Tea has a policy that the franchisor must only buy raw materials from Mixue Ice Cream and Tea, under the pretext of maintaining the quality of the products.

9. Grand opening of outlets

After the preparations have been completed, the outlet can carry out the grand opening. Usually, in this process, Mixue Ice Cream and Tea will help to enliven the event by providing attractive promos.

Notes:

- One year warranty for the machine (checking).
- One shophouse may not have another franchise brand even if it is 2 floors.
- The contractor must be from Mixue Ice Cream and Tea.
- If you stop cooperation within 3 years, a penalty will be imposed.
- All raw materials from central, except Oreo and Lemon.
- The expiration date of raw materials is around 6 months.

3.4 How Much Franchise Start-Up Costs of Mixue Ice Cream and Tea?

The data achieved for this study showed that the initial cost of the Mixue Ice Cream and Tea franchise is around 700–850 million. These costs could be adjusted to the conditions of each region and included the costs required by outlets which consisted of area survey fees, deposit fees, management fees, training costs, machine and tool costs, first raw material package costs, and site renovations. However, these costs did not include the fee of renting a place or shop.

3.5 The Demographic Market Mixue Ice Cream and Tea in China

Based on the data analyzed by the Sevenpreneur team, Mixue Ice Cream and Tea had served the untapped market in China. People within the range of 20–30 years were the highest proportion of ice cream buyers in China, which reached 58%. In addition, 64% of ice cream, tea and coffee buyers in China had purchasing power of no more than 24 RMB. Mixue Ice Cream and Tea catered to the 20–30 years old market and sold products at 1–8 yuan. Mixue Ice Cream and Tea had an additional value of selling products at low prices, so Mixue Ice Cream and Tea could serve most market segments compared to other brands that offered products with prices starting from 15 yuan [8]. This was one reason why Mixue Ice Cream and Tea was growing fast both to brand and revenue.

3.6 Brand Position Mixue Ice Cream and Tea

The matrix explains that the brand position of Mixue Ice Cream and Tea is at low price-high quality position with the KISS and Luckin Coffee brands. However, what distinguishes these three brands is their market target. Compared to other brands, the majority are at high price-high quality. This makes Mixue Ice Cream and Tea able to target most market segments because it can compete with high quality brands but offers considerably lower prices for its consumers (Fig. 3).

But Mixue Ice Cream and Tea's brand awareness is easy to stick in the minds of today's consumers, because they have succeeded in their viral marketing strategy. For example, a few months ago in Indonesia there was an interesting business phenomenon because in a short time many people could discover Mixue Ice Cream and Tea because it became a trending topic in cyberspace. Instantly, the outlets were filled with consumers curious to try its products. Soon after, new outlets of Mixue Ice Cream and Tea appeared in various parts of Indonesia. If someone searches for the words Mixue Ice Cream and Tea on Google maps, especially in the Jabodetabek area, there will be more than one Mixue Ice Cream and Tea outlet closest to the buyer [9] (Fig. 4).

But Mixue Ice Cream and Tea has implemented three selling proposition values:

1. Emotional Value, where loyal customers will have an emotional closeness with the taste and brand.
2. Economic Value, where the product offered is 50% cheaper than similar brand products, but with the same taste and quality.

Fig. 3 Matrix of Mixue Ice Cream and Tea brand position

Fig. 4 Pyramid selling
proposition value of Mixue
Ice Cream and Tea
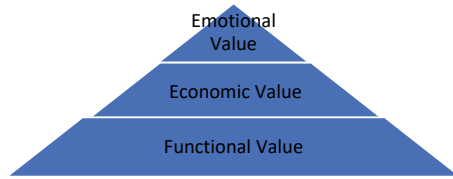
3. Functional Value, where Mixue Ice Cream and Tea products meet basic needs as food.

3.7 The Innovation of Supply-Chain from Mixue Ice Cream and Tea

Mixue Ice Cream and Tea takes a low-price strategy approach. This can be achieved because Mixue Ice Cream and Tea starts an in-house supply chain that can provide very cheap prices for customers and franchises. Nugroho said on his YouTube channel that Mixue Ice Cream and Tea had become the first beverage company in China with zero cost distribution. Based on this, Mixue Ice Cream and Tea can sell its products below its competitors' costs without sacrificing its quality [2] (Fig. 5).

One advantage of starting an in-house supply chain is that the cost structure issued by the company can be cheaper and more reliable so the price of the goods offered can be cheaper. This can be done hoping it will broadly segment the consumer market so it will cause a large demand and increase the volume of production produced while also reducing production costs to a lesser extent.
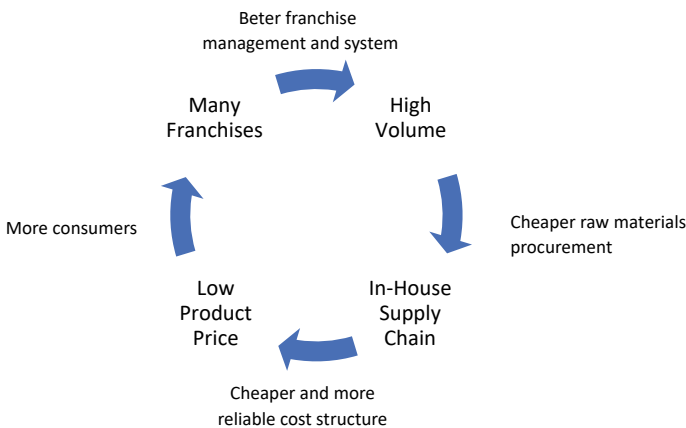
Fig. 5 Life cycle supply-chain Mixue Ice Cream and Tea

3.8 Business Operations: Key Activities to Run the Business

1. Mixue Ice Cream and Tea has its own supply chain and produces all its own ingredients. Delivery without intermediaries and third parties means that franchisees can sell products at low prices.
2. Franchises that are many and spread across various countries provide many benefits because ordering materials can be made in large quantities so prices are easier.
3. Cutting logistics costs for franchisees, so they can still sell products at low prices.

3.9 Main Business Revenue of Mixue Ice Cream and Tea in 2022

The main profit that Mixue Ice Cream and Tea depended on selling raw materials to franchisees. Sales of ice cream through direct stores only contributed less than 1% (Table 1).

Based on the figure, the total revenue of Mixue Ice Cream and Tea obtained between March–June 2022 was 243,329.51. The majority of the revenue was obtained from selling product raw materials of 175,591.03 or (72.16%), Packaging of 37,854.87 or (15.55%), equipment and equipment facilities of 11,639.77 or (4.78%), operating materials and others of 10,512.24 or (4.32%), franchise 6378.43 or (2.62%), and sales of ice cream 1362.43 or (0.56%) [10], in million yuan.

These results could be achieved because Mixue Ice Cream and Tea focused on developing the number of outlets in various countries with the franchising concept.

Table 1 Mixue Ice Cream and Tea revenue in March–June 2022

Business type	2022		2021		2020	
	Income	Percent (%)	Income	Percent (%)	Income	Percent (%)
Ingredients	175,591.06	72.16	723,049.13	69.89	326,320.25	69.76
Packaging	37,845.87	15.55	177,880.52	17.19	73,889.19	15.80
Equipment and materials	11,639.77	4.78	69,484.57	6.72	40,337.16	8.62
Operating materials and others	10,512.24	4.32	36,226.52	3.50	10,608.75	2.27
Franchise and license	6378.13	2.62	19,574.30	1.89	9990.24	2.14
Direct store selling	1362.43	0.56	8279.72	0.80	6612.14	1.41
Total	243,329.51	100.00	1,034,494.77	100.00	467,757.73	100.00

Mixue Ice Cream and Tea did not open new outlets at its own expense but by looking for partners willing to open new outlets with raw materials supplied directly. This was so Mixue Ice Cream could still maintain the quality of the products.

3.10   Is Mixue Ice Cream and Tea Still Promising?

Based on data compiled from Grand View Research, the global ice cream market was estimated to reach $79.0 billion in 2021 and was expected to reach $81.8 billion in 2022. The global ice cream market is estimated to grow at a CAGR of 4.2% from 2022 to 2023 and reach $114.7 billion in 2030 [11].

But the value of the Ice Cream market in Indonesia is expected to slow down but not stagnate in 2020–2025 with a CAGR of 7.18% with a total addressable market at around $575.8 million. Serviceable market of Mixue Ice Cream and Tea is not yet distributed throughout Indonesia. The majority are on the island of Java, with it's the largest population in Indonesia, so Mixue Ice Cream and Tea can still reach their market value.

Based on these data estimates, it can be concluded that the opportunity for Mixue Ice Cream and Tea to develop in the global market in the next few years is still promising. However, it must be seen carefully because this can become a boomerang for Mixue Ice Cream and Tea if the company makes the wrong strategic decisions going forward. Based on this, the writer is curious about what Mixue Ice Cream and Tea will do to displace McDonald as the current top tier of the Food and Beverage Franchise.

4   Discussion

Behind the success of Mixue Ice Cream and Tea in carrying out a supply-chain innovation strategy and successfully becoming a beverage company with zero cost distribution, the company keep competing and reaching fifth place against the world's FnB giants. Chin believes that Mixue Ice Cream and Tea is not an ice cream company, but a supply-chain company. This is based on Mixue Ice Cream and Tea's financial report, which only gets revenue of one percent from selling ice cream while the majority of Mixue Ice Cream and Tea's revenue comes from selling raw materials and packaging [1]. Nugroho believes that the secret to the low price of Mixue Ice Cream and Tea lies in supply chain innovation. Mixue Ice Cream and Tea has successfully started a supply-chain strategy by becoming the first beverage company in China with free logistics delivery [2]. However, Tang believes that even though the profits are small, the turnover management mode and rapid expansion of its outlets have made MXBC have its own position in the beverage market and are favored by customers. However, such operations management will have many negative effects. For example, branch operating pressure for outlets becomes greater, and requirements for regional

administrators become higher and lack of enough traffic will be the main problems faced by MXBC [4]. Another opinion expressed by Chen, is that it is easy to grasp the MXBC franchise business model, which is like a double-edged sword that saves the company's past but can damage the company's growth because it is difficult for MXBC to manage franchisees and good management on a large scale [3].

5   Conclusion

Overall, Mixue Ice Cream and Tea has succeeded in disrupting its business strategy by innovating its business operating system (supply-chain). Based on its business strategy, Mixue Ice Cream and Tea are able to make low cost products but with quality on par with its competitors. Currently, Mixue Ice Cream and Tea can sell its products at low prices and they can also enter almost all market segments and are in great demand by customers. The success of supply chain management can be achieved due to the implementation of an in-house supply chain. The in-house supply chain has enable Mixue offering prices cheaper for consumers and its franchise partners. Further, applying in-house supply chain has caused Mixue in creating zero cost distribution. The most important thing to maintain in the business strategy is a strategy of how prices can be offered below competitors but still maintaining high quality of the products offered.

For brand positioning, Mixue decided to position itself in the level of low price-high quality. For the target market, Mixue does not limit itself to any buyer segments. Without limiting the target market, Mixue market is very large, it serves numerous ranges of segments, therefore, Mixue is very popular among kids, teenagers and middle age buyers. For the selling strategy, there are three important selling propositions including: Emotional Value, so that customers are loyal through emotional closeness. Economic Value, by offering products that are almost 50% cheaper than the main competitor's brand products, but at the same quality. Functional Value, carried out by fulfilling basic needs in beverage and food offerings.

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Political Marketing Strategy on the Muslim Party in Bali Case of Partai Keadilan Sejahtera Candidate H. Marjuhin, S.H. In Legislative Elections in Karangasem District

Dima Ekzan Kurniawan and Nur Sofyan

Abstract Bali, an area with a Hindu majority, has a unique anomaly in legislative elections. Partai Keadilan Sejahtera (PKS), a party with Islamic values, can explore sources of victory in an election arena. PKS, represented by H. Marjuhin, S.H., was able to answer the challenge and became the only Muslim representative elected. This study describes the political marketing strategies PKS and H. Marjuhin, S.H. used to win the legislative election in Karangasem Regency, Bali. This research uses a qualitative approach with a case study research type. Validity testing was carried out using the data triangulation method. Data analysis techniques include data reduction, data presentation, and conclusion drawing. It was found that the political marketing strategy carried out by PKS and H. Marjuhin, S.H. was successful in winning the legislative election amid unfavorable conditions.

Keywords Political marketing strategy · Muslim party · Muslim candidate · Legislative election · Bali

1 Introduction

The discipline of communication science is growing and becoming more complex. Communication science has also penetrated political science. Indonesia, which is a country with a democratic system, will not be far from communication science and

D. E. Kurniawan (✉) · N. Sofyan
Department of Communication Studies, Faculty of Social and Political Science, Universitas Muhammadiyah Yogyakarta, Yogyakarta, Indonesia
e-mail: dima.ekzan.isip19@mail.umy.ac.id

N. Sofyan
e-mail: nursofyan@umy.ac.id

political science. Democracy, in a broad sense, can be interpreted as a government of the people, by the people, and for the people. This indicates that the highest power is in the hands of the people. To realize this understanding, democratic countries usually use certain methods to elevate the existence of the people as the holder of the highest sovereignty in the state. So the general election system is used, which is considered a symbol, as well as a benchmark of democracy [1].

In 2019 Indonesia went through a democratic party. Legislative and executive elections have been carried out with extraordinary dynamics. The political dynamics are already being felt towards the 2024 general election. According to Tamimi [2], approaching the 2024 election, many parties have started self-promotion or carried out special strategies to build the image needed by a national leader. What is more, when Indonesia has to deal with the Covid-19 virus pandemic, which continues to mutate, many political actors who are and will take office are taking advantage of people's suffering and the sluggish social, economic, and political ecosystem to manipulate emotional targets using political branding.

The international community has recognized legislative elections as an arena for forming representative democracy and holding periodic government changes. The main objective of legislative elections is that the region's people can determine their candidate for an appropriate leader and represent the people in an area. According to Schumpeterain, legislative elections are an arena that accommodates competition or contestation between political actors to gain power and people's political participation to make choices in the liberalization of citizens' civil and political rights [3].

Elections are one of the most basic human rights. Therefore, if a country does not hold elections, it can be categorized as having violated human rights and has also violated the principles of democracy itself [4].

Partai Keadilan Sejahtera (PKS) is a party that has Islamic principles. This has been stated in article 1, Sect. 2 of the party's articles of association which reads, "Party based on Islam". Furthermore, in the party's laws, Sect. 1 on party attributes, article 1, paragraph 3 point (b) mentions "two crescent moons symbolize the dimensions of time, harmony, beauty, enlightenment, the greatness of Islam to maintain the balance, continuity of history, glory, and sustainability of the national and state of life". This is reaffirmed in article 1 paragraph 4 of the bylaws, which states "The Party's emblem as referred to in paragraph (3) has a philosophy based on Islam rahmatan lilalamin and the spirit of proclamation to foster leadership for young and patriotic souls as well as the spirit of preparedness, service, in order to realize honesty, truth, justice, and prosperity for all Indonesian people." [5] (Table 1).

Partai Keadilan Sejahtera (PKS), which in 2019 also participated in the contention of regional general elections in Karangasem Regency, Bali Province. On this occasion, PKS got one out of 45 seats represented by H. Marjuhin, S.H., with 2623 votes. In this contestation, PKS is the political party with the fewest seats compared to other parties.

Table 1 Seat comparison

No	Party name	Total seat
1	Partai Demokrasi Indonesia Perjuangan	12
2	Golongan Karya	11
3	Nasional Demokrat	9
4	Gerakan Indonesia Raya	5
5	Hati Nurani Rakyat	3
6	Demokrat	2
7	Partai Persatuan Indonesia	2
8	Partai Keadilan Sejahtera	1

Source Processed by researchers

Based on the elaboration above, the involvement of PKS in the legislative elections in Karangasem Regency is very interesting to study because PKS has both great opportunities and challenges. The opportunity is that PKS has the bargaining power to get votes from Muslim voters, while the challenge is when PKS competes in a region with a majority non-Muslim population like Karangasem Regency. PKS must have its own strategy to attract votes from non-Muslim voters, especially as a political party based on Islamic values and ideology. Moreover, Bali Province itself is an area where the majority of the population is Hindu.

2 Theoretical Approaches

2.1 Political Marketing

According to Lilleker and Lees-Marshment, political marketing is the use of marketing concepts and techniques in politics [6]. Political marketing is a growing phenomenon as political parties apply marketing concepts and techniques to help achieve their goals. There is an ongoing debate regarding the necessity for major political parties to implement political marketing and become market focused. This involves comprehending the general public's desires and creating a "product" suitable for the electorate to win elections [7].

Political marketing has been interpreted as a way to sell and win political parties or political actors in a presidential or local election contestation. People often confuse it with the term political communication. According to O'Cass political marketing is how political parties or political actors approach constituents to meet and satisfy their needs and interests. Political marketing can also be interpreted as a method or tool to maintain relations between political parties or political actors and their voters, and political marketing is not a tool that can guarantee victory [8].

According to Firmanzah, political marketing is a set of methods that include political initiatives, political ideas, political issues, political ideology, characteristics

of party leaders, and community party work programs. Political marketing is not a concept to sell political parties or political candidates to voters. Nevertheless, political marketing is a concept that offers how a political party or candidate can make a program with problems that occur in society [8].

Political marketing is a marriage between marketing and politics, wherein marketing strategies are utilized to promote the offerings of a political party or a candidate. The merger of marketing and politics in this regard creates a political market, in which politicians are marketers and voters are consumers. In line with contemporary marketing orientations, it is crucial to examine the needs and wants of voters to induce positive political involvement [9].

2.2 Political Marketing Strategy

Communication is an integral part of the political system that functions in a social environment [10]. One form of political communication in which there is the offering, creation, and exchange of value between political actors is political marketing. It is understood as a collection of techniques aimed at matching candidates with potential voters whose aim is to promote political actors to voters [11].

The process of determining a strategy in politics is very important. Therefore, political parties or actors must carefully plan and execute a strategy so that there are no mistakes. According to Adman Nursal, there are three strategies for campaigning political marketing [12].

a.   Push Political Marketing

Push Political Marketing is a way of political marketing that refers to candidates and parties directly meeting voters. This strategy can be by distributing brochures, stickers, flyers, and or interacting directly with prospective voters. In addition to parties and candidates, these volunteers are tasked with carrying out field techniques in implementing party and candidate marketing to the public.

b.   Pull Political Marketing

Pull political marketing is a political marketing strategy that refers to candidates and parties marketing through mass media. This strategy is carried out through mass media, be it print, electronic, social media, or via the internet. This method can effectively convey messages to voters. However, the drawback of this strategy is that it costs a lot if the content is campaigned through mainstream media such as television, newspapers, and online newspapers.

c.   Pass Political Marketing

Pass political marketing is a political marketing strategy that uses organizations or community leaders in the area that greatly influence the local community. This needs to be careful in practice because if you are not careful in its implementation, it is possible that the candidates and parties will not get a good response from the local community.

2.3 Elements of Political Marketing

According to Niffenegger, the product, promotion price, and place elements, known as the marketing mix, are reinterpreted within the scope of political marketing. Political parties have to use the elements of the political marketing mix effectively and efficiently to gain the voters' support and competitive advantage [13].

a. Product

In product marketing, it is goods or services that will be commercialized. In politics, the product is a complex matter related to the political party and the candidate carried in an election. Products are also ideas and programs that will be conveyed to constituents.

b. Promotion

Promotion in commercial marketing is the efforts made to attract the attention of buyers through communication techniques. In political marketing, promotion is defined as a campaign by political parties, and candidates carried out through advertising, public relations, and promotion efforts, which usually use the mass media.

c. Price

Prices cover many things, from economics and psychology to national image. The price for a product is very decisive, it determines which segment of society you want to enter. Prices in the economy include all costs incurred by the party during a period.

d. Place

Placement is closely related to the distribution of messages from a party and its ability to communicate with voters. The place in question is a public space that can be accessed by the community directly or indirectly. This means that political parties and actors must be able to map the structure and characteristics of society both geographically and demographically.

3 Research Methodology

This research uses a qualitative approach, with the type of research being a case study. This research focuses on the political marketing strategy of Partai Keadilan Sejahtera in legislative elections in the Karangasem District. This research was conducted in Karangasem District, Bali Provinces. The subjects in this study were H. Marjuhin S.H. (Legislative member of Partai Keadilan Sejahtera), the winning team of H. Marjuhin S.H., and voters. Meanwhile, the object of this research was the political marketing strategy of Partai Keadilan Sejahtera in legislative elections in the Karangasem District. Data collection techniques were carried out through interviews

and documentation. In checking the data, the researcher used a technique to check the validity of the data, namely triangulation. The triangulation used in this study is source triangulation, which means checking the data obtained from the main source. Data analysis techniques in this research include data reduction, data encoding, and concluding.

4   Findings and Discussion

Based on the researcher's observation, H. Marjuhin, S.H., has participated in and won legislative elections in Karangasem Regency since 2009. Then in 2014 and 2019, H. Marjuhin, S.H. won again in the legislative elections in Karangasem and became the only Muslim representative. PKS always represents by H. Marjuhin, S.H. in three consecutive general elections. PKS has a special nickname, "Partai Kursi Satu, or The One-Seat Party" because they always win only one seat during the legislative general elections in Karangasem, Bali.

4.1   Political Marketing Strategy of H. Marjuhin, S.H. as a Muslim Minority in Winning Elections in the Hindu Majority Region of Bali

The identity of H. Marjuhin, S.H. cannot be separated from PKS because H. Marjuhin, S.H. is also the chairman of the PKS in Karangasem Regency. All actions taken by H. Marjuhin, S.H. can indirectly be interpreted as actions of PKS. Moreover, H. Marjuhin, S.H. is the only Muslim official in the legislative institution of Karangasem Regency, so H. Marjuhin, S.H. must maintain the image and identity of himself, the party, and the Islamic religion.

In Bali, Muslim minority candidates are built through political marketing focusing on religious plurality rather than gender issues. The presence of a Balinese Muslim minority candidate has also contributed to enriching the discourse on Islam and Hinduism in Bali. Balinese Muslim minority candidates weave political marketing together by emphasizing a sense of trust. Bali represents Hinduism's attachment to the Balinese community system [14]. Pluralism is inseparable from multiculturalism discourse because the political foundation of multiculturalism is to identify pluralism. This pluralism is a social fact that is difficult to deny and even has significant meaning in the life of the nation [15].

In implementing a push political marketing strategy, the candidate is supported by an active team of volunteers who directly approach the community. They introduce H. Marjuhin, S.H. by involving themselves in community programs. Personal door-to-door approaches are also intensively carried out to promote PKS products. According to a source, there are various ways that the candidate and the volunteer

team promote the products and introduce the candidate. First, by visiting each household. Second, by attending community religious activities. Third, through the street lighting program in Kecicang Village. Fourth, by initiating sidewalk improvements. In every meeting and activity, the candidate and volunteers also distribute *t*-shirts and stickers. This method is certainly used to remind the community about the presence of the candidate by including the candidate's photo, name, number, vision and mission, and party symbol.

The political message conveyed by H. Marjuhin, S.H., and the volunteer team to the community is the Balinese proverb "Menyama Beraya". This proverb is a way of life in Bali and is the foundation for building relationships between religions [16]. The phrase "Menyama Beraya" is always conveyed by H. Marjuhin, S.H., during his campaign as his political message. This can attract sympathy from Hindu voters.

In implementing the Pull Marketing Strategy, H. Marjuhin, S.H., and his campaign team utilize mass media such as print, electronic, social, and outdoor media to introduce the candidate and build a positive image. The role of media in political competition is significant as it has become a new platform for political communication efforts such as political campaigns and technology-based public services [17]. According to sources, H. Marjuhin, S.H. often spreads his campaign through Facebook, as users are still considered numerous in Karangasem Regency. Meanwhile, the campaign team installs banners at several strategic points for outdoor media. The banners contain information related to the candidate, such as the candidate's name, number on the ballot, and vision and mission.

In addition, H. Marjuhin, S.H., and PKS also have media partners who function to report on all campaign programs that have been carried out. Various media types are advantageous for marketing activities, including H. Marjuhin, S.H., and PKS in political marketing. Mass media is considered very useful in disseminating political messages because it can target a large number of people at the same time. Delivering a political message correctly and effectively will be able to attract the sympathy of the community so that they are willing to accept the intentions desired by politicians [18].

In conducting Pass Political Marketing, H. Marjuhin, S.H. conducted socialization and cultural approach with influential figures. Cultural politics refers to the active debate and discussion of ideas in action that have the potential to bring about changes in social relationships and conditions [19]. According to sources, this approach was taken because emotional ties with constituents through certain figures can influence voters. The approach of pass political marketing through community figures who have emotional closeness with their group is considered capable of influencing public opinion. This has also become a culture in the political world to get closer to figures who influence the community.

The method used in this approach is that H. Marjuhin, S.H. often approaches influential youth figures who are into sports. Additionally, H. Marjuhin, S.H. also holds special positions in several organizations such as Panitia Hari Besar Islam (PHBI), Ikatan Persaudaraan Haji Indonesia (IPHI), and a member of Majelis Ulama Indonesia (MUI). With these positions, certain figures and their members will instinctively choose H. Marjuhin, S.H. in the general election.

4.2 The Elements of Political Marketing as a Selling Point for Muslim Candidates

H. Marjuhin, S.H., as the only Muslim candidate among 45 seats in the legislative institution of Karangasem district, must have a different selling point compared to his political opponents during the campaign. While H. Marjuhin, S.H. has competitors from other parties who are also Muslim candidates, he is the only one from the PKS party to have consistently had a representative in the legislative institution of Karangasem district for three terms. The fact that the Balinese Muslim minority candidate is actively engaging and connecting with all members of Bali's society shows that the candidate is striving to achieve political objectives that are focused on the family, community, and the wider public in the province of Bali [20]. Various political marketing initiatives have been aimed at promoting Balinese Muslim minority candidates at religious, social, and cultural events that are common in Bali. The increasing visibility of religious activities in public spaces indicates that candidates from the Muslim minority in Bali are becoming more confident in expressing their religious identity as they attempt to secure a role in the bargaining process for the legislative elections [20].

The bargaining power of H. Marjuhin, S.H. can be explained through the elements of political marketing in the marketing mix.

1. Product

According to Newman [21], Political marketing regards the campaign platform as the main political product, which is composed of four elements. According to the source, the initial element is the candidate's general election program based on their party's guidelines, which in this case is the Muslim party that remains beneficial for all religions. The second element is their stance on the most crucial issue that arises during the campaign period, which is diversity. The third element is the candidate's image, which is H. Marjuhin, S.H., who is a Muslim but does not marginalize other religions. The fourth element is a reference to the candidate's political background and the support of their voters, as H. Marjuhin, S.H. has been a legislative member since 2009 and has always been accepted by the entire community. Furthermore, according to the source, the product offered by H. Marjuhin, S.H. is a vision based on the value of "Rahmatan lil alamin" or goodness for all creatures of the universe, which is absorbed in Balinese culture with the term "Menyama beraya". This means that Islam brings benefits to diversity without marginalizing other religions, and this can be accepted by the Balinese community.

2. Promotion

Promotion in various forms is the most apparent part of political marketing campaigns. The promotion mix can be divided into two main parts, namely paid media, which includes all forms of advertising such as posters, print or broadcast media, as well as telephone and direct-mail marketing, and free media, which refers to the publicity that the party receives but does not pay for (O'Shaughnessy, in [21]).

According to the source, the promotion type involves direct interaction with the community through humanitarian programs, such as sidewalk repairs and providing public street lighting, which incurs costs. However, for promotions without cost, reliance can be placed on word-of-mouth communication between people.

3. Price

Prices can be seen as variables related to campaign funds, psychological prices, and image prices, according to Niffenegger [22]. According to the source, H. Marjuhin, S.H. did not spend too much campaign funds because he did not use political money practices. For psychological prices, constituents do not have a problem with the background of the candidate, who is a Muslim minority. As for image prices, constituents believe that H. Marjuhin, S.H., will provide a good image for the people of Karangasem Regency.

4. Place

To win the competition in general elections, political parties must fulfill the needs of the public. The public's needs include work programs, ideology, aspirations, and a leadership figure that instills confidence in the future. This can only be seen when candidates conduct campaign activities in easily accessible public spaces. According to the source, commonly used public spaces will be tailored to the type of campaign such as fields and residential areas. In addition, virtual spaces using social media will also be utilized in the campaign, such as Facebook and Instagram.

The four elements mentioned above, namely Product, Promotion, Price, and Place, are very important. None of these elements can be reduced because they are interdependent and complementary. Logically, every candidate in the election must have a product to offer. Then they must have a way to introduce the product through promotion. They must consider the price to be spent, and lastly, they must pay attention to the place to be used in the campaign. H. Marjuhin, S.H. has possessed all of these elements to win the election in Karangasem Regency, Bali.

5 Conclusion

This research has aimed to demonstrate the usefulness of marketing concepts in political marketing. PKS, with H. Marjuhin, S.H., and the campaign team, has proven the benefits of effectively and maximally utilizing political marketing. The challenge of competing with the Hindu majority in the general election can be answered using political marketing to compete amid the Muslim minority condition. Each campaign team strives to formulate effective strategies to dominate the minds of the public, as having a strong position in the minds of the public will make a political product easy to remember. The research results show that the political mix affects constituents' intentions to participate in legislative elections. Then, through a political marketing

mix strategy, fundamental aspects of the campaign can be systematically arranged. Product, promotion, price, and place should be deeply considered as a foundation in political marketing campaigns.

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Personal Branding as an Culinary Influencer on @arthaliamelati_ TikTok Account

Yushito Eswanda and Nur Sofyan

Abstract TikTok is the platform for many users to interact and participate in a virtual community. As a social media, TikTok it also brought the rise of social media influencer. Rr. Arthalia Melati Soedarmo is one of the TikTok users and is an influencer in the culinary field, using the media to utilize her personal branding. This study is to finding the role of personal branding used in @arthalialiamelati_ as a culinary influencer in TikTok. This research uses qualitative descriptive approaches. Data analysis techniques, consisting of data collecting, data reduction, data presentation and conclusion. Data triangulation method applied on this research to validate the data on checking and comparison purposes. The results of this study, Arthalia had many positive feedback by her personal branding. later founds out to be able maintaining and controlling her personal branding, Arthalia uses the strategy on her contents by combining non culinary and storytelling at that time with her culinary habit and she has been effectively succeed in building her personal branding when law of personal branding theory used as indicator in this study.

Keywords Personal branding · Culinary influencer · TikTok

1 Introduction

The technology as time progresses and developments rapidly advance in the world of living beings especially humans, there is a desire and effort to adapt and changing the environment, culture, society also the technology itself at an increasing pace.

Y. Eswanda (✉) · N. Sofyan
Department of Communication Studies, Faculty of Social and Political Science, Universitas Muhammadiyah Yogyakarta, Yogyakarta, Indonesia
e-mail: yushito.e.isip19@mail.umy.ac.id

N. Sofyan
e-mail: nursofyan@umy.ac.id

Social media is the results of technology development, allows people to connect and interact with other people [1]. Digitalization has brought a new era of innovation and technology uses, impacted significantly the human lives [2], and led us to new developments in new media such as social media has made it possible for almost all internet users to create and share their contents online [3].

As of January 2023, the number of people actively using social media in Indonesia was 167 million, which represents 60.4% of the country's population [4]. TikTok is one of social media that become the fastest growing social network in the post-pandemic era [5]. According to Sensor Tower in September 2022, TikTok in Indonesia became the country with the most installations in Southeast Asia, this means that 37.4% of all TikTok downloads in Southeast Asia are from Indonesia [6]. TikTok has gained this popularity among users for its interactive, informative, and entertaining content [7], this short-form music videos platform simply allow users to create engaging and creative content that attract their audiences.

Social media is a networked and interactive platform that motivates individuals to able participate in virtual communities, media social users act as both producers and consumers of the information [8]. In the development of social media platforms, has given a new term for users who achieve fame and recognition through their digital content as an "social media influencers" [9]. Influencer in social media commonly refers to a person or user who used social media as a platform to influence others [10]. The rising of social media influencers caused by the cultural and financial momentum behind the influencer industry, estimated that over 50 million people worldwide identify themselves as influencers or creators and investments in the creator space amounted up to 5 billion dollars [11], highlighting the increasing recognition and importance of influencers and creator in the digital economy nowadays.

An influencer or creator in social media should have an differentiating factors to maximize their appearances or 'stood up' among the others. The importance of having a personal brand increased due to globalization and social media development [12]. Personal branding is the concept of presenting ourselves and controlling the impression when others see us both in real world or virtual world [13]. By building an impression that can reflect consumers, it generates connection that can maintain a positive, strong and long-term relationship between brands and consumers [14], in thus area are influencer and their audiences.

Rr. Arthalia Melati Soedarmo is often called Arthalia, a content creator of TikTok joined in 2020. In her TikTok, Arthalia often created content about culinary around Yogyakarta. Street foods is an important segment of the food supply especially for people who living in urban areas of developing countries [15]. Arthalia tried the first time using the TikTok app during COVID-19 pandemic in 2020. COVID-19 pandemic has had carrying effect among individuals and linked to factors of increasing use of social media during this period [16]. Arthalia takes advantage from her culinary hobby, which involved hunting an street foods also malls in Yogyakarta. Yogyakarta is a province region that become the second biggest tourist destination in Indonesia after Bali, offered diverse culinary options that have yet to be fully explored [17]. As an influencer She achieved more than 15.000 followers and 1 million likes in her TikTok account by serving video content mostly about culinary, video-blogging

and fashion. Social media influencers can be distinguished based and counted on their achieved followers, micro-influencers typically having up to 10.000 followers and macro-influencers having over or more that 100.000 followers [18]. The diversity culinaries Yogyakarta offered, leading peoples in Yogyakarta new opportunities to participate such as an influencer. The findings and insight from this study is the role of personal branding in managing TikTok account can be served as a reference to evaluate personal branding strategy and be beneficial who are currently building or starting a personal branding, especially on TikTok. The aim of this research is to explore and gaining insight into how Rr. Arthalia Melati Soedarmo utilize role of personal branding that her applied to managing @arthaliamelati_ as a culinary influencer on TikTok.

2 Theoretical Approaches

2.1 Branding

Branding is the process of introducing a product so it well known, recognized and can be used by the public or the consumer. The branding process is done to provide clarity about something, so an good image is created that corresponds to the desires of the product owner [19].

Branding is a process that requires consistent effort from the product owner to instill the values and perceptions associated with their brand in the hearts and minds of their consumers. The values that associated with a brand are based on the awareness, qualities, consciousness, and associations that are attached to the brand.

2.2 Personal Branding

Personal branding is a way for someone to control of how the others seeing or perceive them. Everyone has their own personal brand, whether consciously or unconsciously formed, therefore a person needs to have a strategy in managing and maintain their personal brand for its longevity and their sustainability.

Personal branding is done by when someone wants to be known for their character, vision, mission, skills, and their uniqueness, by creating a good and strong personal brand, individuals can effectively marketed and positioning themselves in their chosen fields [19].

Personal branding consist of several important elements that linked each other's and need to be built, according to Peter Montoya and Vandehey [20], there is three main building elements:

1. You

It is yourself, personal branding can be developed by their own design and communication methods arranged in such a way as to produce a good personal brand. With two main important things against their target market:

- Who is this person personally?
- What specialization or area of expertise is this person mastered?

2. Promise

Personal branding is related to a promise, a promise that contains a responsibility to fulfill their society needs or desires, and there are causes and effect of the personal brand that is built.

3. Relationship

The relationship or connection that someone has also helps to build a high-quality relationship image for someone who has a good personal brand. Attributes that are relevant to clients and have a connection with a higher power show that there is a better level of relationship in their personal brand.

2.3   Eight Laws of Personal Branding

These are eight main points in building an individual's personal branding according in "The Personal Branding Phenomenon" by Peter Montoya [21]:

1. Law of Specialization

A personal brand should be focused on strengthening, trying into various fields without any specialization weakens the audience's attention and creates doubt [22]. Specialization requires individual to concentrate or focus on a particular skill that is used as strengthens on branding.

2. Law of Leadership

Basically, peoples want to be influenced. Public want someone to lead them and someone who can remove uncertainty and offer clarity [23]. The ability to solving and mastering problems reflect strengthens of individual.

3. Law of Personality

A good personal branding based on individual personality that capable to showing their strengths and advantages as they are, and how they deal with their weaknesses.

4. Law of Distinctiveness

Diversity demands someone to show their uniqueness compared to others while building personal brand, this difference encourages individual to be more unique and different even thought offering the same thing. Strong and effective personal brand need to have a uniqueness that sets it apart from their competitors in same field or industry [23].

5. Law of Visibility

An individual who consistently promoting, marketing themselves, and utilizing every opportunity, it should be pull themselves up to the surface. If someone has a very unique ability but doesn't show or promote their ability to public, it indicates that personal brand can't be formed [24].

6. Law of Unity

The unity makes an individual to have one word that bond between their words and his actions. The reality of individual personal life should be in line with the values and behaviors they have established in their personal brand [22].

7. Law of Persistence

Building a personal brand takes time to grow, and its important to pay attention to each stage and trends. Building a personal brand takes time and consistency, and its important for individuals to stay committed with the brand they've created [22].

8. Law of Goodwill

Goodwill refers to the intention of doing good and creating a positive image for a personal brand, alongside hoping that branding it will last longer. A good, influential, and long-lasting personal brand can be formed if the perceptions are positively and have a values or ideas that useful in public [24].

3   Research Methodology

This research uses qualitative descriptive approaches. This study focused on personal branding that used in @arthaliamelati_ as an culinary influencer in TikTok. This research was held at Special Region of Yogyakarta. The object of this research is the management of TikTok account @arthaliamelati_ owned by Rr. Arthalia Melati Soedarmo in the 2022–2023 period. The data collection techniques that are used to obtain the data for this research, through interview and documentation. Data analysis techniques that will be used to processing data in this research is a qualitative data analysis, consisting by four steps, data collecting, data reduction, data presentation and conclusion. To validate the data on this research, researcher using data triangulation to checking and comparison purposes.

4   Findings and Discussion

4.1   *Rr. Arthalia Melati Soedarmo Being Influencer*

Rr. Arthalia Melati Soedarmo or used to call Arthalia is the owner of TikTok account of @arthaliamelati_, she is one of many influencers that lives in Yogyakarta that located in Republic of Indonesia and she produces video contents about culinary. According to her, she like to be strolling around Yogyakarta city to do "street foods hunting", it means to going outside and buying a food, beverage, or snack from the stalls on the side of the roads. She is interested in a variety of foods around Yogyakarta, because there is not only traditional foods in Yogyakarta but almost every kind of modern, traditional, western, eastern, and many more its available in Yogyakarta.

Arthalia started using TikTok during the COVID-19 pandemic in 2020. The first time she used TikTok, there is no intentions that she will using TikTok as a media to influences other people or to be an influencer. She just using TikTok like many teenagers, who want to express their emotions with short video content with various music that can be applied in the videos, or just posting a video to show what she's up to. During pandemic almost everyone can't go outside to do work or go to school due to lockdown, but there are some peoples that needed to go outside to work for their life such as foods vendor. The situations bring Arthalia the ideas to produce an content about local street foods also promoting their business to her audiences. Now it brought Arthalia into having more than 15.000 followers, reaching 1 million likes on TikTok.

Branding is a process how we introduce our product, this could be goods or services that we provide. In this digitalization era, social media became a mainstream media that anybody able to join, socialize, and be whatever we want to be. TikTok is one of many social media that is currently growing massively, by reason of TikTok are the short video platform making the users are required to produces a video content in a short form and the audiences are simply watching 15–60 s video and move on to the next video or interact with the creators. The TikTok creator needs a branding to be known and recognized by their audiences, then it leads from how to introduce the product became how we introduce ourselves, meaning that our own selves are the product and it can be marketed.

4.2   *Content Insight in @arthaliamelati_ TikTok*

Arthalia branding herself on @arthaliamelati_ in TikTok as culinary influencer workings on promoting and exploring culinary video contents around Yogyakarta. Besides that, not only just promoting a local culinary stall, but she also promoting and recommending fashion shops and tourism spots for tourists when visiting Yogyakarta. Based on @arthaliamelati_ TikTok account, on her culinary content she gained

250.000 22.700 likes and 875 comments on 9 May 2022 about cheapest steak that worth trying, 257.000 views, 21.700 likes, and 571 comments on 11 May 2022 about Pakualaman street foods, and 123.000 views, 14.800 likes, and 381 comments on 3 April 2022 about Jogokaryan Ramadhan Village events. It shows a lot positive and curiosity comments through that culinary video contents such as "what recommended time to visit there?", "the dumplings and the ice cream are the best one" and "this is my favorites steak place!!!".

Meanwhile on one of her fashion contents, she gained 511.000 views, 48.200 likes and 281 comments on 30 March 2023 about woman fashion shop recommended to visit, and one of her tourism spot contents, she gained 4000 views, 197 likes and 12 comments about Tirto Raharjo Temple. Also, it shows many positive and enthusiastic comments even though these contents are not about culinary. Based on her TikTok, in early 2023 she often produces non-culinary content including fashion and tourism, according to her it causes by brand deals that working alongside of her.

So, she used a unique way by telling her life story at the time and including what she ate along the trip to the destinations. She wanting to be able reaching more of her audiences outside culinary stuff but still maintains herself as a culinary influencer. The strategy of combining her culinary content into non culinary and slipping the story of her life on that day is making the personal brand that she has is the habit of the culinary. A habit is not only what usually someone does, but it becomes one with the person and can be used as a value of the personal branding itself. Her culinary habit is an effort to making and controlling her personal brand through her contents.

4.3 Law of Personal Branding as a Personal Brand Building Indicator

Effective and good personal branding are needed to ensure the public is in our control, yet it need process and time to build. But it can be fatal if not done properly and carefully. In this study, researcher has collected data from interview with Arthalia herself, some of her follower, and documentation related to the TikTok account @arthaliamelati_ and the research results are presented by describing the concept of personal branding formation.

First is specialization, Arthalia specializes in creating culinary content videos on her TikTok account. She manages her TikTok account and produces her video content by generating the ideas, preparing shooting equipment, and also post-production when the video needs to be edited.

Leadership, according to @arthaliamelati_ follower, they follow Arthalia because of the interesting and informative content that she presents, especially about food recommendations and promotions around Yogyakarta.

Personally, Arthalia always tried to produce good and positive content. If there are negative comments that are not relevant to the context of the content, she chooses to delete them and allows comments that are critical or given opinion about the content.

Distinctiveness, there is so many culinary influencers in Yogyakarta and what makes Arthalia different than the other influencer are making her habit of culinary as her unique selling point when presents the contents on TikTok.

Visibility, Arthalia learns a lesson from many influencers that are already going big and takes advantage of many opportunities by collaborating with brands such as Scarlett Whitening that need her as a promotional tool, and also publishes her video content not only on TikTok but also Instagram to expand her audience.

Unity, according to her followers they assumed Arthalia as a modern woman, that fun, communicative, and humble based on her content and the way she edits her content videos.

Persistence, Arthalia is still inconsistent with her video content, sometimes she feels bored with the monotonous routine of producing content. However, she used to be consistent in uploading one content almost every day, but she still made sure that at least three to four contents were uploaded every week to ensure that her TikTok account did not fall behind with others or new trends.

Goodwill, Arthalia wants to be seen as a good and consistent person. She admits that sometimes the viewers of her video content are not as many as she expected, but she still wants to maintain the consistency. With her presence as an influencer, she hopes to be able help promote the business of restaurant owners, especially the street vendors she met on the street.

5   Conclusions

Personal branding is one of the important things that needs to be owned nowadays, not only celebrities or popular people on social media who need to have personal branding, but every individual should also need it. Personal branding can also represent a person in their life, having a strong and good personal brand makes the values in individual recognized and expected to provide the benefits to things around them. It's also a differentiator of an individual, making it easier to identify each individual from their uniqueness and diversity that deserves to be appreciated.

Based on the findings and discussion above, Rr. Arthalia Melati Soedarmo on her TikTok account has proved using all aspects that the personal branding she has built is good for maintaining and controlling her audiences. In terms of specialization, she works totally in producing culinary content so that viewers can receive interesting and informative content. In terms of leadership her followers acknowledge that the content Arthalia posting on @arthaliamelati_ is not only about culinary that makes interesting but also the informative promotional content she posts about Yogyakarta. In terms of visibility, she collaborates with a brand, which is certainly not only beneficial for the brand but also for the creator. On unity, Arthalia has successfully created a person branding that is the same as her true self. In terms of persistence, Arthalia is not quite able to maintain consistent in uploading her content regularly, which can weaken the strength of her personal branding. In terms of goodwill, she already has a very good intention to help many food vendors. And in terms of distinctiveness,

Arthalia has a advantage found in this research, which is the personal branding she has built is not only as a culinary influencer, but she also turns her hobby of hunting for culinary into a habit value that can be as strengthens in the process of building her personal branding.

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Analyse the Value Creation Metrics EVA and MVA During COVID-19 with Reference to BSE Listed Companies in India

Katepogu Kiran Kumar, Arockia Stalin, and Syamala Devi Challa

Abstract The purpose of the study is to ascertain the company's value creation for their shareholders even after the Pandemic era. A company must have a plan for sustainable growth if it wants to survive in the long-run period. This can be achieve by employing modern techniques that create shareholder value. Therefore, the study examined firms' financial performance and value creation for their shareholders. In light of this, the study used EVA and MVA approaches, which are the most suitable techniques for measuring financial performance. In order to this, the study choose BSE30 listed companies that were actively trading on the market and that had the highest market capitalization. The study found that certain companies created value to their shareholders, such as Hindustan Unilever Limited (HLL), TCS, and ITC Companies, while others, IndusInd Bank and Bajaj Fin Service, destroyed value owing to higher weighted average costs (WACC) and financial distress.

Keywords EVA · MVA · Rank correlations · Regression · F-statistics

1 Introduction

The world witness the epidemic era and understand the changes in global market with regard to high fluctuations in major stock market indices. Due to sudden changes in share prices and financial performances, Investors lose their confident and many quit form the stock markets investments in the world. However, the common objective of the firms is to maximise the shareholders wealth at any circumstances for creating

K. Kiran Kumar (✉) · A. Stalin
Kristu Jayanti College (Autonomous), Bangalore, India
e-mail: k.kirankumar@kristujayanti.com

A. Stalin
e-mail: arockiastalin@kristujayanti.com

S. D. Challa
Kallam Haranadhareddy Institute of Technology, Guntur, India

confident in to the investors mind. Otherwise, they may quit from the company by simply selling their securities with in the period. Therefore, it is the duty of the company management to make the shareholders stay in the company for a long period. In order this, use innovative strategies for creating wealth to their shareholders by the company management.

The study aims to examine the shareholders' value creation during and after the pandemic period besides whether well-known companies can create wealth for their shareholders during the period of study. In order to this, a company has to have a plan for sustainable growth if it wants to survive in the long run period. Moreover, the future is uncertain; keeping this company's management should have a strategic plan to overcome this kind of scenarios. Regarding this, the study examined the financial performance of BSE-listed companies and finding these companies created or destroyed value for their shareholders using modern techniques i.e., EVA and MVA [1–3].

2   Review of Literature

The literature on the relationship between EVA and MVA of businesses, EVA as a stand-in for MVA, correlation between EVA and MVA, value drivers, firm performance and MVA, inter-industry study and survey, etc. is included in this Study.

As a result, a company's EVA performance has a significant impact on MVA. Uyemura et al. and other authors showed that EVA has a high correlation with market value added, and consequently stock price (the difference between the firm's value and cumulative investor capital). In defining the relationship between value-added and market returns, Riahi-Belkaoui also compared the use of linear and non-linear models. He discovered that models relating accounting and market returns have greater explanatory power when, first, the accounting returns are expressed by the relative changes in net value-added.

NOPAT is defined by Copeland et al. as the profit after taxes attained through net revenues less operational costs and expenditures, depreciation, and taxes.

Wet De 2005 examined the link between EVA and MVA and discovered that MVA and cash flow from operations had a greater association.

Sengupta et al. [2] has shown that the Indian companies has not only employed Economic Value Added models as a basic instrument for performance monitoring but as an ultimate benchmark of wealth generation. Even if the use of EVA as a performance yardstick in India may just be in its infancy, several Indian businesses are steadily adopting this metric to meet the needs of the more sensitive investor base. When bank management makes choices that result in advantages greater than costs, value is created. Depending on the tactics used in the decision-making process, banks may receive these benefits soon or in the distant future. Projects are typically examined financially from the NPV or IRR point of view, although these metrics may not clearly indicate whether value is being generated.

Aminimehr and Iqbal looked at the link between EVA and MVA using trend analysis and Pearson correlation analysis. According to the study, there is a clear unfavourable association between them.

Satish and Rao [3]: The majority of respondents (74%) who participated in a study on the awareness and adaptability of the newly added concept of EVA in the Indian banking industry agreed that EVA has a bright future in the industry. This suggests that most banks are aware of the concept and respect EVA as a reliable performance indicator.

To examine the 8-year gap in study on economic value added, Sharma and Kumar [4] looked at the literature that has already been published. The NOPAT and cost of capital can be used to compute EVA. In this study, 112 publications are taken into account, demonstrating various justifications for calculating economic value added.

Due to the inclusion of the cost of equity in their calculations, Mojtaba and Zadollah claim that EVA and MVA are superior metrics than traditional ones. EVA and MVA have a positive association with one another, according to a research of the two measures' relationships.

Over the 5 years from 2006–2007 to 2010–2011, Bhasin examined the EVA of five top Indian corporations. He saw that the EVA of BHEL, L&T, and TCS had increased in absolute value. It was discovered that BHEL and TCS had economic profits that were higher than their cost of capital.

Prusty examined EVA from the perspective of corporate governance and found that its implementation raised the level of governance of the company by focusing on value creation.

In their 2014 study, Dhiman, Wani, and Singh sought to calculate the EVA and MVA of 30 firms that are part of the Sensex, the premier index of the Bombay Stock Exchange. Also, they made an effort to rate such businesses according to their average EVA and MVA. Only BHEL was shown to be a wealth killer in terms of average EVA. The companies with the highest mean MVA for their shareholders were Aditya Birla Chemicals, ACC, Larsen and Toubro, Tata Motors, and Zee Entertainment Ltd.

Venugopal and Reddy used EVA to calculate the shareholder value creation for Indian pharmaceutical firms. They discovered that 39 out of 77 businesses generated wealth.

EVA for 50 companies listed on the National Stock Exchange was computed by Dogra. In terms of EVA, he discovered that the State Bank of India was the top wealth producer. Tata Motors, on the other hand, came in last in terms of EVA during the 2012–2013 year.

3   Research Gap

The purpose of the study is to analyse BSE 30 Company's shareholders value during unforeseen fluctuations like COVID 19 and Financial Distress. In order to this, the study employs the Value Creation Measures EVA and MVA with reference to BSE Listed Companies in India in order to assess the value creation during the pandemic.

4   Objectives of the Study

- To evaluate the financial performance of BSE Listed Companies using EVA and MVA.
- To study rank correlation between EVA and MVA for BSE Listed companies during the study period.
- To study the significant relationship between EVA and MVA during the study period.

5   Research Methodology

During the research period of 2019–2022, BSE 30 Listed Companies taken into account for the computation of EVA and MVA. The study made use of Stern Steward, the founder of EVA, to identify the value creation that results in economic profit. Additionally, the research employs the MVA approach to determine the market value of the firm. In this study, rank correlation applied, and the firms ranked based on their EVA and MVA values.

5.1   Data Collection

The financial figures were compiled using financial data taken from publicly available annual reports on company websites and BSE index values taken from the BSE website.

5.2   Sample Size

The BSE30, which consists of 30 firms used as the study's sample. All 30 companies taken into account in the studies for the overall examination of shareholder value creation. However, only those companies that remained in the BSE 30 for the period 2019–2022 were included in the analysis. In light of this, based on market capitalisation all 30 firms taken into account in the research during the period of the study to gauge total shareholder value creation.

5.3   Tools of Analysis

To analyze year wise performance of all 30 companies in terms of EVA and MVA, descriptive statistics computed. The study applied Regression, F-statistics to analyze

the significance of company wise EVA and MVA to measure overall shareholder value creation of 30 companies.

5.4 Hypothesis Statement

Based on the theories described and some of the results of previous research, the following hypotheses can be determined:

- H0: No discernible relationship exists between Market Value Added and Economic Value Added in BSE 30 Businesses.
- H1: Discernible relationship exists between MVA and Economic Value Added in BSE 30 Businesses.

6 Results and Discussion

Maximizing shareholder value is every business' primary goal, and this research sought to determine whether BSE 30 businesses could do so during and after the pandemic.

Maximising shareholders value is every company primary objective, the purpose of the study is to determine which BSE 30 companies able to create value to their shareholders. Table 1 shows the financial performance of BSE 30 companies through MVA and EVA over the period of study. In this study, the majority of the companies retain their market value, and many companies created wealth for their shareholders. Out of 30 companies' five companies destroyed the shareholders' value rest of the companies created value. It means that many companies had their own future strategic plans to overcome the unexpected jolts. Moreover, companies focused more on cutting cost and investing on essential projects.

In terms of MVA during the research time, Reliance Industry came in first, followed by TCS and HDFC Bank in second and third, and In terms of EVA, Asian Paints came in first, followed by Nestlé in second, and Titan Company in third. Even after the pandemic, the research found a strong relationship (94%) between EVA and MVA.

Table 2 shows the rank correlation between financial performance measures EVA and MVA during the study. The research discovered that Hindustan Unlevered Limited, TCS, and ITC ranked 1st, 2nd and 3rd to kept steady returns both during and after the pandemic [5]. It implies that the IT and Food and Beverages (HLL and ITC) sectors will be least affected by a pandemic. By making the right choices, these three companies increased the worth of their stockholders' value (Graph 1).

However, IndusInd Bank and Bajaj Fin Service ranked at 30th and 29th respectively. This implies that not all companies able generate wealth to their stockholders during pandemic, there are some companies not able create wealth due to more WACC and unexpected conditions like COVID and financial distress. Then, company

Table 1 Financial performance of BSE 30 companies during the period of 2020–2022

Company	Avg. MVA (Rs. In Cr)	Rank	Avg. EVA (Rs. In Cr)	Rank
RELIANCE IND	1,60,84,254	1	157.6	14
TCS	1,27,50,228	2	226.5	8
HDFC BANK	87,29,636	3	− 0.92	23
INFOSYS LTD	65,80,850	4	191.7	11
HUL	58,31,599	5	446.8	4
ICICI BANK	57,57,680	6	− 0.248	29
ITC	47,32,547	7	242.5	7
SBI	46,49,276	8	− 0.255	30
HDFC	46,33,614	9	− 0.182	25
BHARTI AIRTEL LTD	41,28,493	10	158.8	13
BAJAJ FINANCE	37,50,504	11	− 0.206	26
KOTAK MAHINDRA BANK	33,64,437	12	− 0.151	24
L&T	29,96,473	13	325.6	6
HCL TECHNOLOGIES LTD	29,68,614	14	136.7	15
ASIAN PAINTS	26,26,955	15	546.2	2
MARUTI SUZUKI	26,12,993	16	438.8	5
AXIS BANK	25,91,836	17	− 0.234	28
SUN PHARMACEUTICAL INDUSTRIES LTD	23,16,318	18	219.6	10
WIPRO	22,47,271	19	115.8	17
TITAN COMPANY	21,23,673	20	662.3	1
ULTRATECH CEMENT LTD	20,84,348	21	183.4	12
NESTLE	17,99,503	22	491.9	3
NTPC	16,58,615	23	100.8	18
MAHINDRA and MAHINDRA LTD	15,73,944	24	214.6	9
TATA STEEL	13,41,240	25	33.15	21
TATA MOTORS	13,21,154	26	90.31	19
POWER GRID CORPORATION OF INDIA LTD	11,30,285	27	80.06	20
TECH MAHINDRA	10,78,145	28	125.8	16
INDUSIND BANK	8,13,926	29	− 0.208	27
BAJAJ FINSERV	2,17,223	30	− 0.51	22
Correlation			0.94	

*Source*Computation

Table 2 EVA and MVA average rank correlation during the period of study

Name of the company	MVA rank	EVA rank	Avg. rank	Rank
HINDUSTAN UNILEVER LTD	5	4	4.5	1
TATA CONSULTANCY SERVICES LTD	2	8	5	2
ITC LTD	7	7	7	3
INFOSYS LTD	4	11	7.5	4
RELIANCE INDUSTRIES LTD	1	14	7.5	5
ASIAN PAINTS LTD	15	2	8.5	6
LARSEN and TOUBRO LTD	13	6	9.5	7
TITAN COMPANY LTD	20	1	10.5	8
MARUTI SUZUKI INDIA LTD	16	5	10.5	9
BHARTI AIRTEL LTD	10	13	11.5	10
NESTLE INDIA LTD	22	3	12.5	11
SUN PHARMACEUTICAL INDUSTRIES LTD	18	10	14	12
HDFC BANK LTD	3	25	14	13
HCL TECHNOLOGIES LTD	14	15	14.5	14
HOUSING DEVELOPMENT FINANCE CORPORATION LTD	9	23	16	15
MAHINDRA and MAHINDRA LTD	24	9	16.5	16
ULTRATECH CEMENT LTD	21	12	16.5	17
BAJAJ FINANCE LTD	11	22	16.5	18
ICICI BANK LTD	6	29	17.5	19
WIPRO LTD	19	17	18	20
KOTAK MAHINDRA BANK LTD	12	24	18	21
STATE BANK OF INDIA	8	30	19	22
NTPC LTD	23	18	20.5	23
TECH MAHINDRA LTD	28	16	22	24
TATA MOTORS LTD	26	19	22.5	25
AXIS BANK LTD	17	28	22.5	26
TATA STEEL LTD	25	21	23	27
POWER GRID CORPORATION OF INDIA LTD	27	20	23.5	28
BAJAJ FINSERV LTD	30	26	28	29
INDUSIND BANK LTD	29	27	28	30

Source Computation

management have to focus more attention on value creation, otherwise, investors have a chance quit from the market, as they are the true owners of the company. Therefore, it is the responsibility of the administrators to generate wealth and keep the P/E ratio in line with investor expectations.
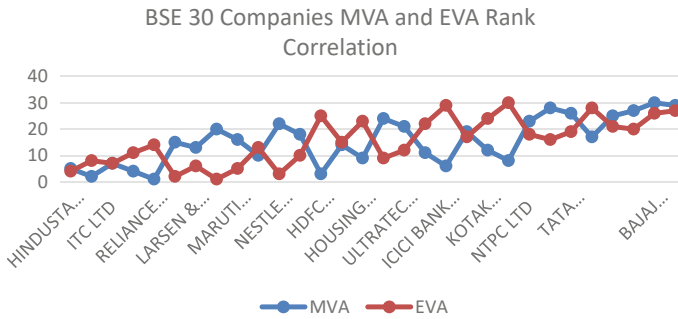
Graph 1 Correlation between MVA and EVA

Table 3 R statistics

Regression statistics	
Multiple R	0.944995
R^2	0.893015
Adjusted R^2	0.889194
Standard error	1,158,981
Observations	30

6.1 Regression and F-Test

Table 3 depicts the R statistics of BSE 30 Company's relation between EVA and MVA; the study found that there is 88% strong positive relation between the selected variables. Moreover, Table 4 shows F-Statistic at 5% significance level of EVA and MVA BSE 30 companies. The F-Test statistically found that the model is good fit 233.71 at (28, 29, 1) degrees of freedom. The overall all the companies behave same direction during pandemic.

Table 4 F-statistics

	df	SS	MS	F	Significance F
Regression	1	31,394	313,940	233.7189	4.05375
Residual	28	3761	134,323		
Total	29	3515			

*Source*Computation

7   Conclusion

This paper analyses the value creation of BSE 30 companies using EVA and MVA in order to determine whether listed companies were able to create or destroy the value during pandemic period. It is surprising that the analysis shows that certain companies created value to their shareholders, such as Hindustan Unilever Limited (HLL), TCS, and ITC Companies, while others, such as IndusInd Bank and Bajaj Fin Service, destroyed value owing to higher weighted average costs (WACC) and financial distress. Moreover, F-Statistic at a 5% significance level of EVA and MVA BSE 30 companies revealed that the model is well-fitting at 233.71 at (28, 29, 1) degrees of freedom as the same results of. Therefore, there is discernible relationship exists between MVA and Economic Value Added in BSE 30 Businesses. It implies that any rapid changes in the business environment that have an influence on a company's results will only last for a short while not long period [6]. The study concluded that BSE 30 Companies overall performance maintained consistent returns during study period, but less value creation when compared to prior years.

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Analysis of Data Clustering: Factors Influencing the Demarketing of Breast Milk Alternatives

Samer Yaghi, Samir Baidoun, and Mohammed Salem

Abstract This study employs data clustering techniques to examine the factors influencing the demarketing of breast milk alternatives. The dataset is subjected to the data clustering approach in order to cluster its variables according to how similar they are. An empirical study using 376 questionnaires from Palestinian breastfeeding women in the Gaza Strip was done to collect primary data. The findings demonstrate that four variables—product, price, place, and promotion—have an impact on the demarketing of breast milk alternatives for a variety of reasons. Policymakers may use the study's insights into the factors influencing the demarketing of breast milk alternatives to create successful strategies for promoting breastfeeding and controlling the marketing of these products. The study also emphasizes how important it is for producers to use moral marketing techniques and create products that are more in line with the WHO International Code of Marketing of Breast-milk Substitutes.

Keywords Demarketing · Gaza strip · Breast milk alternatives · Data clustering · Palestine

1 Introduction

The most suitable form of nutrition for newborns is commonly acknowledged to be breastfeeding. Mothers may opt to utilize breast milk alternatives or be unable to breastfeed for a variety of reasons [1–3]. For many years, the marketing of breast milk alternatives has been a contentious topic due to worries about how it may affect

S. Yaghi · M. Salem (✉)
University College of Applied Sciences, Gaza, Palestine
e-mail: mzsalem@ucas.edu.ps

S. Yaghi
e-mail: syaghi@ucas.edu.ps

S. Baidoun
Birzeit University, Birzeit, Palestine
e-mail: sbaidoon@birzeit.edu

breastfeeding rates and baby health [4, 5]. In order to control the marketing of breast milk alternatives and support breastfeeding, the World Health Organization (WHO) International Code of Marketing of Breast-milk Substitutes was created in 1981 [6–8].

The WHO's forum, the World Health Assembly (WHA), adopted the International Code of Marketing of Breastmilk Substitutes on May 21, 1981 [6]. The Code was developed as a global public health strategy to ensure that breastfeeding is encouraged and that, if required, breastmilk substitutes are administered safely [2]. Infant formula, other milk products, meals, and drinks, including bottle-fed supplementary foods, feeding bottles, and teats should also be subject to marketing restrictions in accordance with the Code [9]. Additionally, it emphasizes how important it is to use feeding bottles and teats in accordance with ethical marketing principles [10]. In later decisions, the WHA clarified a number of Code provisions. These initiatives suggest increased efforts to limit or demarket breastmilk substitutes in order to promote breastfeeding.

The widespread usage of breastmilk alternatives in various nations, including Palestine, may be explained by the rising demand on "modern" actions. This includes exposure to the media, interaction with western medical practices, aggressive marketing of breastmilk alternatives, and violations of the Code by companies that make infant food [10–12].

Demarketing is the practice of lowering consumer demand for a good or service [13]. When it comes to breast milk alternatives, demarketing may entail encouraging breastfeeding, limiting their marketing, or raising the price of these products. Understanding the elements that influence the demarketing of breast milk alternatives and their effect on the market is of developing interest [4, 5].

Data clustering is an effective method for finding patterns and connections in huge datasets. It entails putting comparable data pieces together according to their characteristics. The identification of customer groups and the comprehension of the variables influencing consumer behavior have both benefited from the widespread use of data clustering in many industries, including marketing [14]. In this study, we examine the variables influencing the demarketing of breast milk alternatives using data clustering approaches. The results of this study have important policy implications. Insights into the variables influencing the supply and demand of breast milk alternatives are provided by the study, which can assist decision-makers in creating efficient strategies to support breastfeeding and control the marketing of breast milk alternatives.

The rest of the paper is organized as follows. Part 2 explains the theoretical framework. The method is made clear in Part 3. Part 4 presents the study's findings, while Part 5 has a discussion.

2 Theoretical Background

Instead of government demarketing programs, this study focuses on business demarketing strategies. We believe that customers' opinions regarding breastfeeding are directly influenced by the demarketing features of the product, price, place, and promotion. Therefore, we will elaborate the demarketing strategies in this section as follow.

2.1 Product

The product is related to demarketing initiatives that aim to reduce product volume sales. According to Salem [4], as part of the demarketing idea, businesses try to limit supply chains, scale back on services, and stop effective marketing strategies. Additionally, it is well-known that satisfied customers increase profitability because they are more likely to buy additional product units and return frequently over the long term [15]. On the other hand, dissatisfied customers generate less revenue since they buy fewer things and use less of the company's goods. Additionally, their dissatisfaction frequently manifests itself in complaints and bad word of mouth [16]. Therefore, product is one demarketing strategy that might be employed to lower demand for breast milk alternatives.

2.2 Price

Price fixing may be a simple solution to the demarketing of breast milk alternatives. The demarketing pricing strategy seeks to decrease current demand by increasing prices [13]. Customers' views and behaviors are impacted by pricing, nevertheless [16]. Raising the price of breast milk alternatives can reduce customer access to and interest in breast milk alternatives, particularly among consumers in lower income categories. Increased costs may also make breastfeeding a more appealing and accessible choice for women [16]. It's vital to keep in mind, though, that raising the price of breast milk alternatives can also have a detrimental effect on low-income families who can't afford other food sources. Therefore, authorities must carefully assess how pricing practices may affect newborns' access to vital nutrition.

2.3 Place

Place/location is one of the key components in demarketing, according prior studies [15]. A demarketing effect might result from changing both the site of consumption

and the place of purchase [4]. Limiting the availability of breast milk alternatives in particular areas or marketplaces might have the potential to restrict customer access to these products [15]. This may entail restricting the availability of breast milk alternatives in particular nations or areas or eliminating breast milk substitutes from particular retail locations [16].

2.4 Promotion

The demarketing strategy employs anti-promotional strategies to defend use while using promotions to convince customers to buy products they won't use [13]. Nguyen et al. [17] note out that one of the main goals of social marketing campaigns is to inform the public about the advantages of breastfeeding behavior and the importance of safeguarding both mothers and newborns. Research indicates the significance of consumer promotion in demarketing since it has a direct negative impact on intentions [13, 18]. Since they have a clearer understanding of attempts at deconsumption through promotion and communication, consumers will take demarketing breast milk substitutes into consideration [4].

3 Methodology

3.1 Participants

The study's methodology involved collecting data from 376 female participants who completed a survey on the factors affecting the demarketing of breast milk substitutes. The survey included questions on participants' demographics such as age, employment category, education level, and monthly salary. Additionally, the survey included statements related to product, price, place, and promotion factors that may affect breastfeeding women's decision to use breast milk substitutes. Finally, participants were asked to rate their agreement with these statements on a 5-point Likert scale ranging from strongly agree to disagree strongly. The data collected was then analyzed using data clustering techniques (Fig. 1).

3.2 Procedures

A Google form was used as the primary method of data collection. The link to the Google form was widely disseminated to female participants with snowball effect via social media networks (Facebook, and WhatsApp).
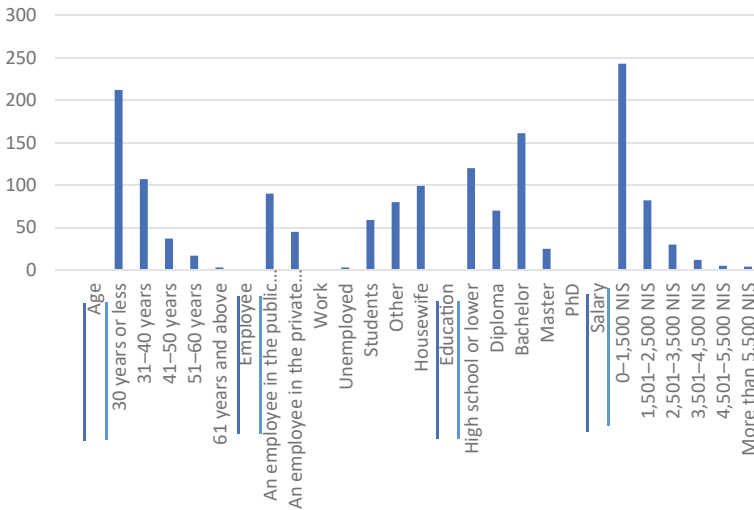
Fig. 1 Respondents' demographics

3.3 Measures

The evaluation was conducted using a 5-point Likert scale questionnaire of four parts. The first part uses six items taken from Salem [4] to assess product. The second part, which was created in connection with Lawrence and Mekoth [18], uses four items to evaluate the price. For the third part, which dealt with place, five items were created in line with Salem [19]. The fourth part used six questions from Salem and Ertz [17], and Salem [4] to measure promotion.

3.4 Experiment Setup

The present study's objective is to use data clustering to divide customers into groups based on their survey replies. We employ the K-means technique [20] to cluster the data. All of the tests were carried out in the Google Colab environment using the Python programming language. The packages used in the experiment are listed below:

- To modify data, Numpy and Pandas are utilized.
- K-Means clustering are implemented using Scikit Learn.
- Matplotlib is a program for graphing and data visualization.
- Scipy uses a dendrogram to depict hierarchical grouping.
- Graphs are created using Seaborn.

4 Experiment Results

Data clustering has been used in a number of tests to examine the factors influencing the demarketing of breast milk alternatives. Customer comments were grouped and their sentiments were examined using cluster analysis. We utilized the Elbow evaluation metric to determine the ideal number of clusters. For each cluster size (K), we computed the Calinski Harabasz Score. K is an integer that falls between 2 and 9. Given that the greatest score is set at two, Fig. 2 demonstrates that two clusters are the optimal amount. Two consumer groups have developed as a result of their answers. As shown in Fig. 3, we also utilized the Sihouette Score [21] to confirm our research. This metric is frequently used to determine how well data clustering has performed.

We employed principal component analysis (PCA) to translate the data into two dimensions in order to illustrate the findings of the cluster analysis [22]. Comparing this method to other comparable instruments, it offers results that are competitive. The two-dimensional data was then subjected to the K-means algorithm [23, 24]. The two clusters (groups) that emerged after performing data clustering are shown in Fig. 4. There are 163 samples in the first cluster. The second, however, includes 213 samples.

For a deeper analysis of the factors influencing the demarketing of breast milk alternatives, we applied additional data clustering techniques. We employed a hierarchical clustering Dendrogram, as shown in Fig. 5, to depict all connections between customer answers. There are two noticeable clusters in this graph.
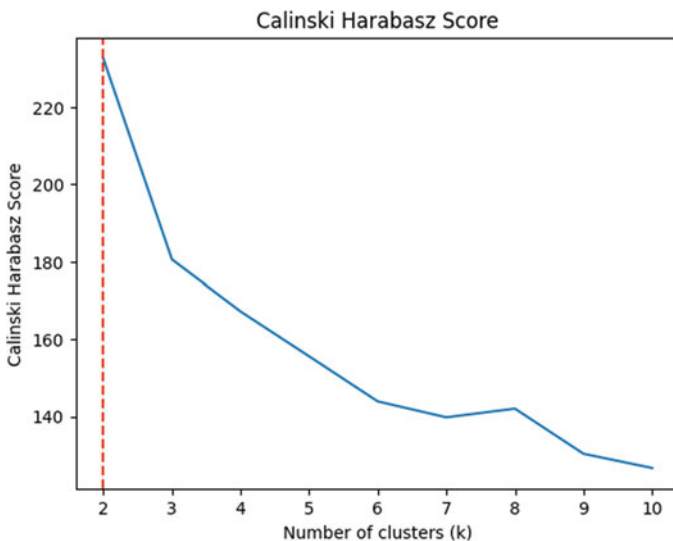
Fig. 2 Elbow evaluation measure with Calinski Harabasz Score
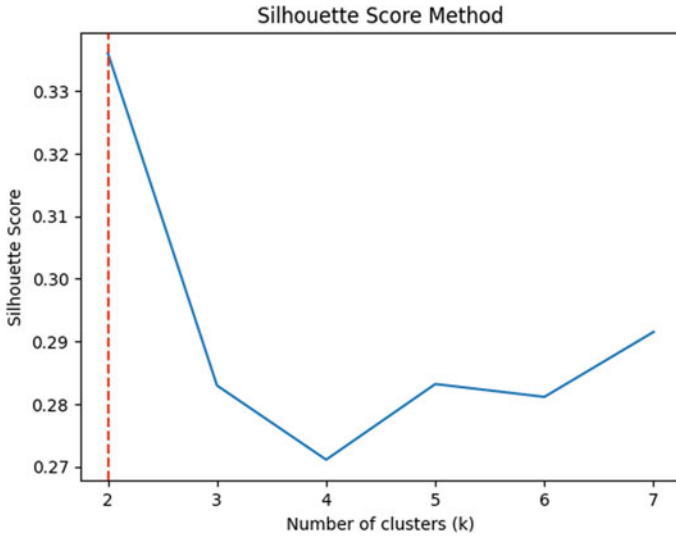
Fig. 3 Elbow evaluation measure with Silhouette Score Method
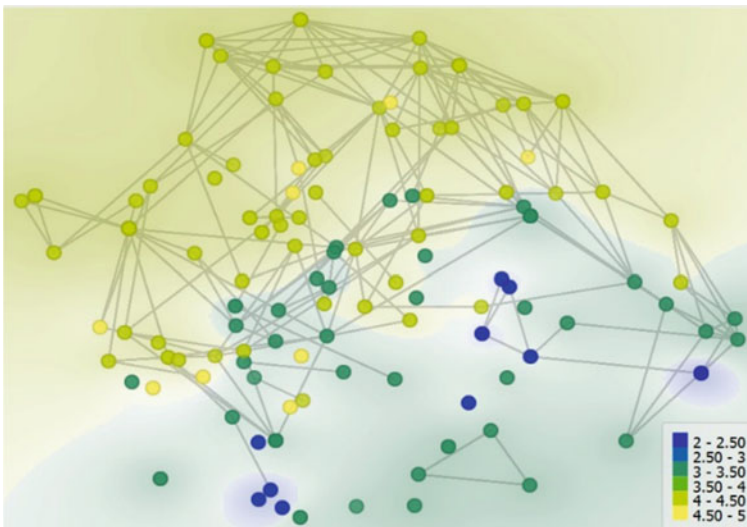
Fig. 4 Results of applying K-means with MDS multi-dimensional scaling

Consequently, we have been motivated to delve further into the two groups by examining each cluster separately. We used many methods to analyze each cluster. One of these methods is centered on researching how the cluster analysis is impacted
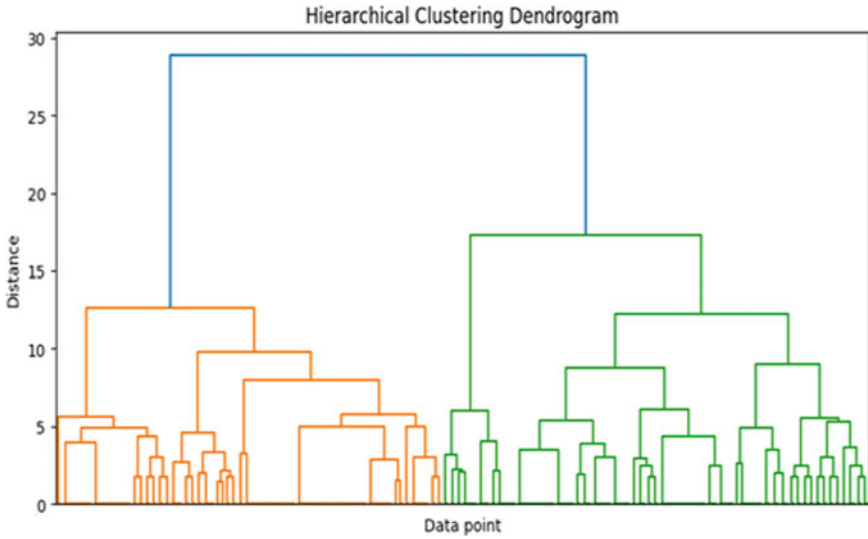
Fig. 5 Hierarchal clustering dendrogram

by the demographic factors. Figure 6 demonstrates that the outcomes of data clustering are unaffected by the demographic characteristics. This is explained by the distribution's compatibility with the entire dataset.

Furthermore, we used violin plots to evaluate each group. The distribution of responses to survey questions is displayed in each figure. Examination of the first
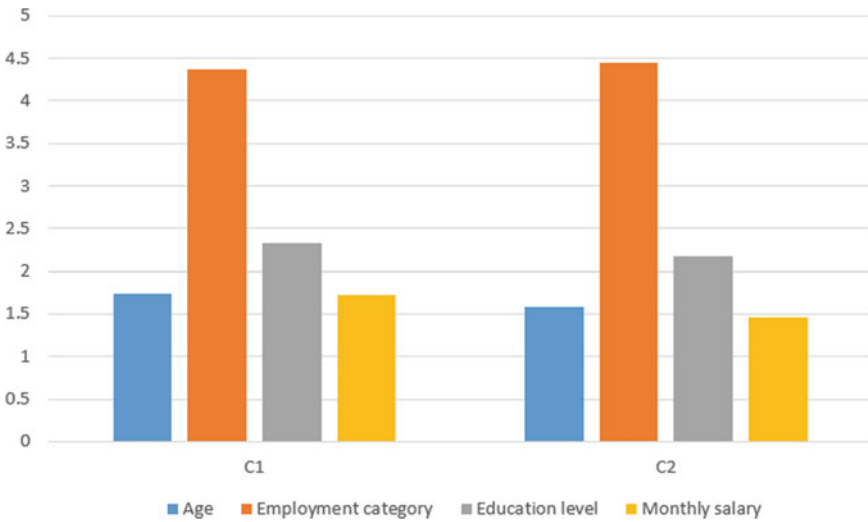
Fig. 6 Cluster analysis with selected variables
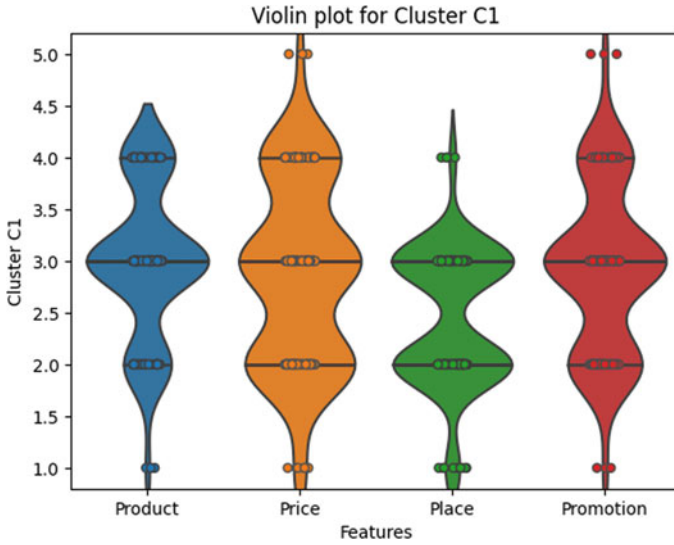
Fig. 7 Violin plot the first cluster

and second groups is shown in Figs. 7 and 8, respectively. The results show that the first group C1, 43.35%, does not receive much interest (Fig. 7), but a number of them can be educated to shift from the first C1 group to the second group C2 to be interested in breastfeeding. In contrast, the second group C2 reveals a percentage of 56.65% in (Fig. 8) significant interest in factors affecting the demarketing of breast milk substitutes.

5 Discussion

The analysis of data clustering has provided valuable insights into the factors influencing the demarketing of breast milk alternatives, focusing on the key demarketing elements of product, price, place, and promotion. More specifically, the findings indicated that the four variables—product, price, place, and promotion—have an impact on the demarketing of breast milk alternatives for a variety of reasons.

The research results bring up significant moral and societal considerations surrounding the demarketing of breast milk alternatives. The promotion of breastfeeding, which is generally regarded as the best baby feeding choice, must be balanced with the business interests of producers. Marketing strategies should be carefully scrutinized to make sure they adhere to moral standards, do not jeopardize public health objectives, or help unnecessarily de-market breastfeeding.

It is important to recognize the limitations of this study. The study concentrated on particular elements that contributed to the demarketing of breast milk alternatives,
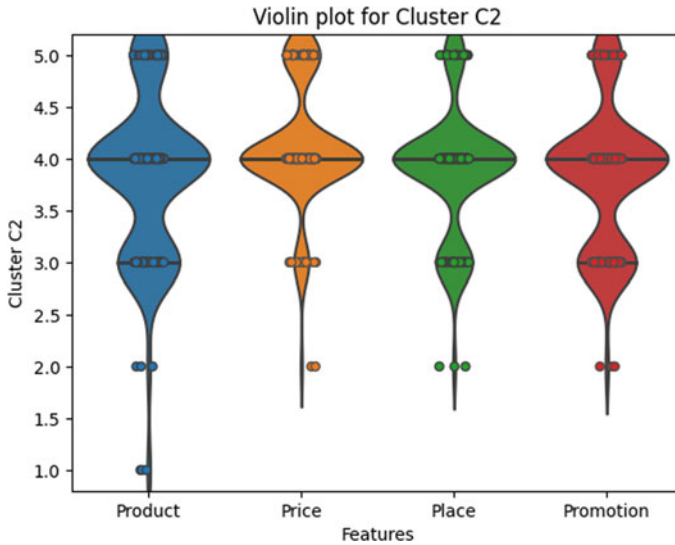
Fig. 8 Violin plot the second cluster

but other elements including cultural differences, societal conventions, and personal traits could also have a big impact. The study's results are also based on a particular sample and could not be entirely generalizable.

Future studies may look into how cultural, socioeconomic, and demographic characteristics affect how consumers perceive and make decisions about alternatives to breast milk. Studies that track the decision-making processes of parents over time would be very helpful in understanding the dynamic nature of demarketing and the variables that affect alterations in attitudes and behaviors. Additionally, further research could examine the efficacy of measures intended to lessen the demarketing effects of breast milk alternatives. This might entail assessing the influence of governmental measures, peer support groups, and educational campaigns on consumer knowledge, attitudes, and behaviors. A deeper knowledge of the elements driving the demarketing of breast milk alternatives and the efficacy of treatments in various scenarios will also result from comparative research across various nations and cultural contexts.

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The Missing Links in Neobanks

S. Indra and **Reenu Mohan**

Abstract As the world transitions itself into the virtual era, the economic enterprises adopted virtual offerings in all facets of its operations. Customers at banks and other financial institutions are becoming more and more reliant on virtual services. The digital revolution is firmly established hence the investments in enabling technologies is predicted to increase significantly in the post-pandemic world. Neo-banks are the financial institutions that are entirely accessible online. Neo-bank's products are tailored to the needs of the customer and supported by modern technology. This investigation involves a descriptive research design that incorporates qualitative and quantitative data from numerous secondary sources. The situation of Neo-Banks and Traditional Banks is also examined using a comparative approach. Neo banks are the new face of Indian banking technology. The purpose of this research article is to recognize the neo-banking structure and comprehend the ability.

Keywords Artificial intelligence · Data privacy · Digital services · Neo bank · Cyber security

1 Introduction

The economic enterprise embraces virtual offerings in each factor of its operations because the globe enters the virtual age. To a large extent, clients in economic establishments and banks an increasing number of depend on virtual offerings. Profitability and simplicity of operation are substantial benefits for banks, even as convenience, reasonably-priced fees, and anywhere transactions advantage customers. Generally, those offerings are called E-banking with inside the banking enterprise. Neo Banks, a substantial revolution in e-banking, is now taking place. Consumers an increasing number of count on specific economic establishments to satisfy their wishes with the aid of using turning in their customers rather included experiences. While the

S. Indra (✉) · R. Mohan
Kristu Jayanti College, Bengaluru, India
e-mail: indra.s@kristujayanti.com

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need for numerous economic provider vendors is using the marketplace towards neo-banks, conventional banks have a whole lot to advantage from switching to PFR bills as a valuable version component. The banking and bills enterprise has gone through a sea change because of digitization and the growing use of internet. Digital bills had been revolutionized which operates totally on line and does now no longer have any bodily department networks. Neo-Banks or so-referred to as challenger banks are virtual-most effective banks that provide a whole banking revel in to clients via a cell or web-primarily based totally utility. Neo-banks upload a virtual layer to conventional middle banking merchandise which minimizes the price of operations and gives custom designed revel in to the clients.

While traditional banks and NBFCs have dominated the Indian banking industry, scaling becomes a challenge as the number of branches increases the cost of operations. Neo-Banks are an exception to this rule because they do not require physical presence, hence the cost of infrastructure is the same regardless of the number of clients. Neo-Banks, particularly for SMEs and MSMEs, offer an immersive banking experience tailored to their needs at an affordable price, in contrast to Payments and Lending FinTech's limited product offering for retail customers.

Neo-Banks offer an immersive banking experience tailored to client needs at a low cost, especially for SMEs and MSMEs. Among the products offered to SMEs and MSMEs by using Neo-Banks are prepaid virtual playing cards, cross-border playing cards, credit playing cards, and bendy fee playing cards. Neo-Banks can easily onboard and provide full banking services to millennials, unbanked clients, gig economy workers, and immigrants because they are no longer dependent on traditional documentation procedures.

The Neo Bank makes use of Application Programming Interface (API), a computer based programming language that facilitates the joining together of certain software applications. Neo banks cater to a more technologically advanced, younger market that is accustomed to making payments online. Neo-banks often do fewer tasks than traditional banks. The future of the banking sector will be decided by Neo Financial Institution. With the platform's many features, customers and traditional banks may now do business easily. Banks in the US or EU markets are considerably different than neo banks in India. In India, Neo Banks supplement the standard offerings of an already-existing bank or a number of other financial institutions by offering them to customers in a very user-friendly manner. By capitalizing on this trend, these neo-banks are able to provide the Indian population with conveniently accessible applications and services. Internet penetration and smartphone usage have been expanding faster. Neo-banks provide products directly to customers to meet their current banking and financial demands.

2   The Neo Banking Industry

Neo banks and other opportunity banks had a market value of $34 billion in 2020, and according to predictions, they would grow at a CAGR of 45.7% to reach a market value of about $730.6 billion in 2028. Several fintech companies have recently integrated India's early neo-banks to the retail sector to better meet the needs of average people, despite the fact that they were originally intended to service company clients and users. India's pinnacle 12 neo banks are Jupiter, Fi Money, OcareNeo, ZikZuk, Open, Finin, Kotak 811, InstantPay, RazorpayX, North Loop, and Digibank. Figure 1 shows the Neo banking Market.

2.1   Neo Banks

They are also known as challenger banks as they have defied the traditional type of banks through their fast and transparent system. Neo financial institutions are businesses that are entirely accessible online. The rising acceptance of online banking as a result of availability of smartphones and internet is going to speed up the neo-bank's demand.

Neo-banks typically have more limited functions than conventional banks. Customers may access the fundamentals, including checking and conserving their money, without excessive items thanks to simple design and lower fees of neo-bank. Neo-banks can also offer greater hobby prices than traditional banks as a result of this strategy. Neo-banks are currently operating all around the arena, totaling 125. These banks can be licensed or non-licensed. The Indian Neo-banks portray themselves as equivalent to traditional banks rather than adopting a more aggressive approach. The

Fig. 1 Segmentation of Neo-bank industry. *Source* www.grandviewresearch.com

Fig. 2 Neo-banks. *Source* The Nielson company (US)

RBI hasn't yet approved virtual-most effective banks, which is the reason. As a result, the majority of them now work with financial institutions like banks. Neo-banks are predicted to fail in India at this time.

Neo-banks are projected to fall under the following categories in India: One option is to work simultaneously as vendor service providers. RazorpayX, Instant Play, and Open are three examples. Several well-known banks, notably SBI YONO and KOTAK811, have online branches. Figure 2 Shows the structure of the Banking system.

2.2 Neobanking Theme

There are 4 important things about Neo-banks. The first is its core value proposition and marketing messaging, which centres on relieving traditional financial institutions of their pain points and assisting consumers with their financial well-being. The second is prepared to disrupt. Neo-banks are marketing modern technologies like device learning, artificial intelligence, block chain, and complex APIs. Their business ideas are the 0.33 aspect, which has increased in importance over the past year. Finally, it's intriguing that they would be targeting both younger and underbanked customers in the growth phase. Simultaneously, even the aged are turning to cell structures and neo-banks. Major portion of the neo-bank's revenue can be contributed to the interchange percentage which is paid by merchants to the neo-banks when customers do shopping through their debit cards. This amount can be up to seven times more than what is charged by other banks. Figure 3 shows share of Neobanks in different Countries.
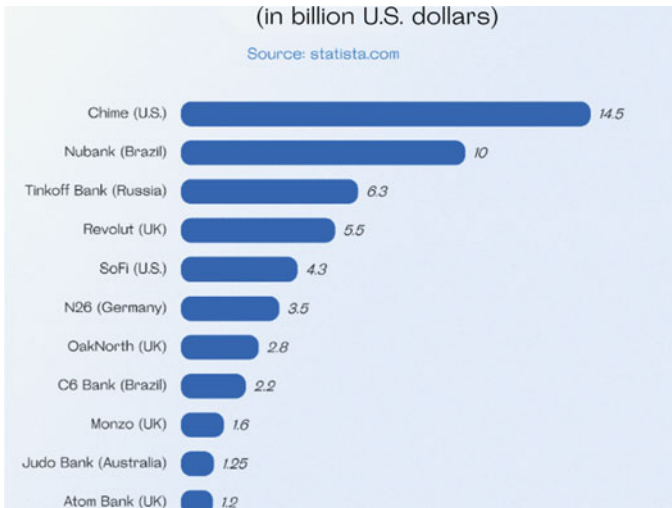
Fig. 3 Share of Neobanks in different countries. *Source* Statista.com

Advantages

The advantages of neobanks can be summarized as.

- Neo-banks can provide the following because they are fully digital
- Accounts can be created quickly, and only ID documents are required
- No payments for utilizing the products
- No annual costs
- Customers can get customer assistance through their website or app
- Unlimited withdrawals from ATMs.

3 Product Offerings of Neobanks

Customers and businesses can open virtual financial savings accounts or cutting-edge loans with the help of neo-banks. The RBI's recent changes to the KYC requirement will be welcomed by neo-banks and encourage them to set up digital buyer onboarding procedures. Neo-banks also make it simpler to send money internationally by utilizing the most up-to-date payment infrastructure. Enterprise neo-banking structures also provide automated bookkeeping and fee reconciliation. Co-branded credit, debit, and pay-as-you-go cards are a popular product offered by neo-banks. Neo banks can only market or distribute those cards since banks must adhere to outsourcing requirements when entering into co-branding agreements [1]. Instead of going through a drawn-out process to obtain a mortgage from a traditional bank, small and medium-sized businesses rely on credit cards to provide the operating money they require.

4   Traditional Banks Versus Neobanks

Neo-bank's business strategy is strongly correlated with the market they want to compete in and the service or good they want to provide. It is undoubtedly a fantastic time to be in business because new banks are challenging the current quo, but it is not risk-free. Considerable investments made by traditional banks must be one of them [2]. Although they are anticipated to use all of their resources, there is still opportunity for the ideal services to thrive. New banks are here to stay, depending on the strategy, the offering, and, of course, the business model. FinTech is enabling traditional banks to update their offerings, raising the cost of attracting new bank clients. New banks do not provide an office facility in case of disruptions as compared to previous banks. New banks are perceived as being riskier than legacy banks in terms of cyber security and service continuity/outages. There is ample room for payments and exchanges; the demand for loans from SMEs surged as a result of the lack of available capital. The main objectives of major new banks are to strengthen the financial standing of independent enterprises.

Very few clients leave their banks for the newer ones. For instance, less than 10% of customers in the UK have their primary accounts with new banks. The voids that initially prompted client migration are being filled by conventional banks. On the other side, customers might experiment with brand-new, digital-only products. As a result, customer lifetimes are reduced, which raises the cost of acquisition for new institutions. The majority of the new banks modify their payment methods, which raises already-existing costs and adds new ones. Figure 4 shows comparison between traditional banks and Neobanks.

5   Technology Framework of Neobanks

5.1   Artificial Intelligence

Neobanks have reaped significant benefits from implementing cutting-edge technologies, like as artificial intelligence, which have decreased expenses and increased revenue through a variety of channels. Financial institutions may manage risks more effectively and make more effective loan decisions thanks to artificial intelligence [3]. In the prevention and detection of fraud as well as the security of financial institutions, artificial intelligence plays a crucial role. AI gathers important data, but in order to fully utilise it, the data must be understood. It is largely employed to enhance client interaction with chatbots.

Immense amounts of data are produced by the banking sector, including credit card transactions, ATM withdrawals, and credit scores. And for a company to stay competitive in the future, it is essential to be able to use that data to make business decisions and to analyze it properly to obtain useful insights.
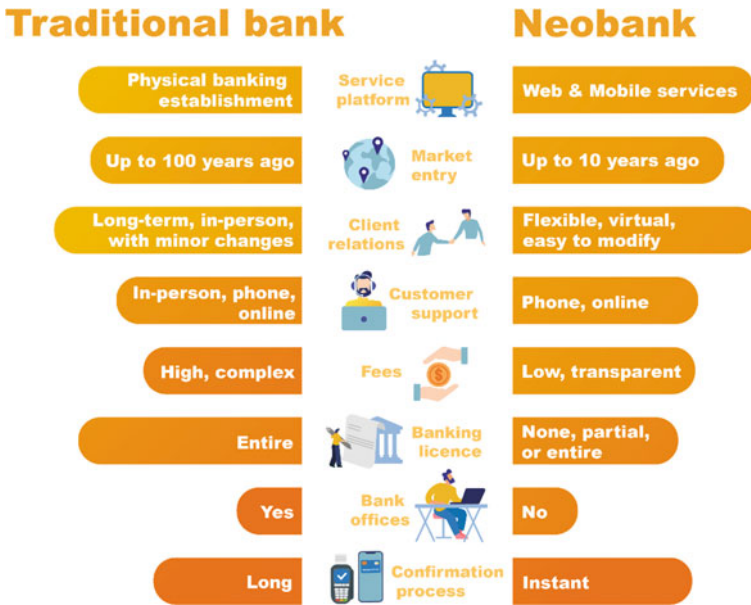
Fig. 4 Comparison between traditional and Neo-banks. *Source* www.softensy.com

5.2 Blockchain Technology

Without a doubt, blockchain is the foundation of the economy. One of the developments in financial services technology that supports the two main tenets of the sector, namely transparency and trust, is blockchain.

By keeping all data regarding real-time payments and profile information on numerous blockchain servers, blockchain functions as a decentralized database and aids in safeguarding the personal and financial information of consumers. With the use of this technology, transactions can be verified in a cost-efficient, decentralised, and authenticated way. This lessens dependence and encourages accurate accounting. It resolves issues like fraud detection and cyber attack prevention.

5.3 Big Data

Big data enables banks to analyse client purchasing patterns, sales management, and other factors to better understand their customers and make timely business decisions.

5.4 Cloud Banking

Banks and other financial institutions want to adopt this technology as the technology of the future. This is mostly a result of banks' desire to improve product and service offerings while lowering costs in the retail and business banking sectors. Through API interface that is simple to integrate with another ecosystem or fintech company, cloud banking offers a crucial differentiator in faster time-to-market with new product launches. In cloud banking, enterprise-level support is a crucial distinction since group-level data can be integrated and made available to clients as services. In addition, banks can decide based on business considerations.

5.5 Robotic Process Automation (RPA)

RPA enables the bank to utilise customer care bots to address low-priority client concerns like confirming account balances and payment-related inquiries while freeing up human agents' time to address more pressing problems. Along with increasing productivity, this also lowers error rates and labor/operational expenses. Without involving human agents, the rapid RPA solution enables consumers to make an immediate decision regarding their credit card application [4]. Technology advancement and use can further assist banks in adhering to the guidelines established by regulatory and central banking bodies.

5.6 Business Process as a Service (BPaas)

Banks and other financial institutions desire to leverage technology and solely pay for the software/product providers' services. In the upcoming days, this is going to be a growing trend. Due to usage of BPas price of products and software licences are reduced. By using preconfigured goods from vendors in the region, data centre maintenance expenses are decreased while regulatory requirements based on central bank regulations are met.

6 The Path to Growth and Profitability

Neo-banks are developing strategies for profitability with their quick customer onboarding. On the other hand, larger neo-banks are currently focused on improving the financial system as a whole. It might even be necessary to change their pricing strategy. In the past, they had problems acquiring customers, but that is no longer the case because disgruntled bank customers are more likely to try neo-banks now. Now

that banks can automate their operations, neo-banks seek to improve their customer acquisition and retention strategies.

A genuine option is to invest in new technology, such as a CRM for possibility management. Increasing the use of neo-banks is the best banking option for customers: It is unfortunate that the majority of customers do not directly owe money to neo-banks. High charge volumes and more significant transaction sizes make those debts appropriate for banks. Deposits at the top financial institution have also increased in size. Neo-banks must therefore put forth a lot of effort to gain their clients' trust and persuade them to use their services more frequently. It is possible to do this by broadening the scope of their apps and features such that their services are enticing enough to upgrade banking apps.

A successful financial marketing strategy showing those products can then have a significant impact. Redefining rate structure: Neo-banks should be operationally efficient in their middle to give better services to customers at lower costs. As a result, there is a need to broaden long-term business models related to customer acquisition and retention. Leading neo-banks around the world heavily rely on top rate pricing strategies, multi-tiered subscriptions, and demographics related to the area of interest to drive profitability.

7   Neo-Banking Providers

Neo-banks developed into fully-fledged branchless banking service providers after forming strategic alliances with banks, obtaining their banking licenses, and doing so. The main problem for neo banks is that rapid development hasn't resulted with an increase in trust. The majority of customers prefer to put their money into conventional businesses because interpersonal communication is still necessary to calm anxieties and offer answers when things go wrong.

However, the predominant trend is that these FinTech businesses outperform conventional banking platforms and provide customers with superior user experiences. For new businesses like some neo banks, this has shown to be incredibly helpful. Additionally, they want to build a network of organisations with similar goals so that they may collaborate, provide support, and open doors for one another.

Small and startup firms can utilise **Coconut**, which offers a robust and user-friendly accounting system, to submit tax returns, track costs, send invoices, and execute basic accounting tasks all in one location. It aims to relieve entrepreneurs of the burden of accounting and tax management so they can concentrate on growing their firm.

In collaboration with Mastercard, Finland **Holvi** strives to provide a business account and provides a free card bearing the Mastercard logo. In essence, it is a payment service provider that provides checking accounts to small businesses on the Mastercard network. In order to facilitate accounting and spending administration, it also provides a mobile app.

Entrepreneurs can open business accounts with "**Neat,**" a money service provider and lender with headquarters in Hong Kong. It gives business owners the resources they need to keep tabs on their spending, accept payments, and transfer money internationally.

8 Neobanking Models

Neo-bank is an entirely new type of banking, as its name suggests. Fintech firms, frequently referred to as "challenger banks," are altering how individuals manage their money on all levels. Neo-banks can offer the same level of security or more thanks to cutting-edge encryption and related technology. They can also use data to improve client experiences and get rid of wait periods and transfer delays, among many other advantages.

Similar to traditional banks, many of these businesses are able to cater to particular nations and market segments. Search results for numerous distinct neo-banks that serve this market may be found by typing "Neo-bank Singapore" into a search engine. Technology and service innovation are encouraged by the industry's open competition.

8.1 Ecosystem Based Model

Neo-banking is not the only fintech sector, it can be said with confidence. An ecosystem-based model consequently appeared. The use of Application Program Interface (API) technology to facilitate communication and integration between various financial apps is the main topic of the article. This service is provided by new financial companies that take an ecosystem-based strategy.

8.2 Exchange-Led Model

A transaction fee is levied by the new bank for each transfer of funds under the exchange-led new banking model. Examples of recent banks utilizing this approach include Chime (USA) and Neon (Brazil). When a consumer uses Chime Visa to make a purchase, Chime receives a portion of the Visa payment.

8.3 Credit-Based Model

Credit-based business models are another option. This concept is employed by Nubank, a different Neo-bank in Brazil, to maintain growth and profitability. This company operates a credit card business and takes payments on credit. Transaction costs, gains from transferred balances, and associated interests are all readily apparent in this type of company model.

8.4 Asset-Based Model

When new banks adopt the asset-based business model, they can provide savings accounts and deposits. These kinds of high-yield certificates of deposit (CDs) and savings accounts (high-yield savings accounts) enable these banks to compete in the consumer banking industry and gain from an asset-based business strategy [4]. Goldman Sachs of Marcus Wall Street is a well-known example of this practice. Instead of offering broad services, they can expand and make money by developing their specialized products [5]. However, this isn't always the case; in some company models, the product is extrapolated in order to earn income.

8.5 Product Extensions Mode

While an ecosystem-based business strategy aims to link and integrate financial services, a model centred on product extensions specifically targets barriers and removes them. Robinhood, which a few years ago introduced a product extension dubbed Robinhood Gold, is a well-known example of this.

Users can now obtain comprehensive market analysis that would not often be accessible to the general public. In order to maintain its competitive position in the market, Robinhood Gold employs a product extension approach by providing this service in addition to a subscription-based model.

9 The Missing Links in Neobanks

9.1 Resistance of Bank Switching

Compared to traditional banks, neo-banks business models have lower variable costs, making it less expensive to scale the operation (e.g. no need for opening up new branches). However, this does not ensure rapid growth on its own. The number of customers leaving traditional banks is rising, but the growth rate is less than

anticipated [6]. Traditional banks have been able to reduce client leakage by providing digital services. Users of digital banking who can quickly meet their fundamental financial demands are more likely to stick around even when the trust issue has not been overcome.

9.2 No Face to Face Customer Support

What happens when traditional banks are engaged and a customer's issue cannot be resolved over the phone or through digital banking? They visit an outpost. Neo-banks don't have physical branches, thus all customer service interactions take place through the phone, chat, or email. Despite the fact that fewer people are visiting branches now because of the pandemic, clients may feel more secure knowing they exist [7]. Therefore, the lack of physical touch points is one of the problems that neo-banks must overcome.

Solution: Neo-banks, which offer customer service through numerous channels, might enhance this procedure with specific design ideas. First of all, all digital touch points, especially the mobile app, should have simple access to support choices. Second, focusing on openness and personalization in the user experience can support the development of a welcoming and trusting atmosphere.

9.3 Involvement of Incumbents

It can be quite a nuisance to close outstanding debts, move savings, recreate automated payments, or even change payroll information to get a wage. Customers with high switching costs also have high acquisition costs when switching neo-banks. Neo-banks offer the benefit of a low cost structure, but traditional banks and large tech companies are a threat because they may use their current client base to gain new market share for nothing. Given that neo-banks are funded in their first stages, big players with plenty of money can be very risky. As an illustration, conventional banks like NatWest began to enter this market by founding their own neo-banks [8].

In any emerging market, established firms pose a threat to startups because they can use their current influence to keep them out. Neo-banks should play the game by concentrating on their own abilities, focus, and quickness rather than attempting to financially compete with major players. Strong differentiators for neo-banks are user centricity, usability, and cheaper costs. Neo-banks can start seriously affecting incumbent firms once these are translated into a distinct value proposition for clients.

9.4 Regulations

Because of its reliance on rules, the fintech sector is exposed. A fintech solution that can function in one nation may run afoul of the laws of another. Even in the UK, where neo-banks have been running successfully for a number of years, meeting new requirements from the government can be difficult. For instance, the UK's Financial Conduct Authority (FCA) requested that regulated e-money businesses not "liken themselves to banks" and disclose to users how their protections differ from those provided by licenced banks. Such needs may encourage neobanks to obtain banking licenses and formally refer to themselves as "banks." The challengers may incur costs as a result of this, but it may also increase their credibility in the eyes of potential clients.

9.5 Limited Financial Products

Neo-banks' selection of financial products is additionally constrained because they lack a full license to operate as a bank and are supervised by another regulated bank. Neo banking currently does not offer several loan and deposit options. According to the expansion, acceptance, and openness of neo banking, they still need to be developed.

9.6 Safety and Security

The security of the customer's money is one of their top concerns when making an online or mobile purchase. Neo banking is obviously very secure and is governed by a local regulatory organization. The degree of assurance and awareness among the client's needs to be raised.

10 Neo-Banks Are Pivoting to Focus on Unit Economics and Profitability

There is some hope. As neo-banks provide more specialized goods and services, better transparency, cost-effective solutions, and simpler access to financial services, the neo-banking market will continue to expand. According to a recent analysis by Grand View Research, the size of the worldwide neo-banking market is anticipated to reach $722.6 billion by 2028.

However, monetizing customers, using the best business models, and receiving adequate finance are all necessary for overall sustainability. The pandemic demonstrated that neo-banks outperform incumbents in peculiar situations.

Neo-banks are being forced to develop additional revenue streams, including paid subscriptions and more, as a result of the pressure to develop a path of profitability and sustainable unit economics. New income models are acceptable, but in order for neo-banks to maintain the trust of their clients, they must also be more open and reasonably priced. Neo-banks also need to invest more in cyber security and take steps to avoid outages like those experienced by Chime, Monzo, and Revolut. Neo-banks must establish their reliability on par with that of the market leaders and increase their level of customer trust. Like any firm, those that make it through the recession will have a bright future.

The issue of trust has been the main worry. In India, people enjoy stopping by branches to chat with locals. Because there wasn't a branch where you could go in and file a complaint, sometimes people had trust concerns. Even while the majority of Indians living in large cities are smartphone users and digital natives, those who live in rural areas may not necessarily be extremely tech aware [9]. It can be a little difficult to serve them customers.

Additionally, even though the RBI is developing a substantial institutional framework and set of recommendations to legitimate neo-banking, the sector lacks the requisite rules, which makes it much more dependent on the bank.

11 Future of Neo-Banks

The RBI established a "secure, era-pushed environment" in 2014 to give the unbanked populace small financial savings accounts, fees, or remittance choices. According to the RBI, banks that accept checks will no longer be branchless or digital. In light of the looming pandemic, the RBI must fully deploy departmental or digital banking providers and be subject to adequate checks and balances under the RBI's jurisdiction. India's economy is considerably different from other economies, which accounts for its sluggish adoption of new technology. Along with the market's enormous size and scope, there are additional hazards and regulations to be aware of. Additionally, there were specific traits in client behaviour that needed to be addressed.

The interruptions caused by the pandemic were advantageous in that they promoted the use of technology and the growth of virtual banking. Due to Covid 19, banks and clients both adopted digitalization right away. In India, online transactions increased by 30% as a result of this in 2017. In India, 54% of mobile customers as of 2020 used smartphones; by 2040, that percentage is projected to rise to 96%. That is more than twice as many Indian cell phone subscribers as the 22% who used smartphones in 2016. In India, 149.7 million smartphones might be shipped in 2020.

People need to manage their time in this fast-paced digital era by employing technology rather than going to the bank or standing in line. Fintech, insurance, and regtech are a few examples of how to create paradigm-shifting solutions using

technological disruptors. Neo-banks are the most recent generational shift in the banking sector; they are fully online-based businesses with no physical locations. Neo-bank is currently hailed as the financial giant of the future. Neo-banks, also referred to as challenger banks, are redefining how traditional banks conduct business.

Statistics show that the global neo banking market was worth \$47.39 billion in 2021 and is expected to grow at an explosive rate of 53.4% between 2022 and 2030. Neo banking's adoption has been accelerated by the rise of the global pandemic.

12 Limitations and Future Avenues

Since neo-banks don't have a history, it can be more difficult to win customers' trust. However, there won't be any question about a neo-bank's repute if a conventional bank or a sizable tech platform serves as its supporter. Banks and fintech companies are widely present in the financial market. Building a customer base in a highly competitive industry is challenging. A well-established ATM network makes it simple to get cash, not all neo-banks have that capability. The low-cost value-added services and user-friendly API of the Neo Bank is going to attract more customers to Neo-Bank. In comparison to the traditional corporate technique, it is not difficult to shift attention from the negatives to the positives and doesn't require as much capital. The banking industry and governing organisations are both active developing new products within the framework of the current neo banking infrastructure. The qualitative investigation revealed that clients, borrowers, and businesses had favourable opinions of neo banking. The issues that traditionalists are having were the basis for each and every negative response.

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The Effectuation Approach of Micro-enterprises in Malaysia: Conceptual Paper

Nor Syazleen Azahar and S. Uthamaputhran

Abstract Despite the significant amount of past studies on entrepreneurship, the COVID-19 pandemic, which has drastically altered business practices and company models, makes some existing studies inapplicable, especially regarding SME performance. The aim of this study is to identify whether the co-creation partnership, means (What I know) and technological capabilities affect the performance of micro-enterprise during post-pandemic. The main gap the authors want to fill is the lack of studies involving the micro enterprises' performance during the post-pandemic using the effectuation and dynamic capabilities theory. 384 local enterprises' surveys will be analyzed using PLS-SEM version 3. This article can be used as a new reference for future studies by academicians. Micro business owners also can be benefitted from this study in order to do any decision making in future. Despite the significant amount of past studies on entrepreneurship, the COVID-19 pandemic, which has drastically altered business practices and company models, makes some existing studies inapplicable, especially regarding SME performance. The aim of this study is to identify whether the co-creation partnership, means (What I know) and technological capabilities affect the performance of micro-enterprise during post-pandemic. The main gap the authors want to fill is the lack of studies involving the micro enterprises' performance during the post-pandemic using the effectuation and dynamic capabilities theory. 384 local enterprises' surveys will be analyzed using PLS-SEM version 3. This article can be used as a new reference for future studies by academicians. Micro business owners also can be benefitted from this study in order to do any decision making in future.

Keywords Effectuation process · Dynamic capabilities · Micro-enterprises · Performance · Post-pandemic · Malaysia

N. S. Azahar (✉) · S. Uthamaputhran
Faculty of Business and Entrepreneurship, University Malaysia Kelantan, 16100 Kelantan, Malaysia
e-mail: a21d046f@siswa.umk.edu.my

1   Introduction

1.1   Background of Study

The business environment has undergone tremendous upheaval as a result of the COVID-19 epidemic, and small businesses have been particularly badly impacted. Small firms are operating in an environment that is difficult because of supply chain disruptions, customer behavior shifts, unexpected and protracted business closures, and the requirement for social isolation. Lack of resources is one of the biggest issues small businesses confront which makes them not to perform. Many small enterprises lack the resources and capabilities necessary to withstand extended periods of inactivity or shutdown. Additionally, they might not have the infrastructure or technology needed to adjust to new business practices like remote work and online sales.

Furthermore, a key element in the success of small businesses has been their capacity to adapt to new changes. Small firms may not have the flexibility to adjust to rapidly changing conditions, but larger organizations may have the means and staff to pivot fast and effectively. Small enterprises have frequently had to significantly alter their business practices, such as creating new products or services, reconfiguring their physical spaces, and implementing new health and safety protocols. It directly affects their performance. Therefore, understanding the key elements and factors that influence the company, especially in relation to performance is crucial in the current situation.

A sizeable body of entrepreneurship and management studies research have captured the role of resources and capabilities in the study. Numerous studies have been conducted in developed countries such as the United States and the United Kingdom, as well as in larger, more established companies that have a more structured organizational culture but the performance of micro-enterprises from developing or underdeveloped countries like Malaysia or Thailand have received little attention.

This research will specifically look at how these youth entrepreneurs from micro-enterprises were able to adapt their operations in response to the pandemic and maintain their operations, which eventually resulted in better business performance and growth. This study aims to further knowledge of how young entrepreneurs from micro-enterprises in developing or undeveloped nations have responded to the pandemic with their resources and capabilities that have helped them succeed in the face of hardship and challenges. Examining the performance of MSMEs based on their importance and contribution is an ongoing concern in entrepreneurship and corporate governance. The performance of MSMEs seems important to many stakeholders because they create more jobs, reduce unemployment, provide cutting-edge technology, and contribute to a country's GDP.

Therefore, this study will look at the co-creation partnership, means (What I know) and technological capabilities whether all these three components will affect the performance of the micro enterprises during post-pandemic. Other than that, the government policies will act as mediator for this study. The co-creation partnership

and means (What I know) derived directly from the effectuation theory and techno-logical capabilities derived from the dynamic capability's theory. These two theories will be used to complete this study.

This paper has been structured with Introduction, Literature Review, Method-ology, and conclusion since it is a conceptual paper. All of these parts explained the important components about this study.

2 Literature Review

2.1 Malaysia Micro-enterprises Situations

Micro-enterprises therefore play an important role in promoting Malaysia's national development [1]. The MSME landscape has grown significantly from 2016 to 2021. According to the latest data from the Malaysian Statistical Business Register (MSBR) published by the Department of Statistics Malaysia (DOSM), there were a total of 1,226,494 MSMEs in 2021, accounting for 97.4%. of total business in Malaysia. In terms of company size, micro-enterprises stand out, accounting for the largest share of the MSME component. Over 150,000 micro businesses added from 2016 to 2021 at a compound annual growth rate of 5.6%. Looking at the composition in 2021, 78.6% (964,495) of all MSMEs will be micro, 19.8% (242,540) will be SMEs, and the remaining 1.6% (19,459) will be SMEs [2]. Usually such companies in Malaysia are engaged in small businesses such as food and beverage services (e.g. food stalls), accommodation (e.g. homestays), night market vendors, food stalls, construction and service companies, and other wholesale and retail trade [1, 3]. In Malaysia, business performance depends on the entrepreneurial skills and characteristics of micro and small business owners [4].

For MSEs, the COVID-19 crisis has had far-reaching effects, including decreased demand, rising costs, financing issues, and supply problems. In general, certain research for instance [5, 6], demonstrate that MSEs have been more negatively impacted by the pandemic than larger units. Smaller businesses are typically extremely vulnerable and have a low potential for recovery due to the scale of performance and limited financial resources [6]. However, during the post-pandemic, microenterprises owners also changed according to the situation through innovation and personal attitudes toward their business to improve the performance [7] espe-cially during and after the pandemic. The usage of social media to increase the performance and income of the enterprises also relevant in Malaysia [8]. Pandemic caused the microenterprises model changes in order to survive and perform well.

2.2 Effectuation Approach and Dynamic Capabilities (Theories)

Effectuation is the range of possible effects that a particular set of means can produce. This comes from the effectuation theory [9]. Entry into force is an expert decision-making theory that appears in the entrepreneurial literature [9] and is touted as a useful technique for making decisions in ambiguous situations. As such, it serves as a useful theoretical lens for survival in situations like Covid-19. Entry into force, the decision-making method typically used by novice firms, is viewed as the opposite of causality. The authors chose this theory which is effectuation theory because during the post-pandemic, the micro entrepreneurs need to utilize what they already have to continue their businesses without need a large fund for new capital.

Moreover, dynamic capacity (DC) is the underlying premise of this work. TLC was modified by Teece et al. in basic research. Previous researchers have used this theory to explore its applicability to business model innovation (BMI). DC is an attractive theoretical strategy for improving our understanding of BMI. DC is especially important for innovation strategies when companies operate in an environment where technological change is systemic and new products and services need to be developed to reflect market changes. This theory chosen because of the unexpected situation happened which is pandemic Covid-19 that affected all economic activities around the world. The changes of market make the author this theory suitable for this study.

Small businesses and startups in particular face enormous challenges in a volatile environment that must be overcome to achieve intergenerational success. This theory led to choosing technical competence as the independent variable, as technology appears to have played a key role in communication during the pandemic. The main theory, the effect theory, was chosen because the researchers believe that the dynamic capacity theory is most appropriate to support the main theory in the discussion of this study.

2.3 Co-partnership Commitment, Government Policy and Performance

The social environment is directly related to the partnership commitments that drive growth. An important and essential resource for gaining competitive advantage in any business is the ability and aptitude to leverage co-partnership commitment. Using or accessing social networking is becoming increasingly popular among businesses in industry-specific contexts to improve performance.

Numerous studies in the literature show a positive correlation between partnership engagement and firm performance (e.g. [10, 11]).These studies show how companies are currently using resources in the form of internal and external capital to gain competitive advantage in a highly unpredictable and dynamic business environment.

Through this study, the authors want to know whether the government policy is affected the social capital and give any changes to the performance of the micro-enterprises. This issue seems to be a question because during the pandemic, the government did many things to help the MSMEs since they struggled to sustain. There is no studies seems to touch about this.

2.4 "Goal" Means (What I Know), Government Policy and Performance

Entrepreneurs manage their knowledge to other parties in order to sustain and survive their businesses. This is classified as a means of crazy quilting. Small businesses have the opportunity to collaborate in environments that facilitate communication and require fewer resources. As has been emphasized in the literature so far, the performance of the venture can be affected by the means (what I know). According to effectuation theory, "what I know" leads to expertise, which empowers an individual or team in new endeavors to make decisions without having to rely on pre-existing or predictive goals [2].

Entrepreneur talents and sustainable entrepreneurship performance are linked by "goal" means practises such information sharing behaviours, inventions, and absorption capacity [12]. As a result, knowledge help entrepreneurs perform well over the long term [13]. Li et al. [14] outlined how information exchange, acquisition, and application support performance and innovation [15]. What entrepreneurs know will help them to make any decision that the best for their companies.

Government programs and initiatives can also contribute to knowledge dissemination. The government or other relevant authorities can play a key role in transferring knowledge and providing other assistance to protect Malaysian MSMEs from this pandemic [16]. The goal of the program is to promote entrepreneurship, act as a paradigm shift from employee to business owner, to help people become resilient in running businesses [17]. However, the program will continue during and after the pandemic.

The knowledge of the entrepreneurs is important to ensure the business goes well and the entrepreneurs need to know what new policies that the government enforces towards MSMEs. This is why government policies seems to affect the performance of the companies and which the assistance by the government that known by the micro-enterprises owners. They can apply any programs or subsidy that gave by the government.

2.5 Technological Capabilities, Government Policy and Performance

According to Burgelman et al. technology is essential for a company to gain a competitive advantage. New technologies are important for small businesses participating in open innovation processes. Because it helps small businesses to exceed customer expectations and improve their company's financial performance.

Most SMBs are experiencing a digital revolution in response to Covid-19 restrictions restricting direct sales. MSME managers should consider their understanding and suitability for digitalization to accelerate organizational processes [18]. A firm's technological and innovative capabilities determine its financial and corporate performance [19]. The technology is being practically used by all business during the post pandemic and still continue after that because of the convenience for everyone. Technology, especially social media being the main method for the business owner to interact with the consumers.

Malaysian government seems to support the usage of social medias and other selling platforms (Shoppe and Lazada) that can assist the micro-enterprise owners to interact with the consumers by organizing programs and classes for handling social medias and selling platforms [20]. This is government policies can influenced the performance of the micro-enterprises.

2.6 Government Policies and Performance

During the pandemic, the government will do almost everything to break the chain of the contagious virus Covid-19. The government has also explicitly mandated it to help entrepreneurs survive. Given the importance of digital transformation, the Malaysian government has launched several initiatives to promote the digitalization of SMEs. This includes financial support through the PERIHATIN Economic Stimulus Package specifically targeted at SMEs [21]. All the initiatives and policies put in place also seem to control the performance of youth microenterprises.

2.7 Conceptual Framework

The conceptual framework for this research is shown in Fig. 1. Social capital, knowledge development, and technical skills are the independent variables, and young SME performance after the pandemic is the dependent variable. Government policy, on the other hand, serves as a facilitator for this research.
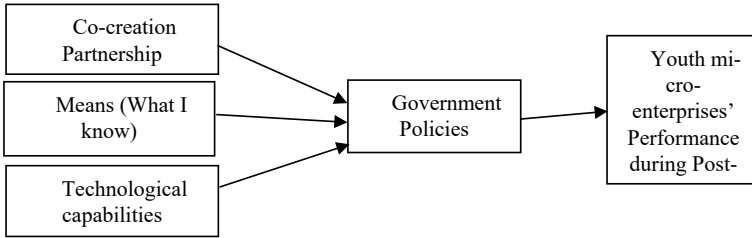
Fig. 1 Conceptual framework

2.8 *Hypothesis*

Hypotheses establish relationships between the dependent and independent variables of a study. The independent factors in this study are technology, means (What I know), and co-creation partnership. The dependent variable is the post-pandemic performance of young Micro enterprises, with government policies acting as mediator. The following diagram shows hypotheses between independent and dependent variables and mediator.

H1: There is a positive relationship between co-creation partnership and youth micro enterprises' performance during the post-pandemic.

H2: There is a positive relationship between means (What I know) and youth micro enterprises' performance during the post-pandemic.

H3: There is a positive relationship between technological capabilities and youth micro enterprises' performance during the post-pandemic.

H4: Government policies positively mediate the relationship between independent variables and dependent variable.

H4a: Government policies positively mediate the relationship between co-creation partnership and youth micro enterprises' performance during post-pandemic.

H4b: Government policies positively mediate the relationship between means (What I know) and youth micro enterprises' performance during post-pandemic.

H4c: Government policies positively mediate the relationship between technological capabilities and youth micro enterprises' performance during post-pandemic.

Table 1 Summary of research design elements

Research design elements	Selected elements for this study
Philosophy	Positivism
Approach	Deductive
Strategies	Survey
Choice	Quantitative method
Technique and procedures	Data collection—self-administered questionnaire Data analysis—descriptive analyses, mediating analysis, and moderating analysis
Unit of analysis	Individual
Time horizons	Cross-sectional

3 Methodology

3.1 Research Design Elements

The study uses quantitative design research techniques. The demographic for this study is young entrepreneurs between the ages of 18 and 30. Specific requirements are used for sample selection, such as youth entrepreneurs must have existed before the epidemic. Partial least-squares structural equation modelling is used to analyze survey data (SEM-PLS) version 3. Characteristics of the study design are summarized in Table 1.

3.2 Operationalization of Variables

According to the literature review [22] and the conceptual framework described in Chap. 3, all components of the study are multidimensional structures with higher reliability and validity than single-item measures. When creating measurement objects, one should examine previously used scales and pay close attention to their proven validity and alpha values. However, some items were modified from other studies and others were created based on the variable definitions. In this section, we discuss the operationalization of concepts derived from the literature.

3.3 Measurement for Demographic Profile

All question items use a Likert scale of 1–5, with 1 representing strong disagreement. Respondents were asked to rate each of her 29 items, which consisted of respondents' demographics, independent variables, dependent variables, and facilitator questions.

3.4 Operationalization of Variables

The sample was drawn from young Malaysian micro enterprises population aged 18–30 years. The researchers chose the single-informant method because it may be effective for data collection. Despite the use of the word 'we' in the questionnaire, most empirical studies on means (What I know), co-creation partnership, and research technical skills follow the single-informant approach according to [20]. I'm using. In addition, single-informant approaches are used in studies of government policy and business performance ([23, 24], etc.). Decision-making in large companies is likely to take place in a collaborative environment, whereas in smaller companies the owner-manager is usually the primary decision-maker [25]. Additionally, the strategic direction of a company is often determined by a single decision maker, the owner and CEO.

3.5 Reliability and Validity

The reliability and validity of studies will be tested before data collection begins. To increase credibility, researchers adhere to her four criteria: (1) configuring all structures, (2) raising metrics, (3) using some indicators, and (4) conducting pilot studies. According to [26], < 0.6 is unreliable, 0.70 is acceptable, and more than 0.8 is desirable. Items are removed or filtered if the score is below 0.70.

4 Conclusion

Although this research is still ongoing, it will make an important scientific contribution to the state of knowledge by evaluating, accepting, or rejecting hypotheses and linking conclusions to empirical data from the literature, providing young companies with strategies for dealing with upcoming uncertainties like COVID-19. Governments can also help business owners by enforcing regulations at inconvenient times.

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Maximizing Organizational Efficiency Through HR Information Systems: A Focus on Decision-Making in Tech Firms

Tamer M. Alkadash, Mohammed Allaymouni, Alreem Khalid Almuslemani, and Yaser Saleh Ebrahim

Abstract This article discusses the use of human resource information systems (HRIS) for decision-making in the twenty-first century, particularly in the context of tech firms. While HRIS has gained popularity in advanced nations, smaller businesses and government agencies have been slow to adopt it due to the high cost and lack of professional dedication. However, the benefits of HRIS, such as faster and more reliable data extraction, outweigh the drawbacks. Investing in education programs for HR workers in IT innovation can be beneficial for global corporations with related HR needs and for addressing IT problems essential for corporate survival. The article aims to assist professionals in showcasing critical points for efficient HRIS implementation, discussing the core definition of the HR data system, its benefits and importance, dilemmas, and how to solve obstacles for HR advancement. Overall, the article provides insights into the essential qualities and attributes that contribute to impactful HRIS in institutions.

Keywords Human resources information system · Human resources · Innovation · Information system · Decision making

T. M. Alkadash (✉) · M. Allaymouni · A. K. Almuslemani · Y. S. Ebrahim
Administrative and Science Department, College of Administrative and Financial Sciences, Gulf University, Sanad 26489, Kingdom of Bahrain
e-mail: dr.tamer.alkadash@gulfuniversity.edu.bh

M. Allaymouni
e-mail: dr.mohammed.allaymoun@gulfuniversity.edu.bh

A. K. Almuslemani
e-mail: 200104115057@gulfuniversity.edu.bh

Y. S. Ebrahim
e-mail: 190104114751@gulfuniversity.edu.bh

1 Introduction

Human Resource Information System managed to help the HR department to analyze the data and to establish a quicker responsiveness to the market changes and turn the capability of the human resource department to achieve business growth while maintaining lower human resource cost and increasing the overall human resource productivity [1]. In its origin human resource information system was a tool that enabled the human resource department to transfer data from its inputs to outputs, and providing a storage facility for this data. Nowadays human resource information system has become unnecessary system that's manage to provide the human resource coordinator an accurate analysis and ultimately a flawless final decision based on the analysis of the information. In our current days human resource information system have developed the necessary features such as the transaction processing system, communication system, decision support system and other facilities such as employee self-services and manager services [1]. These functions have managed to assist the employees of the organization and their managers to finalize the human resource related transaction without direct interferent of the human resource department. This development in a human resource information system have managed to reduce the administrative obstacles that could come along with this type of processes, and managed to save the time of the human resource employees in the organization. Human resource information system has managed to help the organization to do better decision making by analyzing the information and by providing a quick report to the higher management, and by easing the accessibility of the system and the availability of the information.

1.1 Small and Medium HR Companies

No matter what is the size of a company the human resource department ultimate goal is create a plan and develop solutions for the company so the company can achieve its objective. This paragraph will learn demonstrate how the size, responsibilities, resources, and recruitment in the small companies and medium sized company could be differentiated [2].

Small Company A small size business has smaller offices, smaller number of employees along with the number of the customer, and less production level. Basically, everything in small businesses is small, and the human resource department in a small size company is no different [2]. A typical small company will contain between one to 10 employees, and working as a human resource coordinator in a small business means the employee of the HR department well have other responsibilities to accomplish in addition to the original role which is an HR coordinator.

Medium Company A medium sized company usually contains multiple level of management and they contain larger amount of employees A medium size company usually has an HR manager who supervises human resource coordinators who monitor day to day HR task unlike small business were HR employee will act as manager, recruiter, and assisted.

Responsibilities In a small company the HR employee will play different roles usually in small companies the HR employee is also the accountant of the small business. in other words, the HR employee in a small business well have two position in the company, and also being an HR employee in a small business means that employee is the HR manager that covers all the task of HR including benefits administration, payroll, planning and development for the organization growth, and staffing affairs. On the other hand, a medium size company well divide the responsibilities a among the HR employees of the HR department. In other words, each employee will responsible for a specific task. For example, HR coordinator in the medium sized company will be responsible for payrolls only while his or her colleague will be responsible for modifying the policies and ensuring everything is going according the procedure while the manager will be supervising the work of his or her team.

Resources Due to the small size and the less capability of a small size company the resources within these categories of businesses are limited [2]. Which means the human resource employee in that particular type of businesses are aware of the importance of things such as employee training, establishing and modifying policies and procedure to uplift the performance of the department and the company as whole. However, the resources and expender of the business will not be able to cover this area and develop it. On the contrary medium size businesses can afford spending money on these areas to uplift the performance of the company. In other words, the management can afford to pay for training programs for their employees.

Recruitment Recruitment also is a major different when it comes to the size of the company and its ability. for example: recruiting candidates can be time-consuming and additional cost factor that a small business will struggle to handle while a medium sized company does have the funds to do activities such as background check and does have the time for multiple interviews for multiple candidates were small company well conduct a simple research on the social media accounts of the candidate and call the potential candidate for a final interview. Therefore, budget and time can limit the recruitment efforts in a small business while in a medium sized business will not be as such a burden.

The HR Obstacles

Human resource's employees face a bunch of obstacles on their daily routine one of these challenges or problems that human resource faces are:

- Creating a healthy work environment: it's have been reported that a lot of employees at their jobs feels that they are under a lot of pressure which result in burnt out which eventually effects on their performance and productivity, absenteeism increase, and morals drops.

- Human resource roll to create healthy working environment it's by stablishing policies that create the balance and modifying the job description that can divide the task of the position and make it more manageable without creating the feeling of work overloud [3]. Moreover, an HR employee must explain the satiation to the manager of the concern department so the manager can reduce the pressure on his team.

Information Technology Solution

The IT department can you provide a very beneficial services to the HR department for example human resource department one of it is task is to record the attendance of the employees [3]. Back in days, attendance recording was recorded manually were once the employee comes to the work site he or she are going to record their attendance by writing down the time they arrived which can create a problem in terms of inaccurate timing registration. However, once the fingerprint device has been invented the information technology department can link this device with the system of the company to record the daily attendance of the employees and providing an actual figure.

HRIS Importance and Benefits

The HR information System incorporates the HR practices with software in a consistent way. It basically includes implementing a unified view for employee details, attendance, paychecks, and other relating monitoring systems along the whole institution. Simple terms, HRIS framework is a software that helps users maintain their HR workflows [4]. Nonetheless, businesses can run their updated activities much more flawlessly with the support of HRIS. No more bunch of documents and load of different folders moving around. In today's world, that idea is completely out of date. This task can be treated successfully by extremely effective application such as HRIS. There are numerous key essential benefits of using HRIS system software:

- Quicker recruiting and training, reducing the utilization of materials required for prolonged traditional recruiting procedure.
- Error-free paycheck administration and timetabling.
- Accessibility to valuable information, which primarily includes access to worker records.
- Automation reduces routine duties such as analyzing different queries and sending swift alerts, among other things.
- Effective staff monitoring without the use of private oversight supervision.
- Improved staff involvement and encouragement.
- Enhanced organizational metrics and other associated data.—Evaluating worker productivity and producing reports—Oversight of financial and accounting features.
- Successful management of coaching and cultural events, and so forth.

Accordingly, the HRIS greatly assists institutions in transporting out ultimate company's operations very seamlessly, consequently, increasing the corporation's effectiveness [4]. The HRIS is a highly viable strategy for promoting efficiency, rational decision, and the foundation's capacity to achieve quality products and facilities.

Other Importance and Benefits

The primary purpose and benefits of implementing HRIS inside an institution are that it appears to make it smoother for HR to obtain and manage documentation, which rewards the workers with whom they collaborate [5].

- *Organization.* With all of the documentation in one place, it's smoother for HR to discover what they're looking for, record how it's being used, and upgrade it as needed.
- *Accurateness.* Errors are unavoidable when HR must transmit files among numerous software applications or even between apps and sheets documents. Utilizing unified device prevents this issue. As more features are simplified, less manual registration is made, which minimizes errors.
- *Security.* Document folders are simple to connectivity, even those who do not have the direct exposure to or regulation. HRIS could limit entry to only those who ought to recognize.
- *Time Spare.* A desktop makes it smoother and quicker to monitor and adapt accumulated period off and the unopened alignment than a worksheet.
- *Compliance.* Great HRIS distributors maintain their application consistently in order to cooperate with applicable regulatory requirements.
- *Employee Fulfillment.* The simpler it is for members to communicate with HR and gather data such as their PTO proportion, the pleased they will be collaborating for the director.

Content of the Research

In today's marketplace, the productive and appropriate operation of a company is overly dependent on the managers' ability to make unexpected and quick decisions. For obtaining a competitive edge and surviving in the vibrant business context, choices must be taken predicated on previous encounters and with a concentrate on their implications for future advancement. This is primarily determined by the prospective performance of staff chosen using HRIS on research focused [6]. Consequently, HRIS assists companies in determining prompt decisions by offering details at the appropriate time. Each managerial judgment has a significant influence on the institution, and HRIS serves as the foundation for all such crucial data. Numerous considerable studies on the utility of HRIS and its contribution in effective management have been conducted. The purpose must be described at this point. It will not be a comprehensive provision configuration but will outline the procedures that will be implemented in the system. Several organizations could wish to establish the paycheck unit, whereas others could wish to create new functionalities. Everything is dependent on the company's budget and strategy [7]. However, it is a necessary

step prior to interacting with the supplier or professional programmers. Alternatively, this will complicate discussions and negotiations with computer programmers. At this point, the corporation's HR regulations and procedures should be thoroughly examined and characterized. If there is uncertainty in the procedure, it could be difficult to integrate it into the system. Hence, it claims that HRIS boosts competitiveness by enhancing HR facilities and monitoring procedures through the converting of raw details for fast and reliable making decisions, and that its assistance in the reconfiguration of all HR managerial services, resulting in worker fulfillment and laying the groundwork for business strategy HRM. With this context in mind, an effort was made to evaluate the utilization influence of HRIS schemes on taking decisions in the selected software vendors under consideration.

2   Literature Review

Abdul Kader et al. [8] conducted a study by conducting a survey to HR staff among the workforce of confidential educational institutions in the country and deduced that HRIS utilization is limited in colleges leading to a shortage of facilities, high costs, a poor management, and an inadequate training. In his editorial, [9] indicated that the process model is generated to evaluate the HRIS. Management Information System gives a firm a challenging edge and guidance it down a road to increasing the value about what it incorporates to the business. Brijesh Kapil [10] discussed the implications of IT on the hiring procedure by many 1200 researchers at Ranbaxy Science labs, concluding that HRIS ends up playing a more corporate strategy effect on HR and illustrating that HRIS is an excellent judgement call method. According to Chen Wei [11] conducted research on data processing, which was utilized in real-time performance management. The researchers indicated that energetic HR data software be obtained without available data. According to Mujeeb [12], the use of a HRIS improves the efficacy of HR activities in the medical sector. Gary S. Fields used HRIS documents to performed a research on Construction Consultancy Firm with 100 designers to learn about their promotions, work performance, strategic planning, and metacognitive. The study observed that HRIS was the greatest instrument for evaluating employee productivity for advancement. According to Huo and Kearns [13], Human Resource Information System has actual worth and serves as a sophisticated analysis evidence for decision crafting, particularly in the IT industry. Lado and Wilson [14] debated the scope toward which HR managements might facilitate or restrict rational decision by offering or prohibiting essential information about related-individuals corporate problems using HRIS. According to a study conducted on Indian corporations, HR professionals used HRIS for the following HR practices. However, HRIS was widely used in business governance within the company. Whereas, according to De Alwis [15] analysis on the Sri Lankan corporate sector, the far more frequently was using functionalities in the HR directorate are the recruitment process, job evaluation, and performance evaluation, which are deployed by all organizations.

This table below show the above previous studies of both companies in different countries:

Previous studies	Indian corporation (%)	Sri Lankan corporation (%)
Recruitment process	67.2–71.9	72.5
Paychecks services	67.2	–
Basic information	67.2	–
Job evaluation	–	60.8
Compensation	67.2	–
Performance evaluation	62.5	58.8
Workforce planning	62.5	–
Corporate communication	48.2	–

Results and Discussion

International agencies are a medium size company that operates in the Kingdom of Bahrain the company used to conduct all the human resource activities manually and in the recent years the company grown in size and the management found out that conducting human resource activities manually is no longer a valid option because the number of employees has grown and doing simple activities such as applying for vacation became a hard process on the employee and on the management. Therefore, the company have applied human resource portal that allows them to ease these types of activities. As a result, the human resource employees managed to save time and focuses on other sensitive activities.

3 Conclusion

This paper report sought to evaluate and create comparisons HRIS utilization in making decisions as well as anticipate HRIS awareness level in strategic planning. The chosen participants' demand priorities are recognized and directly linked with HRIS utilization. Ultimately, using HRIS equipment in HR activities and corporate functions reduces the managerial job routine's load, enhances a firm's financial standing, allows access to reliable information, boosts productivity, progresses staff members' and business owners' organizational and personal qualifications, recognizes weak points in the firm's entire process, develops successful methods that add significance to the company, and predicting future demands. In general, an HRIS software is made up of many components; thus, institutions could perhaps maximize these components to ensure the overall system runs smoothly. In other phrases, flaws in any domain within an institution can lead to a dysfunctional system as a whole. Foremost, HR divisions differ from each other, and it is quite often essential to recognize the HR district's position in the company; a few represent as corporate strategic collaborators, while others are primarily concerned with employees or represent as

only worker advocates. Furthermore, HRIS is vital for any successful system to guarantee effective performance administration and, as a result, gain a challenging advantage in the business world. It should be considered as a funding instead of a cost by the enterprise/business owners. Management support is ordered to separate the obstructions to HRIS accomplishment. This, like MIS, will assist management in making more efficient and accurate decisions. Individuals and line managers were able to communicate more quickly. Resources were transformed into self-service instead of document transactions, resulting in a more effective HR division.

3.1 Recommendations

- Reducing the amount of printed document and eliminate the need of physical storing which can take space in the offices.
- Enhancing cooperation from within the organization. Even though, the company has multiple branches, reduce possible error within payroll system along with employee information database, and Reduce time and efforts and guarantees enhanced performance.
- Training employees to use HRIS and obtain the documentation they require, that will tend to create a smoother, easier and quicker running HR operations.
- Since the system can relocate the HR information to the database software immediately in just one click, it is recommended for employees to utilize the information management functionalities.
- In fact, the platform of the system software of HR will aid workers on strategic planning by establishing and implementing decisions.

Therefore, we recommend companies to apply HRIS in their companies because of these advantages that the system software provides.

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Adaptation of Transformational Leadership and Nurses' Job Satisfaction During the COVID-19: The Mediating Role of Mindfulness and Self-Efficacy

Nida Khan (ID)**, Zaiba Ali** (ID)**, Ansarullah Tantry** (ID)**, Rahila Ali** (ID)**, and Vinita Mane**

Abstract The present study aimed to explore the link between transformational leadership and job satisfaction in medical nurses during the COVID-19 pandemic. The study further examined mindfulness and self-efficacy as mediators in the model. This was a non-experimental quantitative research study. It employed a cross-sectional research design. Four hundred healthcare nurses were included using a convenience sampling method. The analysis of the data was done by employing Structural Equation Modeling. The explanations supported that transformational leadership directly correlated with nurses' job satisfaction during the COVID-19 pandemic. Moreover, it was observed that mindfulness and self-efficacy have a significant partial mediating effect on the strength of the relationship between transformational leadership and job satisfaction. Important conclusions from the study demonstrated transformational leadership's direct and indirect effects on healthcare nurses' work satisfaction. Staff nurses reported higher levels of job satisfaction when working under staff supervision in the healthcare industry, and nurses who experienced transformational leadership attitudes and had high levels of self-efficacy and mindfulness reported being very satisfied with their work during the COVID-19 pandemic.

Keywords Leadership · Transformational leadership · Mindfulness · Nursing · Self-efficacy · Mediation analysis · Job satisfaction · The COVID-19 pandemic

N. Khan
Fatima College of Health Sciences, IAT, Abu Dhabi, UAE

Z. Ali
College of Business Administration, Princess Nourah Bint Abdul Rahman University, Riyadh, KSA, Saudi Arabia

A. Tantry (✉) · V. Mane
Westford University College, Sharjah 50325, UAE
e-mail: ansarullah.t@westford.org.uk

R. Ali
Jagran Lakecity University, Bhopal, India

1 Introduction

1.1 Background

Nurses are at the forefront of treating and preventing various illnesses, especially COVID-19, and easing these patients suffering. They greatly influence how well healthcare facilities can handle such circumstances [1]. Rising demand, overwork, infection risk, the risk of illness transfer to their families, and deliberate seclusion have overloaded nurses, like other healthcare professionals [2]. Because of these challenging circumstances, nurses have experienced psychological symptoms like worry, insecurity, and anxiety [3]. Nurses' emotions and etiquette while they strive to help the healthcare system fulfill its objective, generate great experiences, and cheer connections between staff and patients by encouraging healthy work environments. Such beneficial activities should be supported within the healthcare industry to achieve international health goals. As a result, it is critical for healthcare policymakers and administrators to recognize the relevance of job satisfaction (JS). Leadership moderates the relationships between workplace deviant behaviors, emotional behaviors, JS, and firm performance. Empowering leadership was found to have positive influences on the JS levels of employees and their performance [4]. As we move into the twenty-first century, corporations no longer place as much emphasis on the expertise that employees possess as it does on improving the quality and functionality as well as the happy working environment that employees have [5]. Because of its impact on employee behavior, overall productivity, and organizational functioning, JS is one of the most prominent and frequently used concepts in any discussion of human resource management [4, 6].

Employment satisfaction is described as an individual's attitude toward and emotions about their job [7]. Self-efficacy was described as a person's proclivity for competence and talent, which they can then channel into a positive coping approach [8]. Moreover, mindfulness was defined as, "an awareness by paying attention to the moment without making judgments about what you are doing, which can vary from moment to moment and from person to person" [9]. While as, leadership may play a critical role in establishing an effective and efficient work environment that benefits professionals, patients, and the workplace. Studies on the behavior of leaders in the workplace have revealed a variety of implications for the mental health of service-oriented employees.

There are still some unanswered concerns about the link between leadership styles, mindfulness, SE, and JS in nurses. To favorably affect health professionals' work satisfaction and, as a result, enhance healthcare quality indicators, it is vital to identify and fill present shortages in leadership skills. The healthcare industry is one of the most important cornerstones of social systems that prioritize humans. And leadership is a crucial role player in an organization, influencing employee or other social unit outcomes, as well as the work environment [10]. Transformational leadership (TL) may incorporate a range of different influencing techniques, but more research is needed to better understand how this type of leadership affects followers' attitudes

and behaviors in the context of other individual factors [11]. Therefore, the research was conducted on healthcare nursing employees because of the challenging work culture. Whereas TL was an independent variable, mindfulness and SE were treated as mediators, and JS was taken as the dependent variable; the purpose was to explore links in these variables among nurses during the COVID-19 pandemic.

1.1.1 Aim

The aim of the present research was to examine the impact of TL on healthcare nurses' JS during the COVID-19 pandemic in Kashmir, India. The study further aimed to investigate mindfulness and SE's mediating role between TL and JS.

1.1.2 Structure of the Paper

Here is the structure of the paper after background and introduction about the variables of the study.

   I. Literature Review.
  II. Hypotheses.
 III. Methods: Research design, sample, materials (TL, mindfulness, SE, & JS), and research framework.
 IV. Results: Descriptive statistics of variables, correlation analysis, and mediation analysis.
  V. Discussion: Discussion of results in relation to the hypotheses and literature review. Suggestions for future research.
 VI. Conclusion: Summary of the study's findings, limitations, and contributions.
VII. References: List of sources cited in the paper.

1.2 Literature Review

1.2.1 Literature on TL and JS

In a systematic review, 88% of studies supported a significant correlation between leadership style and nurses' JS. The most beneficial associations were seen in the transformational style, which was followed by honest, resonant, and servant styles. In all cases, passive-avoidant and laissez-faire approaches, on the other hand, exhibited a negative connection with job satisfaction. The transactional style was the only one that exhibited both a positive and negative association. In this difficult environment, leaders must not only enhance technical and professional skills but also work to boost employee happiness and morale. As a future goal, it is vital to identify and close leadership knowledge gaps to positively improve health professionals' job satisfaction and, as a result, healthcare quality indicators [10]. Puni et al. [12] in

a study revealed that there are positive relationships between the dimensions of transformational leadership and job satisfaction in the banking sector.

1.2.2 Literature on TL MF, SE, and JS

Hypothesis 1: That transformational leadership has a significant positive relationship with job satisfaction.

The connection between transformational leadership and job satisfaction was found to be mediated by self-efficacy [13]. Moreover, Decuypere et al. [14] explained that mindfulness is positively linked to transformational leadership. Studies reported that nurses' personal traits and work characteristics significantly influence how well-being and transformative leadership are related. Moreover, Leaders in the service sector are more likely to foster the good well-being of their staff when they demonstrate idealized influence, encourage self-efficacy in staff, push staff to think for themselves and cultivate genuine relationships with staff [15]. The link between transformational leadership and the well-being of employees was found to be influenced by various factors such as interpersonal relations, emotions, mindfulness, stress, trust, and engagement [11].

Hypothesis 2: That transformational leadership has a significant positive relationship with mindfulness and self-efficacy.

Hypothesis 3: That mindfulness and self-efficacy have a significant positive relationship with job satisfaction.

Hypothesis 4: That mindfulness mediates the relationship between transformational leadership and job satisfaction.

Hypothesis 5: That self-efficacy mediates the relationship between transformational leadership and job satisfaction.

1.3 Methods

1.3.1 Design

To meet the objectives of the study and test the hypotheses, a non-experimental quantitative research design was implemented using structural equation modeling (SEM) for the data analyses employing AMOS (V. 24). The study followed a cross-sectional research framework.

1.3.2 Sample

The sample of the study consisted of 400 nurses employed in the healthcare sector during the COVID-19 pandemic in Kashmir, India. The nursing staff were included in the sample irrespective of their marital status and type of job. The sample was selected using the convenience sampling method. The average age of the sample was 31.47 years. Descriptive statistics, correlations, and reliability estimates were performed. The mediation model was tested using structural equation modeling in AMOS. For estimating total, direct, and indirect effects, the Bootstrap method was employed.

1.3.3 Materials

Data were collected using standardized tools for all the study's variables. The 25-item TL Scale was used to collect data on healthcare nurses' impressions of their supervisors, Deans/Principals/Directors' transformational leadership behaviors [16]. It's a well-known scale that asks respondents to rate each item on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) (strongly agree). The Cronbach's alpha for current data was 0.88. Mindfulness was examined on Mindfulness Attention Awareness Scale (MAAS). The MAAS is 15 items measure of 6-point ratings from 1 to 6. All the scores are added to get a total score. High scores indicate higher mindfulness on the measure. The Cronbach's alpha calculated for the present study was found to be 0.84. Self-efficacy was measured employing 10 items SE Scale [17]. This is a 4-point Likert scale. All the scores are summed up and higher scores reflect higher levels of self-efficacy. For measuring JS data was collected on JS Scale (Dobey 2009, as cited in Mainali and Tantry [18]). Responses were rated on a 5-point Likert scale with higher scores indicating greater JS. To calculate the scores, the four items were summed and averaged. In this study internal reliability was calculated with α of 0.87).

1.3.4 Research Framework

A research model was developed based on the literature review that included TL style as an independent variable, MF and SE as mediation variables, and JS as a dependent variable. In a quantitative research test, we utilize reasoning to explore the impact on the dependent variable [19]. A quantitative technique was used to evaluate data to discover the link between statistical concepts.

Table 1 Statistics of means, standard deviations, reliabilities, and pearson's correlation coefficients

V's	N	M	SD	Items	α	1	2	3	4
1.TL Sig	400	73.60	12.1	20	0.81	–	0.195** 0.001	0.362** 0.001	0.418** 0.001
2. M Sig	400	59.01	9.2	15	0.84		–	0.173** 0.001	0.241* 0.020
3.SE Sig	400	23.00	3.4	10	0.79			–	0.584** 0.001
4. JS Sig	400	60.79	12.3	25	0.86				–

** Significant at the 0.01 level; * Significant at the 0.05 level

1.4 Results

1.4.1 Descriptive and Correlational Statistics

Data for each scale was treated with descriptive and inferential statistics such as mean, standard deviation; correlations, reliability (Table 1) and validity, and path modeling discussed later. Cronbach's alphas for all the scales were in an acceptable range. The mean score on TL perceived by staff nurses in their supervisors, Deans, Principals, or Directors showed moderate levels of TL (M = 73.60, SD = 12.124). On self-report measures, staff nurses showed moderate levels of MF and SE (M = 59.01, SD = 9.286 AND M = 23.00, SD = 3.399 respectively) and a high degree of JS (M = 60.79, SD = 12.323).

1.4.2 Mediation Analysis

The Goodness of Model Fit Assumptions: A structural path was drawn from the independent variable (TL) to both mediators (MF and SE) and dependent variable (JS) and from mediators (MF and SE) to the dependent variable (JS) among healthcare nurses. The results of the mediation analysis are presented in Figs. 1 and 2. The hypothesized model of the study was supported by model fit statistics as $\chi^2 = 84.435$, $df = 3$, $p = 0.000$, $\chi^2/df = 0.000$, TLI = 0.90, CFI = 0.94, RMSEA = 0.057, C.I, 95%). Also, CR for all the path estimates was in an acceptable range (CR > 1.96), when the critical ratio (CR) is > 1.96 for a regression weight, that path is significant at the 0.05 level. In this study, the path model was found to show good model fits. The goodness of model fit indices is presented in Table 2.

Direct Effect: All three direct path estimates are found to be significant and are in the hypothesized direction. Therefore, the results are consistent with hypotheses 1, 2, and 3. When only TL was in the model, the estimates path model shows that TL has a weak and significant positive direct effect on job satisfaction ($\beta = 0.222$, CR =

Fig. 1 Showing direct link between TL and JS
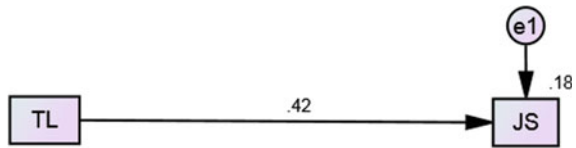
Fig. 2 Path diagram showing mediating effect of self-efficacy and mindfulness on the link between transformational leadership and job satisfaction
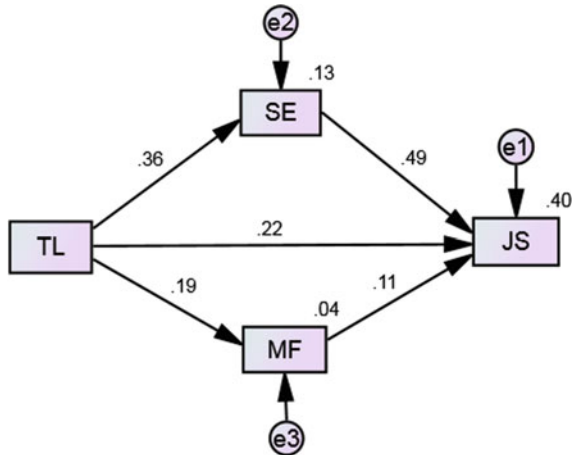
Table 2 The goodness of model fit indices

χ^2	χ^2/df	TLI	CFI	RMSEA	CR
84.435	0.000	0.90	0.94	0.057	> 1.96

CR > 1.96 means the path is significant at the 0.05 level

5.241, SE = 0.043 $p = 0.000 < 0.01$ level of significance, CI, 95%), supporting the hypothesis 1 i.e., transformational leadership has a significant positive relationship with job satisfaction (Fig. 1). Similarly, TL is found to have a weak and significant positive direct effect on MF and SE ($\beta = 0.195$, CR = 3.961, SE = 0.038 $p = 0.000 < 0.01$ level of significance, CI, 95% and $\beta = 0.362$, CR = 7.749, SE = 0.013 $p = 0.000 < 0.01$ level of significance, CI, 95% respectively), hypothesis 2 suggesting that TL has a significant positive relationship with MF and SE is fully supported as well. Moreover, SE has a direct positive effect on JS ($\beta = 0.487$, CR = 11.661, SE = 0.150 $p = 0.000 < 0.01$ level of significance, CI, 95%) confirming full support for Hypothesis 3 that mindfulness and self-efficacy have a significant positive relationship with job satisfaction. Therefore, it can be suggested that the beta values of TL, MF, and SE suggest that all three factors significantly impact JS among healthcare nurses during the COVID-19 pandemic. Additionally, SE has the strongest beta coefficient which suggested that SE emerged as the most potent determinant of JS compared to TL and MF in healthcare nurses. At the same time, it can be said that TL significantly determines the SE in healthcare nurses as well.

Table 3 The estimates of the structural path model

Path model	B	S.E	C.R	P
Direct effect				
Transformational leadership → Job satisfaction	0.222	0.043	5.24	< 0.01
Transformational leadership → Mindfulness	0.195	0.038	3.96	< 0.01
Transformational leadership → Self-efficacy	0.362	0.013	7.74	< 0.01
Mindfulness → Job satisfaction	0.115	0.052	2.89	< 0.01
Self-efficacy → Job satisfaction	0.487	0.150	11.66	< 0.01
Indirect effect				
Transformational leadership → Mindfulness → Job satisfaction	0.018	–	–	< 0.01
Transformational leadership → Self-efficacy → Job satisfaction	0.180	–	–	< 0.01
Total indirect effect	0.198	–	–	< 0.01

Abbreviations: β = Beta value showing the strength of the link, S.E. = standard error, C.R. = critical ratio, and p = Probability value

P < 0.01 means the path is significant at the 0.01 level

Indirect Effect: The estimates of the path model, presented in Table 3, for indirect effect, showed that the relationship between TL and JS was partially mediated by MF and SE among healthcare nurses during the COVID-19 pandemic. Mindfulness as a mediator slightly inhibited the impact of TL on JS ($\beta = 0.018, p = 0.004 < 0.01$ level of significance), thus hypothesis 4 is supported. The partial impact of MF is very weak and negligible. The inclusion of SE as a mediator in the path model increased the significant effect of TL on JS ($\beta = 0.180, p = 0.000 < 0.01$ level of significance). Therefore, hypothesis 5 assumes that self-efficacy mediates the relationship between transformational leadership and job satisfaction is supported by the results (Fig. 2). Thus, it can be concluded that SE partially mediated between TL and JS in healthcare nurses during the COVID-19 pandemic.

1.5 Discussion

Transformational leadership has been one of the most useful operational leadership paradigms for leaders in the twenty-first century over the past few decades [20]. As a result, nursing leaders are under intense pressure to maintain a workforce in good condition and prepare it to address the ongoing public health problems. Transformational leadership behaviors recognized by healthcare employees were found to be crucial for the enhancement of their well-being [11]. The current study presented a mediation model, with self-efficacy and mindfulness serving as the mediators, to represent the mechanism underlying the impacts of nursing deans', directors', or supervisors' transformational leadership on nurses' job satisfaction during the COVID-19 pandemic. The study came up with important findings that showed the direct and indirect effects of TL on healthcare nurses' JS. The Directors/Deans/

Managers/Staff Supervisors in the healthcare sector with transformational leadership were found to enhance the levels of job satisfaction in staff nurses and on the other hand, the nurses perceiving transformational leadership with superior levels of mindfulness and self-efficacy were highly satisfied in their jobs. Transformational leadership has been proven to be beneficial in the healthcare sector [21].

Therefore, the results supported all the hypotheses of the study. The findings of the study explained that TL has a significant and direct impact on healthcare nurses' JS during the COVID-19 pandemic which supported hypothesis 1. TL was found to have significant positive correlations with MF and SE among nurses which fulfilled the basic criteria for undertaking the mediation model as an analysis framework. It also suggested a mediating impact of MF and SE in the relationship between the TL and JS of healthcare nurses. SE was seen to partially mediate the strength of the relationship between TL and JS. So, hypothesis 5 provided support by the findings of the present study. It can be said that TL has an indirect impact (via SE) on the JS of healthcare nurses. The results of this study suggesting that TL has a direct and indirect impact on JS support the previous literature such as in the nursing clinical setting, transformational leadership has been linked to a variety of positive work outcomes, including increased nurse satisfaction, psychological engagement, and innovative work behavior [21].

The analysis of the study further claimed that TL had an indirect impact on JS through SE in healthcare nurses during the COVID-19 pandemic. The findings supported the literature such as in a study by Prochazka, et al. [13] from a path analysis observed a small indirect impact of TL on engagement via self-efficacy. Nevertheless, the TL was found to have a significant direct impact on engagement. Furthermore, SE might only partially account for the link between engagement and TL.

The results from testing the fourth hypothesis of the study showed that the relationship between TL and JS of healthcare nurses is mediated by MF. Therefore, hypothesis No. 4 was supported by the results of the study. It was found that MF partly influenced the bond between TL and JS. The findings of the present research are in line with many other studies such as a study that reported that through fostering intrinsic motivation and, in turn, extra-role performance, path analysis found that mindfulness partially makes up for low levels of transformational leadership. Furthermore, the results demonstrated that mindfulness had additional benefits for intrinsic motivation and extra-role performance, expanding earlier research on its impact on in-role performance [22]. Chen et al. [23], found that TL was positively connected with employee work satisfaction through the mediation role of the perceived employee relations atmosphere.

1.6   Conclusion

It can be concluded from the observations of the study that TL has a significant relationship with JS of healthcare nurses and the strength of the relationship is positively affected by the presence of mindfulness and self-efficacy. In future research on related topics, leadership styles, MF and SE, as well as JS, should be thoroughly studied, with reference to demographic characteristics, in relation to other factors, and theoretically developed across many industries and working groups.

1.6.1   Implications

Leaders should place an emphasis on making the organization's values, goals, and mission clear [24]. They should also work to instill confidence in their team members by treating them with respect and care, encouraging their opinions and suggestions, and being upbeat about the future [24]. Hospital management must identify the fundamental leadership skills needed by bedside nursing staff, establish programs to improve these skills, and allocate at least two weeks per year to leadership education and training [25].

The present study's findings add to the existing body of knowledge in various ways. First, our research uncovers a novel TL mechanism. Previous studies have verified the relationship between TL and employee JS from intrinsic motivation and trust in leaders and the employee's JS was found to be affected by the perceived organizational interactions [26, 27]. Therefore, this study offers a new account from the perspective of employees' SE in relation to the organization to discuss the effect of TL on employee JS. Specifically, the study aimed to examine the mediating role of SE. Thus, TL emphasizes the connection and interaction between leaders and employees. The findings suggest that employees' psychological attributes such as SE and MF influence the link between leadership styles and JS in the organizational context.

1.6.2   Limitations

The 400 nurses who made up the sample size might not be an accurate representation of all nurses. The results of the study might not apply to different contexts or groups. Convenience sampling might have produced a biased sample since participants might not have been chosen at random but rather by themselves depending on their availability or interest in the study. Age, gender, and years of experience were all unaccounted for in the study, which could have affected the findings. The results could not necessarily be extrapolated to other situations because the study was undertaken during the COVID-19 pandemic.

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Real and Accrual-Based Earnings Management Practices in the Pre-and During the COVID-19 Outbreak: Evidence from UAE Listed Firms

Ahmad Al-Hiyari, Elias Haija, and Mohamed Chakib Kolsi

Abstract The aim of this article is to examine the prevalence of both accrual and real earnings manipulation practices before and during the Covid-19 Pandemic for publicly listed firms on the Abu Dhabi Securities Exchange (ADX). Our results indicate income-increasing real and accrual earnings management activities have increased during the pandemic period as opposed to the pre-pandemic period. Our results also indicate that, in comparison to the pre-Covid-19 period, firms tend to manage earnings upwards to promote stable performance and avoid abnormal reductions in earnings due to disruptions in business activities. Our study has important implications for both capital providers and regulators who are interested in assessing the credibility of financial statements.

1 Introduction

The emergence of coronavirus disease (COVID-19) in Wuhan, a city in China, at the end of 2019 has caused serious health and economic crisis. As of 10 March 2023, a total of 676,609,955 laboratory-confirmed cases have been identified globally, of which 6,881,955 already died, according to the data compiled by Johns Hopkins

A. Al-Hiyari (✉) · E. Haija · M. C. Kolsi
College of Business Administration, University of Khorfakkan, Sharjah, UAE
e-mail: ahmed.alhiyari@ukf.ac.ae

E. Haija
College of Finance and Business, The World Islamic Sciences & Education University, Amman, Jordan

M. C. Kolsi
Dubai Business School, University of Dubai, Dubai, UAE

University. Europe and Western Pacific have the majority of these identified coronavirus cases, approximately 63% of the world cases [26]. The rapid spread of the novel coronavirus in many countries worldwide has forced the World Health Organization (WHO) to declare it as a pandemic on 11th March 2020.

In response to such severe effects on global public health, many countries' governments have imposed aggressive and unprecedented measures to fight the spread of the disease such as lockdowns, travel and mobility restrictions, testing and tracing of the virus [4]. While these measures may be effective in containing the pandemic, they adversely affect the entire global economy [9]. The International Monetary Fund (IMF) has declared a global economic recession with a contraction level of 4.9% in global Gross Domestic Product (GDP) in 2020 [11], and the International Labor Organization (ILO) predicts global working hours to decrease by 14% in the Q2 of 2020, which is equivalent to nearly 400 million full-time jobs [10]. Consequently, borrowers and businesses across the world are experiencing tremendous losses, affecting their solvency, while millions of employees are facing job losses. At the same time, many countries' governments and international institutions have enacted measures to deal with damages caused by the Covid-19 crisis and to restore shareholders' confidence in financial markets [5].

Since 2020, scholars have produced numerous empirical studies documenting the financial consequences of the global coronavirus crisis [1, 4, 5, 7, 12, 15, 17, 19, 22, 23, 25, 29, 30]. For example, [16] investigate earnings management practices of firms listed in European countries. Their empirical findings reveal that increase in upward income manipulation activities during the novel coronavirus outbreak. However, [18] show that the COVID-19 crisis adversely affects the decision usefulness of earnings. Ali et al. [3] document a negative connection between the outbreak of COVID–19 and earnings manipulation practices of U.S firms. Rahman et al. [20] show that family firms tend to engage more in real earnings management activities than other firms during the pandemic.

Nonetheless, to the best of the authors' knowledge, there is no previous documented study on earnings manipulation activities of UAE-listed firms in the period pre and during the coronavirus crisis. The current study fills this gap in the literature by examining how COVID-19 impacts firms' accrual and real income manipulation practices. Understanding earnings management of the firms is at the forefront of concerns of both shareholders and regulators. This is because unreliable information can damage shareholders' confidence in capital markets and thus adversely affect the flow of foreign direct investments. However, the extent to which firms can distort earnings depends on the strength of corporate governance mechanisms [2]. Thus, our study can be useful to regulators in responding to firms' earnings manipulation activities.

Considering the severe impact of the coronavirus crisis on firms' financial results, managers may adopt numerous financial and economic decisions to mask the negative consequences of the coronavirus crisis. Indeed, various studies indicate that managers have incentives to act opportunistically to the detriment of outside shareholders. Thus, based on agency theory, managers are expected to increase firms' income

via engaging in both real and accrual earnings manipulation activities during the pandemic period compared to the pre- pandemic period.

The remainder of this study is structured as follows. Section one describes the previous literature, while section two presents the methodology utilized to investigate the hypotheses. The last second is devoted to implications and conclusions.

2   Literature Review and Hypotheses Development

The earnings management concept has been evolving since its appearance in the mid 1980s when it first became an essential topic of discussion in accounting research and literature. Financial reporting is intentionally distorted by corporate managers to obtain personal benefits at the expense of outside stockholders. Overstating net profit is a common way to improve a firm's financial performance [13]. In the financial markets, this trend is swiftly reflected, as stock prices are tightly linked to the company's financial results. As a result, the company's management uses income management techniques to keep stock prices on the financial market high that matches investors' expectations.

Several studies have tested the impacts of the COVID-19 pandemic on income manipulation practices. Nevertheless, their empirical conclusions are mixed and inconclusive. For example, [24] compare income smoothing of European listed banks in the pre and during the coronavirus period. They find evidence that income manipulation practices have increased during the pandemic period, especially in countries with poor governance and institutional quality. Similarly, [16] focus on European countries and demonestrate that firms tend to distort earnings in an upward direction during 2020. They suggest that the reliability of financial statements decreased because of the coronavirus crisis. Yan et al. [28] investigate China's A-share listed firms and document a positive relationship between COVID-19 and both accrual and real income manipulation practices. Rahman et al. [20] analyze a sample of Chinese-listed family and non-family firms and find that family firms exhibit an increase in real income manipulation activities compared to other firms. Overall, [20] conclude that the pandemic has reduced the quality of financial reports of family and non-family firms. On the other hand, [3] use a modified Jones model (1991) to analyze the inter-relations among income manipulation, the COVID-19 pandemic, and the strength of stockholder protection institutions. Surprisingly, they find a significant decrease in income manipulation practices during the pandemic period. In addition, they find a negative correlation between the robustness of stockholder protection institutions and income manipulation practices. Liu and Sun [18] study U.S firms and find similar results. In the UAE, there is no previous documented study on earnings management before and during the pandemic period. We expect that, during the COVID-19 pandemic period, managers used all kinds of earnings management tools to circumvent the disastrous consequences on their financial statements. Specifically, we formulate the two following hypotheses:

H1. The COVID-19 pandemic increases income manipulation practices of ADX-listed firms through accruals manipulation.

H2. The COVID-19 pandemic increases income manipulation practices of ADX-listed companies through real activities manipulation.

3   Research Methodology

3.1   Sample and Data Collection

Our research is based on secondary accounting and financial data from firms' annual reports for the selected companies. The main source of the data was firms' annual reports available on Abu Dhabi and Dubai Securities Exchange (www.adx.ae). Since our objective is to check the patterns of earnings management during the pandemic period, we choose the two following periods: 2018–2019 (2 years) which is the pre-Covid-19 period and 2020–2021 (2 years) which is the Covid-19 period itself. We eliminate financial firms from our sample since the estimation of discretionary accruals is based on abnormal loss provisions (LLP) rather than working capital and long term assets. Our final sample encompasses 136 firm-year observations.

3.2   Econometric Models

3.2.1   Accruals Management Proxy

The extant literature on earnings management offers numerous measures to proxy for earnings management practice. Following [14], we used the performance-adjusted abnormal accrual to capture discretionary accruals. Accordingly, we present the following equation:

$$\frac{TACC_{it}}{Asset_{it-1}} = \beta_0 + \beta_1 \frac{1}{Asset_{it-1}} + \beta_2 \frac{\Delta sales_{it} - \Delta AR_{it}}{Asset_{it-1}} + \beta_3 \frac{PPE_{it}}{Asset_{it-1}}$$
$$+ \beta_4 \frac{Profit_{it}}{Asset_{it-1}} + \varepsilon_{it} \qquad (1)$$

where:
TCCA = Net income-operating cash-flows
Assets = Total assets
$\Delta sales$ = Changes in revenue
ΔAR = Changes in receivables
PPE = Property, plant, and equipment
Profit = Net income

3.2.2 Real Manipulations of Cash-Flow

As in [21], we use three proxies to capture real income manipulation practices, namely, abnormal operating cash-flow (OCF), abnormal production costs and abnormal other discretionary expenditures. The fitted values from the following equation serve as a proxy for normal OCF.

$$\frac{CFO_{it}}{\text{Assets}_{it-1}} = \beta_0 + \beta_1 \frac{1}{Asset_{it-1}} + \beta_2 \frac{Sales_{it}}{Asset_{it-1}} + \beta_3 \frac{\Delta Sales_{it}}{Asset_{it-1}} + \varepsilon_{it} \quad (2)$$

where OCF denotes operating cash-flow. All other variables were defined previously. Consistent with [6], abnormal OCF equals actual OCF minus the estimated level of OCF obtained from the above equation.

Next, we use the following model to estimate normal production costs:

$$\frac{PC_{it}}{\text{Assets}_{it-1}} = \beta_0 + \beta_1 \frac{1}{Asset_{it-1}} + \beta_2 \frac{Sales_{it}}{Asset_{it-1}} + \beta_3 \frac{\Delta Sales_{it}}{Asset_{it-1}} + \frac{\Delta Sales_{it-1}}{Asset_{it-1}}$$
$$+ \varepsilon_{it} \quad (3)$$

where PC is the sum of COGS and the Δ in inventory. All other variables were defined previously.

Finally, we estimate the expected level of discretionary expenditures employing the following equation:

$$\frac{DE_{it}}{\text{Assets}_{it-1}} = \beta_0 + \beta_1 \frac{1}{Asset_{it-1}} + \beta_2 \frac{Sales_{it-1}}{Asset_{it-1}} + \varepsilon_{it}$$

where DE represents discretion expenses, calculated as (R&D expenses + advertising expenses + other selling and administrative expenses). All other variables were defined previously.

4 Results

4.1 Abnormal Accruals

Figure 1 shows the trend of discretionary accruals for the full period 2018–2019 for the pre-Covid-19 period and 2020–2021 for the Covid-19 period itself. The mean of discretionary accruals was 0.137 during the year 2018 but has decreased to 0.118 for the year 2019 (i.e., The pre-Covid period). This is because of the reversible nature of discretionary accruals due to their low persistence compared to other earning components and cash-flows [8, 27]. However, for the year 2020, the average mean of discretionary accruals increases above 0.18 indicating that managers increase
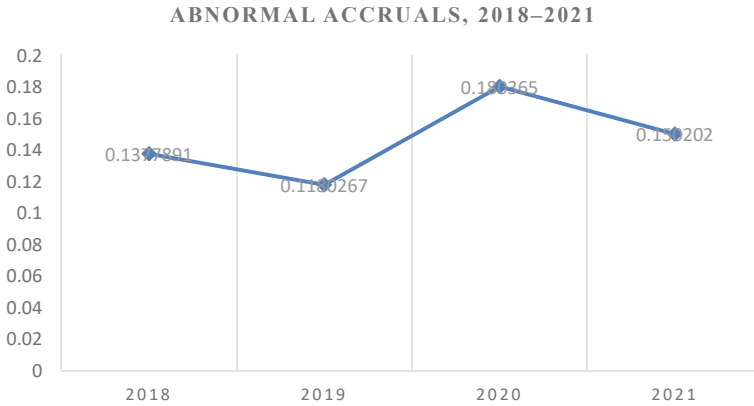
Fig. 1 Abnormal accruals for the full period

reported income via positive discretionary accruals (income-increasing strategy) in order to circumvent the disastrous consequences of COVID-19 pandemic on net income and firm financial performance. Our first hypothesis stating that during the COVID-19 period, earnings manipulation through discretionary accruals is thereby confirmed. For the year 2021, the mean of discretionary accruals deceases again to 0.15 mean confirming thereby their reversible character through time and their transitory role. For example, if managers underestimate the value of final inventory at the end of the reporting period to increase artificially annual net income, the opposite impact will occur during the next period through the beginning of the year inventory and vice versa. Also, firms can choose to shift accounting estimation methods from 1 year to another (FIFO, Average) for inventory valuation or (straight line method vs Accelerated method) for the depreciation of fixed assets without violating the consistency assumption of accounting. Finally, T-test of mean comparison between abnormal accruals for the period 2018–2019 (PreCovid-19 period) and abnormal accruals for the period 2020–2021 (Covid-19 period) shows significant differences between the two variables ($t = 11.2328$ and $p = 0.000$), thereby rejecting the equality of means of that variable for the two periods. Our first hypothesis stating that during the COVID-19 period, firms use upward manipulation of reported earnings through discretionary accruals is thereby confirmed.

4.2   Abnormal Operating Cash-Flows

As for discretionary accruals, Fig. 2 shows a substantial increase in the trend of abnormal cash-flows for the Covid-19 period compared to the pre-Covid-19 period. The average mean of abnormal cash-flows jumps from 0.05 during the year 2018 to 0.118 for the year 2020 indicating that managers double their "efforts" in increasing reported income via real manipulation tools during the Covid-19 period to offset

Abnormal OCF 2018-2021
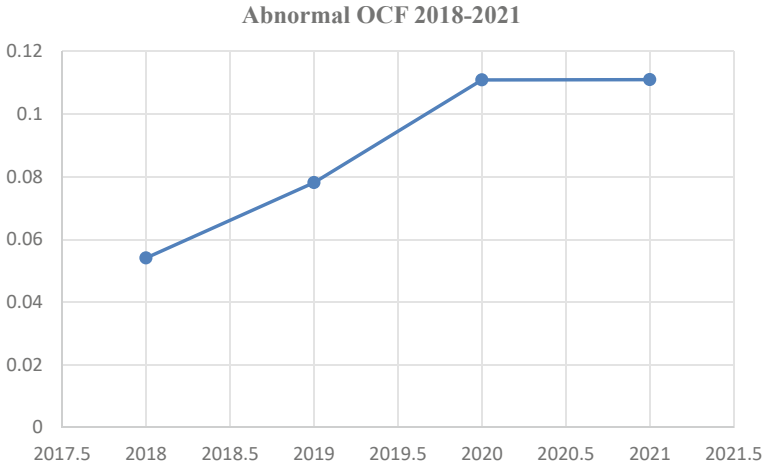
Fig. 2 Abnormal operating cash-flows for the full period

the disastrous consequences on revenues, receivables, and other cash-flow sources. However, contrary to discretionary accruals, the average mean of discretionary cash-flows remain constant (0.111) for the year 2021. Which indicates the higher persistence of such tools relative to the discretionary accruals. Also, when mangers opt to overestimate or underestimate real variables, their impact on reporting earnings cannot be offset during 1 year such as discretionary accruals. Economically, the negative consequences of Covid-19 on financial performance are still severe, this implies that mangers will continue to use all available tools in order to overpass this crisis such as offering excessive price discounts to customers on sales or extending the discount period or granting them more lenient credit terms. Also, most of the estimation models of real cash-flows manipulations used lagged cash-flow as an explanatory variable to control the effect of prior year manipulation trend on the current period cash-flows. Hence, our hypothesis H.2.1 stating that firms manage upward reported income through abnormal positive operating cash-flow is thereby confirmed.

4.3   Abnormal Production Costs

Roychowdhury [21] claim that managers can produce higher net income through increasing firm production more than required, leading to spreading the fixed costs over a larger number of units and consequently reducing the cost per unit (phenomena known as economic of scale). By contrast, during the pandemic period (2020–2021), we expect that firms are forced to reduce their production costs due to the relative
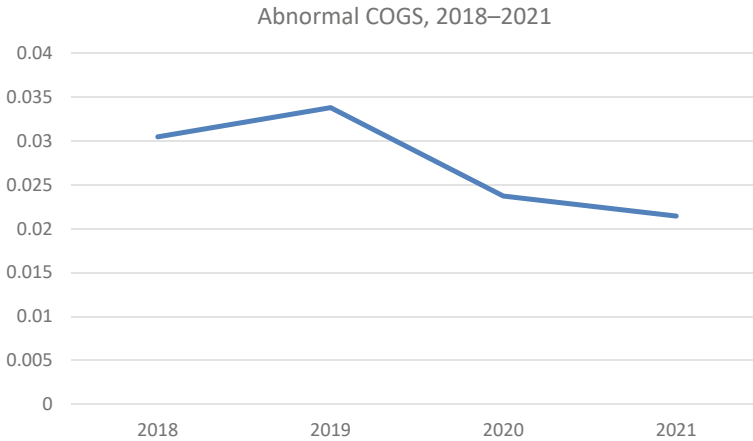
Fig. 3 Abnormal production costs for the full period

less demand from customers and lockdown measures that negatively impact production and distribution (supply chain) worldwide. Hence, we assume that the mean of production costs has decreased during that period compared to the pre-coronavirus period.

Figure 3 shows a substantive decrease in the production costs from the year 2019 to 2020. This is due to the slow-down of production cycle worldwide during the pandemic period. Low production costs can positively impact reported income if we assume that sales have not decreased sharply for the same period. Hence, firms manage downward discretionary expenditures during the Covid-19 period to increase reported income. Our hypothesis 2.3 stating that firms manage upward reported earnings through abnormal negative production costs is thereby confirmed.

4.4   Discretionary Expenditures

Reduction of discretionary expenditures: it is commonly known that a reduction in discretionary expenditures such as sales R&D and advertising expenses will inflate reported income. In addition, it is known that reducing discretionary expenditures will boost current period cash flow, assuming that such corporate outlays are paid in cash (Fig. 4).

Unlike abnormal operating cash-flows, abnormal discretionary expenditures show a sharp decrease from 2019 to 2020. In fact, during the pandemic period, most of the company's activities have decreased, especially those for whom managers can apply their discretion. Consequently, as the level of ordinary expenditures deceases, reported income will be higher for the same level of sales. Higher discretionary expenditures imply a favorable economic environment that enhances firms to invest

Abnormal DISEXP, 2018–2021
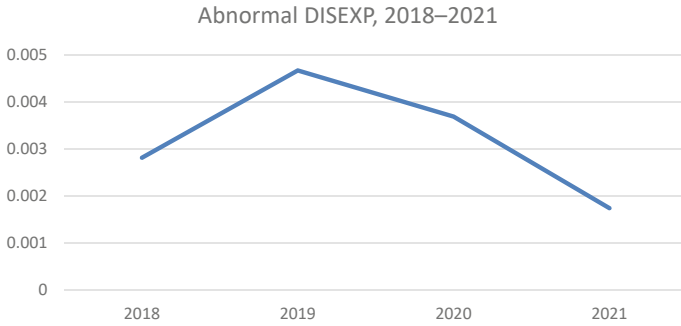
Fig. 4 Abnormal discretionary expenditures for the full period

more in R&D, advertising, and other expenditures (employee training) to boost their activities and profit margin. This is contradictory to the Covid-19 period where the worldwide economic environment was unfavorable to activities expansion or additional investments. Finally, our last hypothesis stating that firms manage upward their reported income through abnormal negative discretionary expenditures is thereby confirmed.

5 Conclusion

This research aims to identify the global impact of Covid-19 on non-financial companies listed on the Abu Dhabi Securities Exchange and the main sectors affected by the pandemic's economic crisis. The stock market worldwide has been thrown into chaos because of this virus. The behavior of economic factors will inevitably be affected by the outcome of any crisis or emergency, financial or not. Specifically, this research looks at the impact of the COVID-19 outbreak on the Abu Dhabi stock market, which is considered an emerging financial market, on firms' earnings management practices.

Results show that firms alter profits to keep reported income stable through time; in other words, corporate management wants to decrease profit fluctuations so that investors have a favorable view of the firm's financial performance. First, based on artificial manipulation tools, our sample firms use abnormal positive discretionary accruals to increase reported income especially during the Covid-19 period compared to the pre-Covid-19 period. Second, based on real activities manipulations, firms seem to abnormally inflate operating cash-flows and lowering both production costs and discretionary expenditures, thus, inflating reported income especially during the Covid-19 period compared to the pre-Covid-19 period. As a result, the stock price is more sensitive to positive earnings news, which causes influence of investor perceptions and deception concerning long-term fatalities. The manipulation of earnings toward overestimation made both profits and operating cash flow progressively vital

in reacting to the explanation of the shift in stock prices. These findings specify that a financial lockdown has occurred since the discovery of COVID-19, which has had a negative influence on the value of accounting numbers. When the stock market is down, investors' sentiment and behavior tend to be lower as a result.

The findings of this paper have important implications for shareholders and regulators who are interested in the impact of COVID-19 on financial reporting quality. We recommend future studies extend the research period to include the post-Covid-19 period. In addition, we recommend future researchers extend this study by analyzing the financial sector firms.

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Green HRM Practices and Organizational Culture Among the It Professionals Employees in Chennai

C. Kathiravan and P. Prabu

Abstract This research investigates the connection between Green HRM Practices and Organizational Culture among IT professionals in Chennai, India. The IT industry plays a crucial role in the Indian economy, but it also has environmental impacts that require attention. Green HRM practices can promote sustainability and environmental protection. The study will use a descriptive research design, with a questionnaire administered to 343 IT professionals. The independent variables are Green HRM practices, while the dependent variable is organizational culture, including seven characteristics. The article will review literature on Green HRM practices and organizational loyalty, as well as assess Green HRM in Indian universities. The research methodology will use structural equation modeling (SEM) technique with Smart PLS for data analysis. The findings will be presented, and implications discussed in the conclusion. The study concludes that there is a positive relationship and significant effect on the Green HRM Practices and Organizational Culture of IT employees in Chennai City.

Keywords Green HRM practices · Organizational culture · IT professional

1 Introduction

The Indian IT and ITeS industry is a vital contributor to the country's economy, creating employment opportunities and attracting foreign investors. However, it also has an environmental impact that needs to be addressed, and Green HRM practices can play a crucial role in promoting sustainability. Organizational culture is equally important in shaping a high-performance workplace and is defined by several characteristics.

This article aims to investigate the relationship between Green HRM practices and organizational culture among IT professionals in Chennai. It will use

C. Kathiravan · P. Prabu (✉)

Department of Business Administration, Annamalai University, Chidambaram, TamilNadu, India
e-mail: prabusivam94@gmail.com

a descriptive research design and a questionnaire to collect data from 343 IT professionals. The independent variables are Green HRM practices, which include training, development, career planning, compensation, and performance appraisal. The dependent variable is organizational culture, which includes innovation and risk-taking, attention to detail, outcome orientation, people orientation, team orientation, aggressiveness, and stability.

The article will begin by exploring the concept of Green HRM practices and their importance in promoting sustainability. It will also review the literature on the link between Green HRM practices and organizational loyalty, as well as the assessment of Green HRM in Indian universities. The article will then provide a definition of organizational culture and identify the seven characteristics that shape it. The research methodology, which will utilize structural equation modeling (SEM) technique with Smart PLS for data analysis, will be outlined.

The findings of the study will be presented and discussed in the results and discussion section, and their implications will be discussed in the conclusion. The paper's structure includes an introduction, literature review, conceptual framework, research methodology, results and discussion, and conclusion and implications.

1.1 HRM Practices

The word "Green" in the present scenario is not just associated with the colour. It conveys the idea of being environmentally friendly and "Organic". The recent past, human beings were engaged in mindless plunder of natural resources; squeezing them out for profitability alone. The focus of corporates was only on monetary benefits and the damages inflicted to the environment were never even thought of. The frequent calamities that have been occurring throughout the world and the understanding that the human race often fails to defend themselves from the fury of nature have led governments, organizations, and individuals to change their attitude towards the environment.

The world has realized the importance of shifting its focus from economic growth to more sustainable development. Global Organizations such as the United Nations and governments of various countries have made environment conservation and protection a part of their agenda. The United Nations Environmental Programme (UNEP) which was introduced in 1972 has been responsible for the implementation of several environmental agreements and protocols which focused on climate change, conservation of biodiversity, protection of endangered species, etc., between its member countries.

1.2 Organizational Culture

High-performance workplaces have long been recognized as requiring conducive organizational cultures. The shared norms, customs, and traditions that define an organization's culture foster stability, loyalty, and productivity. Not only does the company as a whole have a culture, but that culture often includes many different subcultures. Culture at both the individual and organizational levels should be taken into account when designing a workplace [].

According to recent research, there are seven main characteristics that sum up to define an organization's culture.

  i. **Innovation and risk taking**: The extent to which workers are pushed to think outside the box and take calculated chances.
 ii. **Attention to detail**: The extent to which workers are supposed to be analytical, precise, and detail-oriented.
iii. **Outcome orientation**: The extent to which leaders prioritize outcomes rather than the means by which those outcomes are achieved.
 iv. **People orientation**: How much management thinks about how choices will affect employees when making plans.
  v. **Team orientation**: The extent to which group efforts are prioritized over individual ones in the workplace.
 vi. **Aggressiveness**: The extent to which aggressiveness and competition rather than easygoing.
vii. **Stability**: The extent to which an organization's actions prioritize status quo preservation over expansion.

2 Review of Literature

To learn more about the connection between Green HRM Practices and loyalty, Schwalm [5] surveyed 331 Libyan oil and gas workers. A study using structural equation modeling found that investment in staff through both training and competitive pay increases levels of dedication on the job. Job stability and a pleasant workplace atmosphere were also proven to boost employees' loyalty to their employers.

In his essay "Assessing Green Human Resource Management Practices in Higher Education Institute," Renwick [4] examined the situation of Green HRM in Indian universities. They looked at all HR operations to see how environmentally friendly they were, such as hiring and screening employees, providing them with instruction and feedback on their performance, encouraging their involvement in corporate matters, and so on. The article also assesses the accountability and awareness of green policies and practices of management, staff, and students.

An "enhancing" culture, a "orthogonal" culture, and a "countercultural" culture were proposed by Martin and Siehl [] to transmit top management's interpretations of the meaning of events throughout the organization, generate commitment to

their practices, and control behavior. This strategy of subverting the goals of higher management, which she dubbed "counter-culture," has its roots in social norms.

Gordon [3] argues that a company's culture is heavily influenced by the characteristics of the industry in which it operates. Companies that operate in the same market tend to hold similar beliefs because they are guided by shared understandings of industry norms, consumer preferences, and cultural norms.

3   Research Methodology

3.1   Research Design

The study's goals and the emphasis of the final analysis informed the study's methodology. The researcher employs a detailed research strategy to conduct the investigation. A descriptive study is one that sets out to describe some aspect of a person or group. The study's methodology effectively portrays the current state of affairs. One IT company in Chennai, India, is the centre of this investigation into the Green HRM Practices and organizational dedication of IT professionals. The study investigates how committed organizations are to Green HRM practices and where the IT workforce stands at the moment.

Objectives of the Study

- To examine the OC of Chennai IT Employees.
- To understand about the differences in views toward Green HRM Practices and Organizational Culture among Chennai IT Employees.
- To develop a model of Green HRM Practices and OC among Chennai IT workers.

Hypotheses of the Study

- There is no significant difference in Green HRM Practices of IT Employees personnel in Chennai based on demographic information.
- In terms of demographic information, there is no significant difference in OC among IT Employees in Chennai.
- Green HRM Practices and OC have little impact (Fig. 1).

3.2   Data Collection

The researcher collected raw data from working IT professionals via a thorough and organized questionnaire. The survey has three parts, the first of which includes a summary of the staff members' demographics. HRM strategies are dissected in Part 2, and in Part 3, we delve into the topic of OC.

Fig. 1 Framework of the research

Table 1 Reliability analysis

S. No	Variable	Item	Cronbach's alpha
I	Green HRM practices	20	0.81
II	Organizational culture	37	0.86

3.3 Reliability Analysis

The dependability of these components was also determined through a reliability study. Cronbach's alpha requires a reliability coefficient between 0.80 and 0.86; a value of 0.70 or higher indicates sufficient reliability (Table 1).

3.4 Sampling Technique

The study made use of the sample process probability model. The survey taker was chosen using a basic random sampling method. This method of collecting information is quick and cheap. The technique used introduction to find qualified IT experts with equal chance. This study's inspection method was developed specifically to confirm the existence of IT staff.

3.5 Sample Size

There were a total of 363 surveys sent out. A total of 351 completed survey forms were received. Twelve questionnaires were not completed. Out of 351 total surveys, 343 qualified. The other 8 contained serious errors. This meant that there were 343 people in the group.

3.6 Data Analysis

The purpose of a route analysis is to identify the external variables that influence a dependent variable. The main variable in this approach is Green HRM Practices. The culture of an organization is an independent element.

4 Research Analysis

4.1 Correlation Analysis

The Pearson correlation test was utilized on a sample of 343 customers to establish the association between the parameters Green HRM Practices and determining consumer to purchase. The data shows that the degree of correlation between Green HRM Practices and variables impacting consumer purchasing decisions is considerable. It also demonstrated that none of the factors are unconnected.

Table 2 clearly demonstrates that all variables' P values are significant at 1%. As a consequence, it has been determined that there is a significant relationship between Green HRM Practices factors and consumer purchasing choices. Wells et al. [6], Milliman et al. and Clair et al. discovered a similar result, and the table result supported the views of various authors who conducted research in the Green HRM Practices and Organizational Culture area with respect to various respondents such as academicians, workers, and others.

Table 2 Inter relationship between green HRM practices and organizational culture factors

Factors	OC_IR	OC_AD	OC_OO	OC_PO	OC_TO	OC_AG	OC_ST
HRM_ Tra	0.439 0.001**	0.477 0.001**	0.469 0.001**	0.439 0.001**	0.438 0.001**	0.378 0.001**	0.322 0.001**
HRM_ Dev	0.513 0.001**	0.493 0.001**	0.531 0.001**	0.513 0.001**	0.368 0.001**	0.317 0.001**	0.397 0.001**
HRM_CP	0.438 0.001**	0.480 0.001**	0.470 0.001**	0.438 0.001**	0.371 0.001**	0.291 0.001**	0.399 0.001**
HRM_ Com	0.515 0.001**	0.487 0.001**	0.525 0.001**	0.515 0.001**	0.438 0.001**	0.378 0.001**	0.322 0.001**
HRM_PA	0.438 0.001**	0.480 0.001**	0.470 0.001**	0.438 0.001**	0.427 0.001**	0.378 0.001**	0.364 0.001**

NS Not Significant; * Significant at 0.05 level; ** Significant at 0.01 level

Null hypothesis H_o = There is no significant relationship between the factors of Green HRM Practices and Organizational Culture

Alternate hypothesis H_1 = There is a significant relationship between the factors Green HRM Practices and Organizational Culture

4.2 Regression Analysis

Table 3 depicts the effect of HRM Practices factors on organizational culture innovation and risk taking among IT professionals' employees. This table predicts and outlines five powerful factors of HRM Practices such as 'Training', 'Development' and 'Career Planning', 'Compensation', 'Performance Appraisal'. Three HRM Practices factors, such as 'Training,' 'Career Planning,' and 'Performance Appraisal,' are potent among five IT professionals' workers, while the other two factors, 'Development,' and 'Compensation,' are less potent. Actually, the factors 'Development' and 'Compensation' have no effect on organizational culture's innovation and risk-taking.

The coefficient of determination R^2 is the square value of the sum moment interactions. R^2 increases as R increases. R^2 adjusted is always less than R^2. The model is acceptable if the difference between the adjusted R^2 and R^2 is small. As a result, the following hypothesis was developed to validate this viewpoint.

$\mathbf{H_O}$: There is no impact of factors of HRM Practices on Innovation and risk taking of Organizational Culture among the IT professionals' employees.

The factors 'Training,' 'Development,' and 'Career Planning,' 'Compensation,' and 'Performance Appraisal' have a R value of 0.484 and an R^2 value of 0.234, showing a 23.4% prediction of Organizational Culture's Innovation and risk taking. Because the difference is only 0.010, the adjusted R^2 0.224 is very near to the R^2 value; thus, the sample size approaches the population size. At the p-value 0.001 threshold of significance, the F-value of 23.2 is significant. As a result, the following regression equation was devised (Table 4).

Innovation and risk taking of Organizational Culture $= (1.302) -$ Training (0.534) $+$ Development $(0.393) +$ Career Planning $(0.878) -$ Compensation $(0.243) +$ Performance Appraisal (0.828).

The 'beta' value of Training of HRM Practices of -0.612, representing a -61.2% impact on Training of HRM Practices on Organizational Culture Innovation and risk taking, lies on the slope of the regression line. The t-value of (-2.121) indicates that the normalized regression coefficient is significant at a p-value of 0.035. As a result, the Training of HRM Practices affirms the effect of Organizational Culture on Innovation and risk taking among IT professionals' employees.

Table 3 Impact of dimensions of HRM practices on Innovation and risk taking of organizational culture

Independent variable	Dependent variable	R	R^2	Adj R^2	F	p
'Training', 'Development' and 'Career Planning', 'Compensation', 'Performance Appraisal'	Innovation and risk taking of organizational culture	0.484	0.234	0.224	23.2	0.001

Source Primary data

Table 4 Co-efficient table

S. No	Model	Un-standardized coefficients		Standardized coefficients	t	p
		B	Std. error	Beta		
	Constant	1.302	0.181		7.186	0.001
1	Training	− 0.534	0.252	− 0.612	− 2.121	0.035
2	Development	0.393	0.420	0.472	0.936	0.350
3	Career planning	0.878	0.259	0.977	3.394	0.001
4	Compensation	− 0.243	0.416	− 0.294	− 0.585	0.559
5	Performance appraisal	0.828	0.239	0.947	3.124	0.001

Source Primary data

The 'beta' value of Development of HRM Practices of 0.472, representing a 47.2% effect on the Development of HRM Practices on the Organizational Culture's Innovation and risk taking, falls on the slope of the regression line. The t-value of 0.936 indicates that the normalized regression coefficient is not significant at a p-value of 0.350. As a result, the Development of HRM Practices affirms that Organizational Culture has no effect on Innovation and risk taking among IT professionals' employees.

The 'beta' value of Career Planning of HRM Practices is 0.977, which indicates a 97.7% impact on the Career Planning of HRM Practices on the Organizational Culture's Innovation and risk taking. The t-value of 3.394 indicates that the normalized regression coefficient is significant at a p-value of 0.001. As a result, the Career Planning of HRM Practices affirms the effect of Organizational Culture on Innovation and risk taking among IT professionals' employees.

The 'beta' value of Compensation of HRM Practices is − 0.294, which indicates a − 29.4% effect on the Compensation of HRM Practices on the Organizational Culture's Innovation and risk taking. The t-value of (− 0.585) indicates that the normalized regression coefficient is not significant at a p-value of 0.559. As a result, the Compensation of HRM Practices affirms that Organizational Culture has no effect on Innovation and risk taking among IT professionals' employees.

The 'beta' value of Performance Appraisal of HRM Practices is 0.947, which indicates a 94.7% effect on the Performance Appraisal of HRM Practices on the Organizational Culture's Innovation and risk taking. The t-value of 3.124 indicates that the normalized regression coefficient is significant at a p-value of 0.001. As a result, the Performance Appraisal of HRM Practices affirms the effect of Organizational Culture on Innovation and risk taking among IT professionals' employees.

The analysis found that 'Training,' 'Career Planning,' and 'Performance Appraisal' have a positive effect on Organizational Culture's Innovation and risk taking. Erhart found that 'Development' and 'Compensation' were less frequently displayed by school leaders. They also discovered that collaborative and compromise styles, followed by forcing and smoothing, were commonly noted. 'Training,' 'Career

Planning,' and 'Performance Appraisal' factors, according to Bai et al., mediate the connection between distributive and procedural justice and innovation and risk taking. The study also discovered that the 'Development' and 'Compensation' factors of HRM Practices have no impact on the Organizational Culture of IT professionals' employees' Innovation and risk taking. However, the 'Training' of HRM Practices supports the negative effect of Organizational Culture on Innovation and risk taking among IT professionals in the Chennai district. Cloninger et al. found a link between Human Resource Management Practices and Organizational Culture.

5 Conclusion

In summary, this study found a positive relationship between Green HRM Practices and Organizational Culture among IT Professionals in Chennai. However, limitations included a limited sample size, reliance on self-reported data, and neglecting the influence of other factors. Future studies could address these limitations by using larger and more diverse samples, examining other organizational factors, investigating the effectiveness of different types of green HRM practices, and conducting longitudinal studies. The findings suggest that businesses should implement environmentally friendly HRM practices to enhance environmental performance and organizational culture. These practices can also improve employee job satisfaction and retention rates, and businesses should strive for stricter standards in their efforts to achieve sustainable growth and contribute to a greener world.

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Knowledge Development for Pursuing Open Innovation in Service Industry: A Dynamic Capability Perspective

Natasha Anggia and **Anjar Priyono**

Abstract This research analyzes how knowledge developed by companies using dynamic capabilities can support open innovation. Most previous research has analyzed dynamic capabilities and open innovation separately. The interplay between the two has yet to be discussed much; this is the research gap analyzed in this study. An exploratory case study in firms operating in the hospitality industry was selected because most previous research was undertaken in the manufacturing sector. Our analysis of qualitative data collected from various sources identified two main capabilities for supporting open innovation: knowledge sensitivity capability and dynamic knowledge conversion capability. Further, we developed a framework explaining how firms can pursue open innovation using dynamic capabilities. A single case study enabled researchers to conduct depth and detailed analysis, but its generalizability has been criticized. Future research can analyze the framework developed in this research using surveys in large-size samples.

Keywords Dynamic capability · Open innovation · Knowledge management · Resource orchestration · Business ecosystem

1 Introduction

The Covid-19 pandemic caused a dramatic change in the business environment. Several types of industries are experiencing a downturn, one of which is the hospitality industry. The social distancing policy implemented by the Indonesian government through the Decree of the Minister of Health Number HK.01.07/MENKES/259/2020 has caused a decrease in tourist visits in 2020, as presented in Fig. 1.

Dynamic capabilities have been widely cited as an alternative to adapt to uncertain and rapid environmental changes [1]. The literature discusses this concept as

N. Anggia · A. Priyono (✉)
Department of Management, Universitas Islam Indonesia, Jl. Prawirokuat, Sleman, Yogyakarta, Indonesia 55283
e-mail: anjar.priyono@uii.ac.id
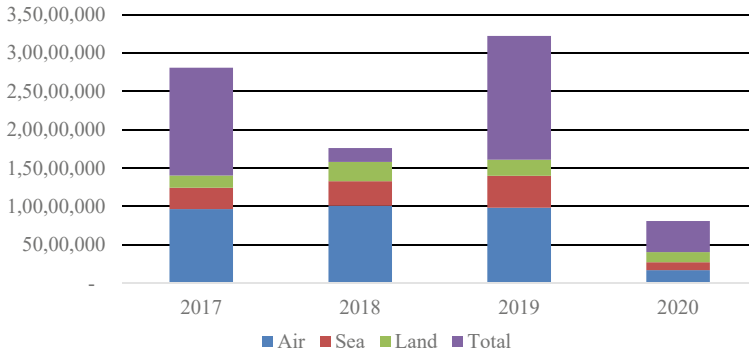
Fig. 1 Number of foreign tourists based on the mode of entrance. *Source* Biro Pusat Statistik [4]

motivating companies to make fundamental organizational changes [2]. The basic concept of dynamic capabilities states that companies can combine internal and external resources and then arrange them with certain configurations flexibly to respond to developing conditions [3]. The dynamic capabilities framework concerns how companies create competitive advantage in a rapidly changing environment.

The concept of dynamic capabilities has some similarities to open innovation. The concept of dynamic capabilities emphasizes sensitivity to the external environment to acquire, integrate, rebuild, and reconfigure the organization's internal resources to create a competitive advantage [5]. Meanwhile, open innovation adopts an open attitude towards external innovation sources [6]. The similarities between dynamic capabilities and open innovation lie in their focus on adaptability and flexibility in dealing with changes in the external environment. The acquisition from external parties includes knowledge, which is the essential source for innovation [7]. Thus, both concepts use an outside-in perspective in their implementation [8]. This approach emphasizes the external environment first before configuring resources and creating innovation.

Even though the two concepts are related, how dynamic capabilities support open innovation has yet to be extensively analyzed. Previous research is conceptual and does not use empirical data [9]. Meanwhile, other studies that use empirical data emphasize more on what capabilities from dynamic capabilities support each stage of open innovation [10]. To address this knowledge gap, this study proposes the following research question: *How does knowledge derive from dynamic capabilities support open innovation?*

The paper consists of five main sections. The next section, Literature Review, discusses relevant works in the field of dynamic capabilities, open innovation and the interplays between both concepts. The third section describes the Research Method, which highlight the justification of using a single case study design. In the fourth section, the Findings and Analysis are presented, discussing the necessary capabilities for pursuing open innovation. Lastly, we present the key findings of the study and directions for future investigation in the Conclusion section.

2 Literature Review

2.1 Dynamic Capabilities for Adapting to Changes

Dynamic capabilities refer to an organization's ability to adapt, change and update its internal resources to deal with changes in the external environment. Dynamic capabilities enable organizations to innovate, change, and meet new challenges in a rapidly changing business environment [5]. Organizational dynamic capabilities determine how internal and external capabilities are integrated, built on, and reconfigured to address changes in the business environment. The dynamic capability involves sensing, seizing, and transforming [11]. Scholars suggest that the use of artificial technologies can support firms to be more efficient to offer customized product and services to market [12]. Thus, the technology increases the adaptability of firms to changing environment.

Dynamic capabilities facilitate companies to survive in rapidly changing environmental conditions. Dynamic capabilities make it easier for companies to arrange various resource configurations to become flexible and adaptable. To achieve organizational flexibility, firms must be guided by leaders who can make decisions quickly and deploy resources to take opportunities that arise [1]. In addition, with dynamic capabilities, companies can influence companies that are members of their network. Companies with strong dynamic capabilities can develop ecosystem leadership, namely the ability to lead and influence the dynamics of business ecosystems. Dynamic capabilities can make companies become ecosystem orchestrators who allocate resources and create value in ecosystems [13].

2.2 Open Innovation for Knowledge Sourcing

One of the most well-accepted definitions of open innovation is "a distributed innovation process that involves the purposive inflows and outflows of knowledge to accelerate internal innovation and expand the market for external use of innovation, respectively. It encompasses the purposive creation and management of both inbound and outbound knowledge flows across the firm boundary" [14]. Open innovation can occur at various organizational levels, between organizations, industries, and regional or societal innovation systems [15].

Acquiring innovation from external sources requires two steps: the company must first find sources of external innovation and then bring those innovations into the company. Companies may seek the latest innovations, technical discoveries or knowledge, market knowledge, components, or other useful information to support the company's innovation efforts [16]. An important step of open innovation is to get external innovation which is the process of identifying and finding the source of this innovation. Researchers have learned that, in general, the role of innovation from

external sources is to augment or complement the company's internal knowledge [15].

Companies can activate and filter innovation from external sources. Companies wishing to increase the supply of external innovations can use third-party actors (such as innovation intermediaries) to activate and facilitate these innovations [17].

2.3 The Interplays Between Dynamic Capabilities and Open Innovation

Dynamic capabilities and open innovation have much in common, are pretty general, and require contextual specification. Both can be applied at the level of business units, companies, or within an ecosystem. However, open innovation and dynamic capability also have critical differences. Broadly speaking, open innovation is a series of processes to create innovations using resources from outside the organization [15], while the dynamic capability framework is a systemic theory of strategic management [9]. The concept of dynamic capabilities includes processes for creating innovation and relates to corporate governance, managerial decision-making, and sources of competitive advantage [18].

Dynamic capabilities support open innovation in several ways. With the support of dynamic capabilities, firms can detect and recognize innovation opportunities outside the organization through collaboration with external parties such as business partners, universities, or research institutions. All of this is part of sensing capability. Next, by using seizing capability, companies can take the innovation opportunities that have been identified and incorporate them into their business strategy. The final stage is integrating new resources and competencies from external parties into existing business operations; firms can use configuring capability to perform this task [9].

3 Research Method

3.1 Research Method: Case Study

This research was conducted using the case study method, from determining the research topic to drawing conclusions based on the phenomena that occurred in the research subjects. The case study method relies heavily on research questions designed to describe the context of answering the "how" or "why" questions of a social phenomenon, and this method allows the questions to be constructed to be broad and deep, relevant, and include detail explanations of several social phenomena [19]. Case studies involve an in-depth exploration of the Focusing phenomenon and are well suited for answering "how" research questions [20].

3.2 Case Study Design: Single Case

This study used a single-case study design with an analysis of the company, namely PT. Pulau Bawah is located in Anambas Islands Regency, Riau Islands Province. PT. Pulau Bawah has 36 villas, 32 located on the beach or facing the sea, while the remaining four are on the mainland.

Using a single case study is appropriate for unique objects so that researchers can analyze in depth and detail one particular case. With characters like these, the subject and research context can be observed more comprehensively [21, 22].

To overcome these weaknesses, researchers used several approaches suggested in the literature, namely triangulation, using relevant theory as the foundation for analysis, and being open to various perspectives when conducting data analysis [20].

3.3 Data Collection and Analysis

Data collection was conducted through a series of interview activities, field observations, and desk research. Desk research was carried out in the early stages of data collection before the researcher conducted interviews and focus group discussions. Desk research was undertaken to provide researchers with an initial understanding of the topics discussed in interviews. Even though the researcher has prepared an interview protocol, the researcher is open to responses from informants and asks further questions in more detail.

Interviews were conducted with the General Manager, Deputy General Manager, and staff of PT. Pulau Bawah. These are the most responsible people for all strategic and operational activities of the company. With this position, they understand the strategic issues discussed in this research, such as organizational capabilities and open innovation strategies. Other informants who participated in this study were staff, supervisors, and several customers whom researchers met during field visits. Data sources that number more than people allow researchers to increase research reliability [23, 24] and prevent bias [20].

Data analysis was carried out using grounded theory which consisted of three stages: open coding, axial coding, and selective coding. In open coding, data is analyzed in detail to identify patterns that emerge from the data without any prior theoretical framework. Next, the concepts identified in the previous coding stage are grouped based on the emerging theme categories in axial coding. Then, in selective coding, the focus is given to developing one core category that is most relevant and significant in forming theory [25].

4   Analysis and Findings

4.1   The Case Company

This research used one case, PT. Pulau Bawah is a company engaged in tourism with the concept of sustainability and protecting the environment. PT. Pulau Bawah is a luxury resort that offers Indonesian tourism with a sustainable concept. The architect, Sim Boon Yang, of Singapore-based firm Eco-ID, designed the facilities of PT. Pulau Bawah with the entire building to adapt to the island's natural landscape. Bawah Island has an area of about 300 hectares; usually, the number of visitors is limited to 70 people. PT. Pulau Bawah has three lagoons with clear water and 13 beaches with white sand. The company manages 150 employees, of which 120 are local people.

4.2   The Capabilities for Open Innovation: Preliminary Findings

This study is part of a postgraduate research project; the data analyzed and presented in this paper are the preliminary findings. The data analysis carried out focuses on what companies need capabilities to carry out open innovation [26]. We conducted summative content analysis to summarize large and scattered data. In principle, summative content analysis is "counting and comparisons, usually of keywords or content, followed by the interpretation of the underlying context" [27]. Figure 2 presents the data structure from our data analysis. We arrange the raw data from the interviews graphically so that the relationships between concepts and the causal relationships between concepts can also be observed [26].

Data can be aggregated into two-second orders: knowledge sensitivity and dynamic knowledge conversion. Knowledge sensitivity consists of five first orders: trend sensitivity, context sensitivity, accuracy sensitivity, and confidentiality sensitivity. Knowledge sensitivity indicates how responsive the company's knowledge is to the innovation trends that appear in the market.

Context sensitivity shows how far knowledge can be accepted based on customer background, competitor behavior, and market conditions that affect innovation success. An innovation will be accepted by customers from certain groups but only sometimes accepted by other groups. In this context, sensitivity is the involvement of stakeholders as carried out by a case study firm in collaboration with an external expert from a German company on solar panel products being developed in PT. Pulau Bawah. The purpose of the innovation, as stated by the Deputy General Manager of PT. Pulau Bawah is:

> The goal of innovation is efficiency, profitability, and so on. The use of new technology provides more benefits than the current one. This - i.e., the technology - means that our
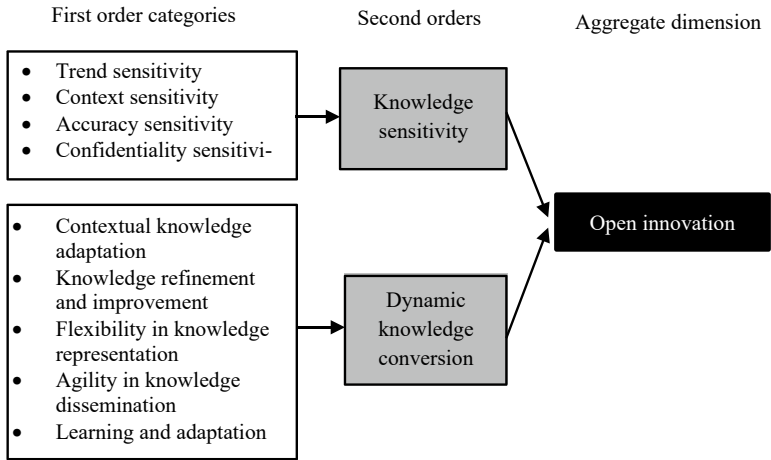
Fig. 2 Data structure. *Source* Authors' elaboration

communication with external experts is, of course, very much needed. (Deputy General Manager of PT. Pulau Bawah)

Finally, knowledge confidentiality shows how important it is for companies to maintain the confidentiality of this knowledge to benefit from innovation.

In addition to knowledge sensitivity which consists of the four first orders above, companies need the capability to convert knowledge into innovation. With this conversion capability, companies can obtain economic benefits from knowledge. There are four first orders for dynamic knowledge conversion capability: knowledge updates timely, contextual knowledge adaptation, knowledge refinement and improvement, flexibility in knowledge representation, agility in knowledge dissemination, and learning and adaptation.

Knowledge update timely refers to continuing to renew knowledge, considering that innovation is a moving target. For this reason, innovations can expire, so the knowledge that forms the basis for creating innovations must be continuously updated. One example of this knowledge update is the action of firms carrying out environmentally friendly innovations as a source of competitive advantage. One of the informants explained:

We have to update ourselves with technological developments, be receptive in the sense of not rejecting what new updates, new creations rather than product innovations are, then look at and review these new technologies whether they are suitable or not implemented in our company (Deputy General Manager PT. Pulau Bawah)

Knowledge contextual adaptation shows how well a company can apply knowledge according to the context so that innovations introduced in the market can be readily accepted. One example of knowledge contextual adaptation the company has implemented is developing wedding and honeymoon packages on Bawah Island. The

company's marketing staff works intensely to detect the currently developing market environment.

Knowledge refinement and improvement show how capable the existing knowledge is in reflecting user input, which is then updated and revised. Ideally, knowledge can be modified based on user input to reflect current conditions. The following is an example of how the firm pursues knowledge adaptation:

> We communicate with internal parties to get updated information about these innovations [i.e., eco-friendly innovation]. Because after all internal assessments, input from external experts is also very much needed (Deputy General Manager of PT. Pulau Bawah)

Flexibility in knowledge representation refers to the company's ability to repackage the presentation of knowledge so that users can accept the market. The knowledge that is presented in an unstructured way will be difficult to accept, and as a result, the resulting innovation may deviate from the basic ideas presented in the original knowledge. This dissemination is carried out not only to internal parties who innovate but also to stakeholders, including policymakers, as stated by the informant as follows:

> So far, the government has been very cooperative and supportive with the programs we are implementing. … they support policies; of course, they are very supportive

4.3   Discussion: The Interplays of Capabilities and Open Innovation

Capability and innovation are two different concepts, even though they are related. When knowledge has been obtained from internal sources, experts, government, customers, suppliers, and universities, the next stage is implementing innovation.

This research found that companies with strong dynamic capabilities also enable effective open innovation practices. The informant stated that open innovation is beneficial to the success of the PT. Pulau Bawah development, as expressed by the Deputy General Manager:

> I think yes, I am a person who strongly agrees with open innovation, where open innovation helps a company to grow more rapidly. Innovation and increased performance are felt by three things, in terms of energy and financial efficiency, the second is effectiveness, and the third is quality improvement. (Deputy General Manager, PT. Pulau Bawah)

The overall findings are presented in Fig. 3. Capability is a prerequisite for implementing open innovation. Capability makes constraints regarding the choice of path to be taken by the company.
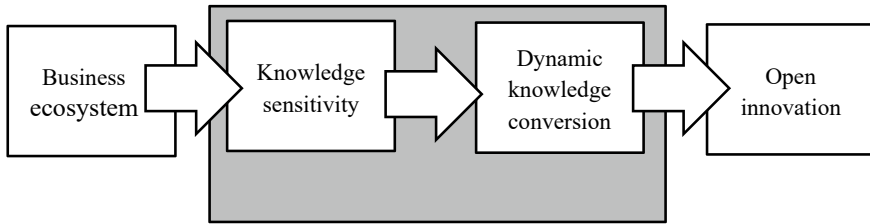
Fig. 3 Capabilities for pursuing open innovation. *Source* Authors' elaboration

5   Conclusion

This research analyzed how dynamic capabilities support companies in carrying out open innovation. Most research in dynamic capabilities and open innovation is carried out in the manufacturing industry, so this study is conducted in the hospitality industry. Empirical findings find that dynamic capabilities help companies acquire, adapt, and convert knowledge into innovation. Capability determines how much innovation a company can do. Companies can only carry out some of the desired innovations because the company's capabilities limit the implementation of innovations. For managers, this research provides guidance on how to manage knowledge to encourage innovation. This research used one company with in-depth data but produced narrow generalizations. For this reason, future research can use surveys to test the results of this study.

Due to exploratory nature of this study, single case design was selected. The design provides a detailed and in-depth analysis, but its generalizability has been criticized. In this regard, future research can analyze the framework developed in this research using surveys in large-size samples to test the validity of the findings and increase the generalizability of the results. Moreover, future research can extend the framework by exploring additional factors that may influence the interplays between dynamic capabilities and open innovation, such as organizational culture, leadership, and collaboration.

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Consumption of Millets and Its Determinants in Bangalore

Jaspreet Kaur , **B. Subha**, **A. Arun Prakash** , **and M. R. Eshan**

Abstract Millets are coarse grains with high nutritious values. It is a choice of traditional Indian households. Millets are gaining back their due status with more people coming back to the choice of grains in their lifestyle. Reasons are plenty, such being high nutritious content, gut health, weight management, cardiovascular health etc. to name a few. This study carried out in the city of Bangalore, India depicted the interest of the consumers in millets owing to these factors. Consumers consume Millet irrespective of their family incomes. This study carried out in the city of Bangalore, India, intended to study the factors affecting the purchase and consumption of millet. Several factors determine the consumption of millets including health factors, family traditions and increasing awareness about millets among the younger population. The International Year of Millets in 2023 is a move towards promoting millets for consumption and production. Millets can lead forward towards sustainable development. There is a potential area of growth both in terms of cultivation and sales of millets.

Keywords Weight management · Gut health · Awareness · Muscular built · Taste · Nutrition · Affordability · Convenience · Cardiovascular · Spending · Consumption · Women's health and diabetes management · Millet · Bangalore · Consumption

J. Kaur (✉)
Department of Management, Kristu Jayanti College, Bengaluru 560077, India
e-mail: jaspreetkaur@kristujayanti.com; jaspreetarsh@gmail.com

B. Subha · A. Arun Prakash · M. R. Eshan
Department of Professional Management Studies, Kristu Jayanti College, Bengaluru 560077, India

1 Introduction

2023 has been declared the International Year of Millets. The purpose is to bring to light the importance of consuming coarse grain. These grains, which were an important part of older Indian kitchens, lost their charm in between, and are gaining back popularity. Several Indian-originating grains, including Sorghum (Jowar), Pearl Millet (Bajra), Finger Millet (Ragi/Mandua), Minor Millets such as Foxtail Millet (Kangani/Kakun), Proso Millet (Cheena), Kodo Millet (Kodo), Barnyard Millet (Sawa/Sanwa/Jhangora), Little Millet (Kutki), and two Pseudo Millets (Buck-wheat (Kuttu) and Amaranthus (Chaulai) are of Indian origin and consume less water during cultivation, (https://agricoop.nic.in/, [1]). A good source of protein, fibre, essential vitamins, and minerals is millet. In addition to helping people reach and maintain a healthy weight, millet may also safeguard cardiovascular health, prevent the onset of diabetes, and reduce gastrointestinal inflammation, (Dresden, 2022). This study is carried out in the city of Bangalore, Karnataka, India. Bangalore is a cosmopolitan city, home to people from different cultural and social backgrounds. This study is carried out among 172 respondents in the city of Bangalore. Primary data is collected through a questionnaire. Random sampling was used to collect first-hand information from the respondents. IBM SPSS Statistics, 2021 is used to analyse the data. Regression analysis and ANOVA were used to statistically analyse the data. In the results, it was evident that consumers of millets consumed the grain due to a variety of reasons weight management, diabetes management, nutritious values, cardiovascular health, muscular build-up, women's health, gut health etc. The study revealed that the consumption and purchase of millet are independent of the family income and are positively related to the desire for weight management and muscular build-up. A collective study of variables like weight management, Gut health, Awareness, muscular build-up, Taste, Nutrition, Affordability, Convenience, Cardiovascular, Spending, Consumption, women's health and Diabetes management also showed a positive association with the consumption of millet. Section 2 of the research presents objectives; Sect. 3 highlights the hypothesis; Sect. 4 reveals review of the literature; Sect. 5 discusses research methodology; Sect. 6 presents data analysis; Sect. 7 reveals the conclusion and further scope of the study.

2 Objectives

1. To assess the factors affecting the purchase and consumption of Millet in Bangalore.
2. To assess the buying habits of the consumer.
3. To assess the buying behaviour based on various factors.

3 Hypothesis

H1: Consumption is dependent upon the income of the consumer.
H2: Consumption is dependent upon the desire to manage Diabetes.
H2: Consumption is dependent upon the management of body weight.

4 Review of Literature

Farmers in Karnataka are switching to drought-resistant millets in contrast to crops which require high quantities of water [2]. Nutrition-wise, millets have high calcium which is eight times more calcium than other grains. Some of the millets are high in iron content also. Millets can prevent cardiovascular diseases by reducing triglycerides. Studies indicate that millet may be effective in controlling cancer cell growth [3]. The main source of food is millet in many parts of the world with arid conditions. Millets contain essential amino acids like sulphur in high quantities. They provide phenolic acids and glycated flavonoids, two types of antioxidants. Foods made from millet improve the viability or functionality of probiotics and have a lot of positive health effects [4].

Millets are superior to other grains as they are abundant in dietary fibre, phytochemicals, antioxidants, and polyphenols [5]. On average the proteins present in finger millet and foxtail millets are respectively 14.4 and 15.9%. This is much higher than other cereals [6]. Common millets were the crops which were planted as earlier dry farming crops in East Asia, this is owing to its requirements of less water and resistance to drought, (Houyuan Lu houyuanlu@mail.iggcas.ac.cn, May 5, 2009). Millets contain antioxidants and antimicrobial, anti-ageing and anti-carcinogenic properties. Niacin, riboflavin, thiamine, beta-carotene (found in yellow pearl millet), and minerals (Ca, Zn, Mg, Fe, and Cu) are some of the essential vitamins that are present in millets [7].

5 Research Methodology

This study is exploratory, using a survey method to test the formulated hypothesis. Data were collected from 172 respondents consuming millet, through a questionnaire. The sample was chosen in Bangalore city. A five-point Likert scale, anchored a 1 as strongly disagree and 5 as strongly agree was used to assess the preferences of the consumer for various factors responsible for purchase and consumption of millet. The questionnaire was divided into two parts, where the first part was related to the demographic profile of the consumer and the second part dealt with the factors affecting the consumption of millet. Each factor responsible for consumption was rated on a scale of 1–5, 1 being the least and 5 being the highest. the demographic analysis in

terms of education represents 18.6% of respondents having at least primary qualification. The highest being 56.4% postgraduates. 20% of the respondents owned small businesses;41% are working professionals; 16% students and 22% are homemakers. 18% of respondents belong to joint families and 82% belong to nuclear families.

6   Data Analysis

Educational qualification of the respondents vary from 9.3 percent for primary education to 56.4 percent for post graduation, as indicated in Table 1.

Respondents income varies from 11.6% for Rs. 10,000–25,000 to 33.7% for Rs. 75,000 and above as indicated in Table 3.

As indicated in Table 4, 82% of the respondents are from nuclear family.

Table 5 represents descriptive statistics of educational qualification, occupation, monthly income and family type of the respondents.

Table 1 Educational qualification of the respondents

	Frequency	Per cent
Primary	16	9.3
Senior secondary	16	9.3
Degree	43	25.0
Post graduation	97	56.4
Total	172	100.0

Table 2 Occupation of the respondents

	Frequency	Per cent
Small business	35	20.3
Professional	71	41.3
Student	28	16.3
Homemaker	38	22.1
Total	172	100.0

Table 3 Occupation of the respondent's monthly income

	Frequency	Per cent
Below 10,000	31	18.0
Rs 10,000–25,000	20	11.6
25,000–50,000	23	13.4
Rs 50,000–75,000	40	23.3
Above Rs 75,000	58	33.7
Total	172	100.0

Table 4 Family type of the respondent

	Frequency	Per cent
Joint family	31	18.0
Nuclear family	141	82.0
Total	172	100.0

Table 5 Statistics, descriptive (Educational qualification, occupation, monthly income, family type)

	N	Minimum	Maximum	Sum	Mean	Std. Deviation
Educational qualification	172	1	4	565	3.28	0.976
Occupation	172	1	4	413	2.40	1.047
Monthly income	172	1	5	590	3.43	1.499
Family type	172	1	2	313	1.82	0.386
Valid N (listwise)	172					

Table 6 Statistics, descriptive

	N	Minimum	Maximum	Mean	Std. deviation
Millet consumption	172	4	5	4.42	0.495
Spending	172	3	5	3.75	0.659
Awareness	172	3	5	3.73	0.702
Diabetes	172	3	5	3.95	0.638
Consumption	172	3	5	4.24	0.441
Nutrition	172	3	5	4.51	0.567
Affordability	172	3	5	3.88	0.669
Taste	172	3	5	4.29	0.609
Convenience	172	3	5	3.95	0.699
Cardiovascular	172	3	5	4.27	0.573
Muscular buildup	171	3	5	4.11	0.690
Women health	171	3	5	3.98	0.694
Gut health	172	3	5	3.98	0.721
Weight	172	3	5	4.37	0.520
Valid N (listwise)	170				

Since the p-value is less than 0.05, it indicates that millet consumption is dependent on predictor variables as indicated in Table 8.

Table 10 indicates consumption of millet and educational qualification are related.

Table 7 Model summary[b]

Model	R	R square	Adjusted R square	Std. error of the estimate	Change statistics				
					R square change	F change	df1	df2	Sig. F change
1	0.549[a]	0.302	0.244	0.429	0.302	5.188	13	156	0.000

[a]Predictors: (constant), weight, gut health, awareness, muscular buildup, taste, nutrition, affordability, convenience, cardiovascular, spending, consumption, women's health, diabetes
[b]Dependent variable: millet consumption

Table 8 ANOVA[a] (Millet consumption and weight, gut health, awareness, muscular buildup, taste, nutrition, affordability, convenience, cardiovascular, spending, consumption, women's health, diabetes)

Model		Sum of squares	df	Mean square	F	Sig.
1	Regression	12.429	13	0.956	5.188	0.000[b]
	Residual	28.747	156	0.184		
	Total	41.176	169			

[a]Dependent variable: millet consumption
[b]Predictors: (constant), weight, gut health, awareness, muscular buildup, taste, nutrition, affordability, convenience, cardiovascular, spending, consumption, women's health, diabetes

Table 9 Residuals statistics

	Minimum	Maximum	Mean	Std. deviation	N
Predicted value	3.90	5.10	4.41	0.271	170
Residual	− 0.891	1.103	0.000	0.412	170
Std. predicted value	− 1.898	2.525	0.000	1.000	170
Std. residual	− 2.075	2.569	0.000	0.961	170

[a]Dependent variable: millet consumption

Table 10 Chi-square tests (Consumption of millet and educational qualification)

	Value	df	Asymp. Sig. (2-sided)
Pearson chi-square	9.430[a]	3	0.024
Likelihood ratio	9.404	3	0.024
Linear-by-linear association	1.414	1	0.234
N of valid cases	172		

[a]0 cells (0.0%) have an expected count of less than 5. The minimum expected count is 6.70

Occupation and consumption of millets are related due to the *p*-value being lower than the alpha value as depicted in Table 12.

The income of the consumer and consumption of millets are related as the *p*-value is less than the alpha value, as indicated by Table 14.

Table 11 Occupation * consumption of millets crosstabulation

Occupation	Consumption of millets		Total
	High	Very high	
Small business	12	23	35
Professional	42	29	71
Student	21	7	28
Homemaker	25	13	38
Total	100	72	172

Table 12 Chi-square tests (Occupation and Consumption of millets)

	Value	df	Asymp. Sig. (2-sided)
Pearson chi-square	12.397[a]	3	0.006
Likelihood ratio	12.512	3	0.006
Linear-by-linear association	7.776	1	0.005
N of valid cases	172		

[a]0 cells (0.0%) have an expected count of less than 5. The minimum expected count is 11.72

Table 13 Monthly income * consumption of millets cross tabulation

Monthly income	Consumption of Millets		Total
	High	Very high	
Below 10,000	17	14	31
Rs 10,000–25,000	7	13	20
25,000–50,000	8	15	23
Rs 50,000–75,000	25	15	40
Above Rs 75,000	43	15	58
Total	100	72	172

Table 14 Chi-square tests (Income of the consumer and consumption of millets)

	Value	df	Asymp. Sig. (2-sided)
Pearson chi-square	16.107[a]	4	0.003
Likelihood ratio	16.330	4	0.003
Linear-by-linear association	7.738	1	0.005
N of valid cases	172		

[a]0 cells (0.0%) have an expected count of less than 5. The minimum expected count is 8.37

Table 15 Family type * consumption of millets cross tabulation

Family type	Consumption of millets		Total
	High	Very high	
Joint family	14	17	31
Nuclear family	86	55	141
Total	100	72	172

The income of the consumer and consumption of millets are not related as the *p*-value is more than the alpha value as per Table 16.

Levels of significance between variables are shown in Table 17.

From Table 18, it can be seen that the *p*-value is higher than the significance level when analysing the link between Consumer Consumption (the dependent variable) and Consumer Income (the independent variable).

Since the *p*-value is less than 0.05, it indicates that Millet consumption is dependent on predictor variables.

Consumption of millet and educational qualification are related.

Occupation and consumption of millets are related due to the *p*-value being lower than the alpha value.

The income of the consumer and consumption of millets are related as the *p*-value is less than the alpha value.

The income of the consumer and consumption of millets are not related as the *p*-value is more than the alpha value.

From the table, it can be seen that the *p*-value is higher than the significance level when analysing the link between Consumer Consumption (the dependent variable) and Consumer Income (the independent variable). The null hypothesis is accepted, demonstrating that there is no meaningful connection between consumption and consumer income. Hence H01 is accepted. From Table 19, on analyzing the relationship between Consumption (Dependent variable) and Diabetes management (Independent variable), it is observed that the *p*-value is smaller than the level of significance. Hence Diabetes Management and consumption are positively related. H2 is accepted.

From the above table, on analyzing the relationship between Consumption (Dependent variable) and Diabetes management (Independent variable), it is observed that the *P*-value is smaller than the level of significance. Hence Diabetes Management and consumption are positively related. H2 is accepted.

Table 16 Chi-square tests between family type

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson chi-square	2.617[a]	1	0.106		
Continuity correction	2.007	1	0.157		
Likelihood ratio	2.584	1	0.108		
Fisher's exact test				0.113	0.079
Linear-by-linear association	2.602	1	0.107		
N of valid cases	172				

[a]0 cells (0.0%) have an expected count of less than 5. The minimum expected count is 12.98
[b]Computed only for a 2 × 2 table

Table 17 Tests of between-subjects effects

Source	Type III sum of squares	df	Mean square	F	Sig.
Corrected model	7.597[a]	22	0.345	1.502	0.081
Intercept	1684.365	1	1684.365	7324.738	0.000
Education	0.290	2	0.145	0.630	0.534
Occupation	0.541	3	0.180	0.784	0.504
Income	0.584	4	0.146	0.635	0.638
Family	1.037	1	1.037	4.509	0.035
Education * occupation	0.467	1	0.467	2.032	0.156
Education * income	0.000	0			
Education * family	0.000	0			
Occupation * income	0.142	2	0.071	0.309	0.734
Occupation * family	0.007	1	0.007	0.032	0.857
Income * family	0.237	1	0.237	1.032	0.311
Education * occupation * income	0.000	0			
Education * occupation * family	0.000	0			
Education * income * family	0.000	0			
Occupation * income * family	0.000	0			
Education * occupation * income * family	0.000	0			
Error	34.263	149	0.230		
Total	3400.000	172			
Corrected total	41.860	171			

Dependent variable: consumption of millet
[a]R squared $= 0.181$ (adjusted R squared $= 0.061$)

Table 18 ANOVA[a] (Millet consumption and income of the consumer)

Model	Sum of squares	df	Mean square	F	Sig.
Regression	0.049	1	0.049	0.254	0.615[b]
Residual	33.177	170	0.195		
Total	33.227	171			

[a]Dependent variable: consumption
[b]Predictors: (Constant), Income of the consumer

Table 19 ANOVA[a] (Millet consumption and diabetes management)

Model	Sum of squares	df	Mean square	F	Sig.
Regression	1.143	1	1.143	6.056	0.015[b]
Residual	32.084	170	0.189		
Total	33.227	171			

[a]Dependent variable: consumption
[b]Predictors: (constant), diabetes management

Table 20 ANOVA[a] (Millet consumption and weight management)

Model		Sum of squares	df	Mean square	F	Sig.
1	Regression	0.847	1	0.847	4.449	0.036[b]
	Residual	32.379	170	0.190		
	Total	33.227	171			

[a]Dependent variable: consumption
[b]Predictors: (constant), weight management

Consumers who prefer to undergo body weight management consume millet in their diet. The fact is supported by the above table where the p-value is smaller than the level of significance, thus suggesting acceptance of H3. Eating millet and controlling weight are positively correlated.

7 Conclusion

Millets are coarse grains which need less water for cultivation, making them a sustainable crop for the future. Apart from environmental benefits the crop provides a variety of health benefits including weight management, Gut health, muscular build-up, Nutrition, Cardiovascular health, women's health, Diabetes management etc. The study reveals a positive relationship between factors like weight management, diabetes management, nutritious values, cardiovascular health, muscular build-up, women's health, gut health etc. having a positive impact on the purchase decisions of the consumer. Millet is an old form of crop in Indian society, cultivation of which is now taken over by other crops like rice and wheat which yield better revenues for the cultivator. The year 2023 being declared as the year of millet is a step forward to highlight the importance of the crop to both farmers and consumers. The study has a few limitations as the study can not be generalized as the results are derived from a single study and are constrained to a specific region. A further study extending to different regions and wider demography would reveal results which can be generalized. A follow-up study in this direction would help understand factors affecting the consumption and non-consumption of grain. The grains which are sustainable for the environment as well as human health are worth promoting. This study is one step

towards it. Consumers are typically thought of as rational decision-makers who are interested in advantages and functional qualities [8]. A study of purchase decisions of the consumer can help producer to determine the market demand and plan the production.

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A Research Proposal to Examine Psychological Factors Influence on Financial Planning for Retirement in China

Han Ren and **Thien Sang Lim**

Abstract The global life expectancy rate has increased over time, with China being no exception to this trend. The convergence of a growing elderly population heightened strain on the pension fund system, and inadequate savings represents a considerable obstacle to financial stability. Addressing this challenge requires initiatives to enhance retirement planning and promote individuals' financial well-being. Consequently, given the challenges above, high-quality financial planning for retirement (FPR) has emerged as a crucial factor for successful aging, underscoring the need for additional research in this area. Despite abundant research on retirement planning, the emergence of behavioral finance and the incorporation of psychological principles into FPR has heightened its significance. Resultantly, there is a growing need to explore this phenomenon further. It is necessary to examine which psychological factors lead to insufficient savings by individuals. The present study aims to assess the psychological factors influencing individuals' FPR, expanding the explanatory models for retirement savings decisions and behaviors. Using the Capacity-Willingness-Opportunity (CWO) model and supported by image theory and the 3M model, this study focuses on the interaction between future time perspective, retirement goal clarity, risk tolerance, subjective financial literacy, and objective financial literacy as psychological characteristics influence individuals' FPR. Back translation was used to examine the accuracy of the preliminary translation of research instruments to obtain meaningful results. This translation method was combined with the pretest method of expert reviews and cognitive interviews to increase the survey questionnaire's validity. A purposive sampling technique was applied to collect data from adults over 23 years old and with a certain income stream in six cities in China. Structural equation modeling (SEM)

H. Ren
School of Economics, ChangChun University, ChangChun, China
e-mail: renhan0607@sina.com

H. Ren · T. S. Lim (✉)
Faculty of Business, Economics and Accountancy, Universiti Malaysia Sabah, Kota Kinabalu, Malaysia
e-mail: tslim@ums.edu.my

will examine the hypotheses of direct and mediating effects. The findings will offer implications for financial market regulators, policymakers, and consumers.

Keywords Financial planning for retirement · Psychological factors · Financial decision-making · CWO model

1 Introduction

Retirement is an extended period of life when individuals permanently leave the workforce [27]. When people retire from work, they spend the money they save or receive from the public pension fund support system. Having enough money to sustain one's desired standard of living after retirement, relative to the length of one's working life, is crucial for a satisfying retirement experience [8]. Nevertheless, as the number of retired elderly increases, the public pension fund system faces a problem. The aging of the population and a decline in the working-age population exacerbate the challenges facing public pension systems [21]. In addition, individuals' reliance on the first and second pillars of the public pension fund system makes the three-pillar system extremely uneven [20]. According to the current situation, the first two pillars may be difficult to sustain in the long term [21]. The relative significance of personal retirement saving (the third pillar system) will take on additional importance to sustaining living standards after retirement [34]. Nonetheless, many individuals struggle with saving for retirement, as relatively few believe they can effectively plan for this life stage [25]. Although the Chinese government has made efforts to promote individual participation in the third pillar of retirement savings, which involves personal contributions, few people are willing to take advantage of it in practice [25]. Although the benefits of engaging in a conscientious pattern of personal financial planning over one's working life are clear, it is shocking how many individuals are not saving adequately for old age [10].

Determining what makes individuals save less for retirement, which leads to the inactivity of participating in the third pillar, is essential. In an extensive study, [10] examined the ability of individuals to perform complex retirement financial planning. According to [32], financial planning for retirement (FPR) refers to a set of activities undertaken to accumulate sufficient wealth to meet the financial requirements of individuals during the post-retirement stage of their life. A deeper understanding of factors that can influence retirement planning is required to boost the third pillar in China. Therefore, the issue of not saving adequately for retirement can be stated in another way: What are the factors that influence the individuals' FPR, which in turn, lead to inadequate saving?

Studies to test variables related to FPR have been conducted by economists, sociologists, and particularly psychologists [3, 18, 29]. Some literature primarily focuses on the effect of demographic factors [14]. Thus, little is known concerning the effect of psychological mechanisms on FPR. Psychological factors are attributes that affect individuals psychologically and socially. These factors may pertain to

individuals' social environments and how these impact their physical and cognitive well-being. Additionally, cultural differences, such as those between Western cultures that prioritize individualism and collectivist cultures may play a role. Compared to the demographic factors, the influence of psychological factors on FPR, particularly in China, must be studied, as the findings of studies in Western countries have fewer implications in China.

This paper is structured according to five sections. Section 2 provides a review of existing literature and identifies research gaps. Section 3 presents the theoretical framework development and associated hypotheses development. Section 4 outlines the research methodology, including the study design, participant selection, data collection instruments, and analysis procedures. Finally, Sect. 5 includes concluding remarks and directions for future research.

2 Literature Review

Hershey et al. [10] developed the Capacity-Willingness-Opportunity (CWO) model as a conceptual framework for comprehensively examining various factors that may impact FPR. According to [10, 32], the capacity dimension of the CWO model (See Fig. 1) encompasses cognitive and practical factors that influence an individual's knowledge, skills, and abilities to engage in effective FPR, such as saving and investing. The aspect of willingness involves psychological and emotional factors that can encourage individuals to engage in financial planning and retirement savings. Finally, the dimension of opportunity involves variables external to the individual's control. In contrast to the original model, which viewed the dimensions as an additive, the CWO model recognizes potential interactions among the dimensions.

The literature discovered that FPR studies differ across psychological, demographic, and external variables. In particular, psychological variables are primarily explained in the CWO model. Several studies have confirmed the significance of certain psychological variables: financial literacy (objective and subjective financial literacy), financial risk tolerance, retirement goals clarity, and future time perspective (FTP). The variables tested frequently are discussed below.

Financial literacy is one of the psychological variables that has received greater attention in FPR studies. According to [4], financial literacy has a favorable impact on FPR. The Hershey model's predictive power is underscored by the significant influence of financial literacy on behavior, as demonstrated by [9]. Palaci et al. [26] also discovered a positive correlation between self-perceived financial literacy and FPR.

Selected studies have demonstrated that a widely accepted indicator of FPR is the clarity of retirement goals. Previous research has provided empirical evidence that goal clarity can predict individuals' levels of FPR [30, 31]. Similarly, Hoffmann and Plotkina [12] proposed that actual retirement planning activity among individuals can be improved by greater retirement goal clarity following an initial intervention.
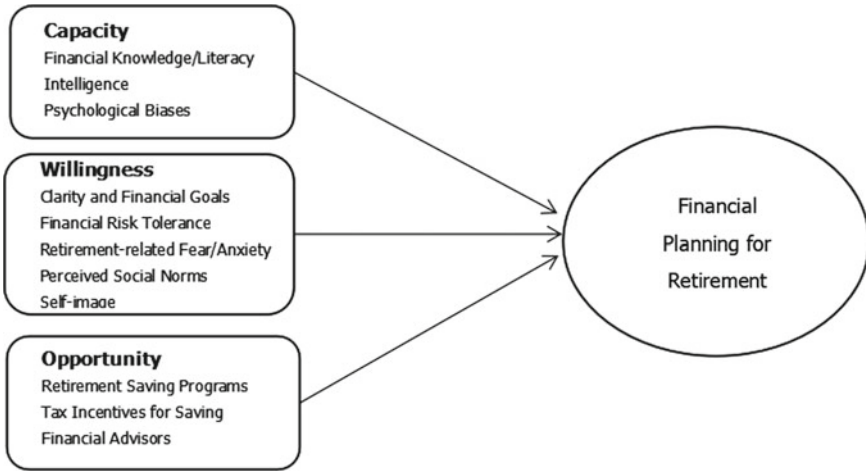
Fig. 1 Capacity-Willingness-opportunity model

According to the findings, a positive relationship exists between retirement goal clarity and FPR.

Studies have shown that FTP is a psychological factor that affects FPR, as it predicts individuals' planning and saving for retirement. França and Hershey [3] suggested a positive relationship between individuals' FTP and their tendency to save for retirement. Tomar et al. [31] have conducted more recent studies and suggested that FTP not only has a significantly positive effect on women's FPR behaviors, but it also has an indirect impact on retirement planning behaviors through clarity of retirement goals.

A few studies examined the influence of risk tolerance on FPR. Grable [5] suggested that individuals with different risk tolerances are likely to exhibit varying behaviors when making investment decisions. According to recent studies, risk tolerance strongly affects complex FPR [19]. Bayar et al. [1] suggested a link between financial risk tolerance, retirement planning, and financial counseling.

After assessing prior literature on psychological determinants of FPR, four primary gaps have been recognized. In terms of the theoretical gap, few studies exist on how psychological factors interact and affect FPR. The relationship among psychological factors must be studied on the basis of the CWO model combined with relevant psychological theories of decision-making, namely image theory and the 3M model, in this research.

Regarding the geographical gap, foreign research on psychological variables affecting FPR started earlier and has a large accumulation in theoretical and empirical fields. Nevertheless, according to literature research, the CWO model was primarily tested and studied in the United States (US) and Spain. Applying the CWO model to more countries may provide more empirical evidence from different cultures.

In the realm of empirical research, despite being an influential model for exploring the psychological factors associated with FPR [4, 32], the CWO model lacks adequate

empirical support. Thus, more empirical studies are needed to analyze the impact of psychological factors on FPR.

Regarding the knowledge gap, the concept of financial literacy can be divided into two distinct types: objective financial literacy (OFL) and subjective financial literacy (SFL) based on its definition [7]. The existing measures of financial literacy in the literature are dominated by OFL measures [22, 33]. The OFL and SFL were not regarded as different independent variables in previous literature regarding FPR. Hence, the knowledge may not exist in the literature on FPR.

According to the above gaps, the following questions are explored in this research:

1. Is FPR influenced by retirement goal clarity, risk tolerance, SFL, and FTP?
2. Does retirement goal clarity and SFL mediate the relationship between FTP and FPR?
3. Does OFL moderate the relationship between risk tolerance and FPR and the relationship between SFL and FPR?

From an academic perspective, this study can verify and enrich the model from a non-Western perspective. Similarly, the mediating role of SFL and retirement goal clarity and the moderating role of OFL are also considered with the influence of FPR. The approach expands the existing research perspective and enriches the relevant knowledge. In practical terms, gaining an understanding of how psychological traits interact with financial literacy can be useful for financial market regulators and consumer policymakers in China to improve their understanding of FPR behavior.

3 Development of Framework and Hypothesis

In order to understand the relationship among psychological variables and their effect on FPR, the study must combine the CWO model with the psychological theory of decision-making. Image theory and the 3M model provide theoretical support for the relationship among psychological variables and enrich the CWO model research scope. Figure 2 illustrates the study's theoretical framework. The subsections provide the hypothesis based on the framework.

3.1 The Impact of Psychological Characteristics on FPR

Future Time Perspective. França and Hershey [3] suggested a positive association between saving behavior and FTP. Similar findings were discovered by [2, 6, 31]. According to their studies, individuals with low scores in FTP tend to show less concern toward savings or planning for future retirement. Consequently, the following hypothesis is posited:
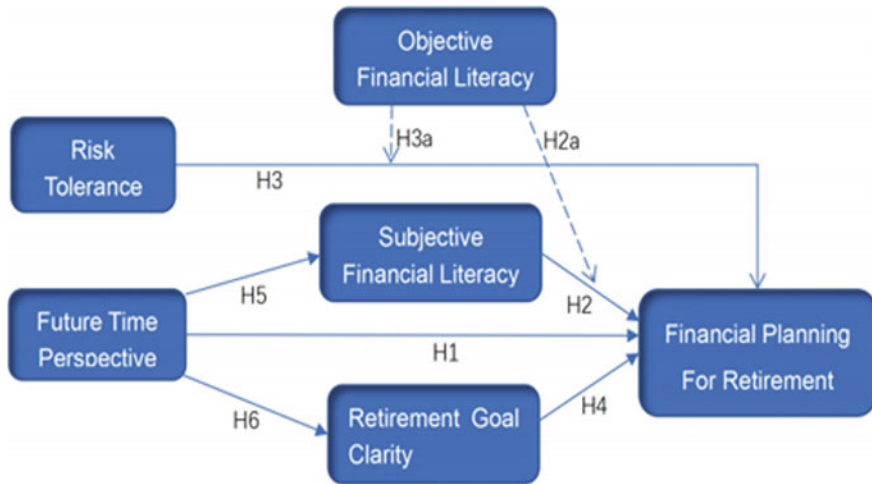
Fig. 2 Theoretical framework

Hypothesis 1: Future time perspective is positively associated with financial planning for retirement.

Subjective Financial Literacy. According to research conducted by [11], individuals' self-assessed knowledge regarding financial matters is positively associated with their retirement planning activities and financial saving tendencies. Based on the above argument, people with more SFL will have the confidence or attitude to plan more retirement activities and have more saving tendencies. Hence, the hypothesis below is proposed:

Hypothesis 2: Subjective financial literacy is positively associated with financial planning for retirement.

Risk Tolerance. According to [13], individuals with a higher risk tolerance are more likely to engage in aggressive financial planning and retirement savings. Similarly, Bayar et al. [1] discovered that financial risk tolerance is a crucial factor in retirement planning and financial counseling. Therefore, these people tend to develop aggressive FPR, such as retirement financial investment. Thus, the following hypothesis is posited:

Hypothesis 3: Risk tolerance is positively associated with financial planning for retirement.

Retirement Goal Clarity. According to previous work, individual retirement goals positively impact FPR decisions [3, 31]. In general, clearer retirement goals are associated with more active choices to continue FPR. On the basis of previous research findings, the following hypothesis is proposed:

Hypothesis 4: Retirement goal clarity is positively associated with financial planning for retirement.

3.2 The Mediating Role of Subjective Financial Literacy and Retirement Goal Clarity

Rolison et al. [28] discovered that young people who possess a high degree of FTP tend to have a positive association with subjective financial knowledge. Kooij et al. [17] suggested a positive relationship between FTP and self-assessed financial knowledge from a psychological perspective. When considered together, these factors may offer insight into the substantial variability in different aspects of financial well-being. Therefore, the following hypothesis is proposed:

Hypothesis 5: Subjective financial literacy mediates the relationship between future time perspective and FPR.

There is empirical research that supports the theoretical basis of the mediating role of goal clarity in FPR. Mowen [24] suggested that clarity of general retirement goals is predicated on FTP. Rolison et al. [28] discovered that young people with long or high FTP prioritized their retirement goals. Hence, the hypothesis stated below is suggested:

Hypothesis 6: Retirement goal clarity mediates the relationship between future time perspective and FPR.

3.3 The Moderating Role of Objective Financial Literacy

Mohammad and Katayon [23] proposed that OFL impacts SFL. Therefore, based on the definition of OFL and SFL, SFL is self-belief toward financial knowledge and can be regarded as a psychological factor to be tested for influence on FPR. In addition, the evidence showed by [31] indicates that OFL moderates the relationship between psychological factors and FPR. As per the literature above, people with higher OFL will have more risk tolerance concerning the retirement financial product, which in turn, moderates the relationship between risk tolerance and FPR. From the presented arguments, the following hypotheses are posited:

Hypothesis 2a: Objective financial literacy moderates the relationship between subjective financial literacy and FPR.

Hypothesis 3a: Objective financial literacy moderates the relationship between risk tolerance and FPR.

4 Methodology

The research empirically investigates the effects of psychological factors on FPR using primary data. Thus, the study adopted a positivist research approach. Based on relevant theories, a theoretical model was formulated, and hypotheses were constructed. As the study is quantitative, it follows a research process comprising
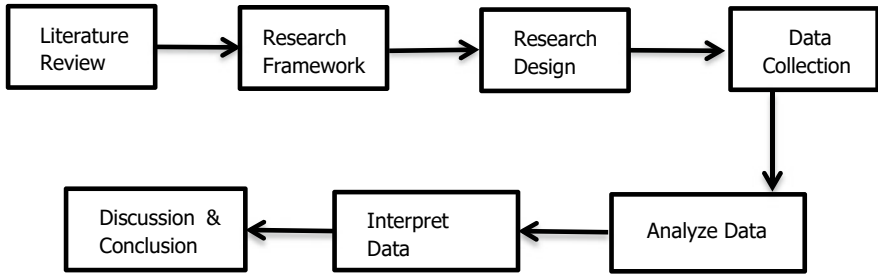
Fig. 3 Research procedure

Table 1 Criteria for GPower analysis

• Test family = f-test
• Type of power analsyis = Priori
• Effect Size of f-square = 0.15 (for medium effect)
• Alpha criteria = 0.05
• Power = 0.8
• Number of predictors = 5

developing the research questions, formulating a conceptual framework, designing the survey questionnaire, collecting and evaluating data, and discussing the results. Figure 3 outlines the research process.

Non-probability sampling was used in this study. Data for the study was collected from several cities covering China's Northern, Southern, Eastern, and Western areas. The cities include Changchun, Chengdu, Xining, Zhejiang, Beijing, and Shanghai. The data collected from these major cities could ensure diversity in terms of respondents' backgrounds.

The participants were screened to ensure they meet the study's criteria. Working Chinese adults aged 23 years and above were involved in this survey. Those over 23 years old are targeted as this group has graduated from university and is about to seek a job.

Another important aspect of the sampling design is the sample size. The GPower application was used to determine the minimum sample size. The criteria for sample size computation used are given in Table 1, and the desired sample size was set to 92.

4.1 Instrument Design

This study used a Likert scale to measure structure. Likert scales are a common method for measuring multiple underlying structures [15]. The study employed a

Table 2 Scale development

Constructs	Number of items	Scale
Financial planning for retirement	9	Six-point likert scale
Future time perspective	5	Six-point likert scale
Risk tolerance	5	Six-point likert scale
Retirement goal clarity	5	Six-point likert scale
Subjective financial literacy	6	Six-point likert scale

six-point Likert scale ranging from (1) strongly disagree to (6) strongly agree. The accurate constructs, number of items, and measurement scales are shown in Table 2.

4.2 Primarily Data

Few procedures must be taken while collecting the data in this research. By following the outlined steps in Fig. 4, a reliable and valid questionnaire can be created.

As this study was conducted in China, the questionnaire must undergo a translation process [16]. This study adopted an iterative process to improve the back translation. Once the final version of the translation was approved, the subsequent step was to conduct a pretest of the translated materials. This article adopted back translation combined with the pretesting method of expert reviews and cognitive interviews to obtain the translated questionnaire, which is clearer to respondents.

Fig. 4 Data collection process
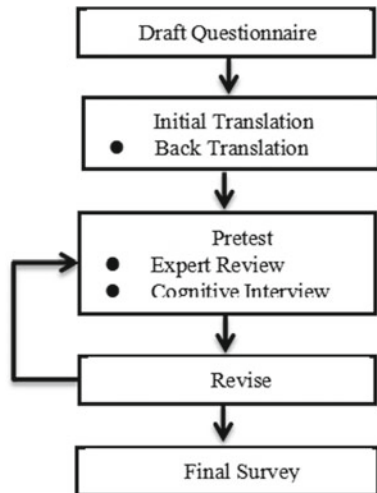
In the data analysis process, the task involves attributing data to the constructs and establishing associations between them. The gathered data from the questionnaires that have been completed will undergo various processes of analysis. Initially, the collected data will undergo processing, including editing, coding, and classification. The processed data will be entered into the Statistical Package for the Social Sciences (SPSS) statistical software for further analysis. The software will be utilized to conduct descriptive analysis as the second step. Lastly, the SmartPLS 4.0 software will be utilized to assess the predictive ability of the structural model and to establish links between the constructs.

5   Conclusion

As the baby boomer generation continues to leave the workforce, pension fund systems will become increasingly strained. Therefore, the relative significance of personal savings will take on additional importance. Applying the CWO model and supported by image theory and the 3M model, this study attempts to investigate the psychological factors influencing individuals' FPR. The research question, framework, and hypothesis were proposed based on the literature review. The study subsequently designs the measurement tools to test the hypothesis and provide ideas for future data analysis.

While this study is one of the first to develop an understanding of the determinants of individuals' FPR, this study is not without its limits. An identified limitation of this study is the reliance on self-reported data to evaluate planning activities and saving behaviors. In the case of individuals' estimates of their FPR, any inaccuracies would be random rather than systematic in nature compared to their actual behavioral levels. One further limitation of this study is the lack of diversity in the sample, as it is restricted to participants from China. It should be noted that pension systems, which are closely related to FPR, are currently undergoing significant changes and vary significantly across countries, making it challenging to generalize the findings to other populations or regions. Further discussion is needed to determine whether the cross-sectional approach used in this study can establish causal relationships among psychological variables and FPR at different time periods.

This study also offers several recommendations for future research. This study intends to test the impact of psychological variables on FPR behavior based on the CWO model in China. In order to provide broader evidence, the CWO model will be examined in other countries (such as Australia, Russia, and Brazil), which can also lay the groundwork for future comparative studies based on different cultures. In addition, the OFL measurement selects initial questions at an appropriate difficulty level to ensure respondents can engage with the task. In future research, medium and advanced OFL levels, which may influence the findings, should be considered.

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COSMO-RS Based Prediction and Screening of Antimicrobial Activities of Deep Eutectic Solvents

Lama Alafandi, Amal A. M. Elgharbawy, Huma Warsi Khan, and Azura Amid

Abstract A total of 18 different deep eutectic solvents (DESs) were thoroughly analyzed in this extensive study employing the most recent advances in COSMO-RS (Conductor-like Screening Model for Real Solvents) analytical approach. To establish a broad and representative sample for the study, these DESs were carefully chosen and made up of a range of substances, including urea, thymol, menthol, and six different fatty acids. This study's main goal was to examine the various DESs' antibacterial capabilities by examining how they interacted with bacterial cells. The study concentrated on looking at how the DESs interacted with four crucial bacterial cell components in order to accomplish this aim. Components were 2,6-diaminopimelic acid, N-acetyl-a-neuraminic acid, N-acetyl-muramic acid, and N-acetyl-D-glucosamine. These elements were chosen because they play important roles in the construction and operation of bacterial cells. The results of the research showed that the advanced σ-profiling and σ-potential assessments offered useful information on the most interactive and successful DESs against microbial cells. Decanoic acid-based solvents showed the most effectiveness in interacting with the chosen bacterial cell components among the 18 DESs tested. This study's significance and effects go beyond its immediate conclusions. In order to save resources in creating new antimicrobial drugs, this study provides a simplified method for screening biological components. Furthermore, this research opens doors for further investigation and potential applications of these solvents in the fight against drug-resistant bacteria and the development of new therapeutic approaches for treating infectious diseases by identifying Decanoic acid-based DESs as potent antimicrobial candidates.

L. Alafandi · A. A. M. Elgharbawy (✉) · H. W. Khan · A. Amid
International Institute for Halal Research and Training (INHART), International Islamic University Malaysia, P.O. Box 10, 50278 Kuala Lumpur, Malaysia
e-mail: amalgh@iium.edu.my

A. A. M. Elgharbawy
Biotechnology Engineering Research Center (BERC), Department of Chemical Engineering & Sustainability, International Islamic University Malaysia, P.O.Box 10, Kuala Lumpur, Malaysia

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1 Introduction

The current era advocates for sustainable development while striking a balance between the development of industry and the maintenance of the natural environment. This is a significant challenge that the world is facing at this time [1]. Therefore, the use of green solvents such as DESs has been a research hotspot to meet sustainable development goals. Deep eutectic solvents (DESs) are acknowledged as suitable replacements for organic solvents and ionic liquids due to their ease of preparation, 100% atom economy, low cost, potential biodegradability, and low toxicity.

DESs are a combination of two solids that form a liquid with a significantly lower melting point than its components, due to the formation of hydrogen bonding contacts between the molecules. One component acts as a hydrogen bond donor, while the other acts as a hydrogen bond acceptor [2].

According to the literature, DESs have been tested as antimicrobial agents, demonstrating the potential of saturated fatty acid-based DESs as preventive/therapeutic options against microbial infections and/or components of novel biocompatible biomedical devices for antibacterial purposes when compared to isolated fatty acids [3].

The physicochemical properties of DESs are one of the main reasons behind the rising interest of researchers in these solvents as antimicrobial agents. The properties of these solvents can be flexibly adjusted with different combinations of components to meet specific requirements. Therefore, there is a need for a sustainable screening method to investigate the optimal effective combination of hydrogen bond acceptor (HBA) and hydrogen bond donor (HBD) to formulate targeted DESs. The conductor-like screening model for realistic solvation (COSMO-RS) has been determined as an innovative approach to predicting thermophysical data for liquid systems and has become a convenient alternative to methods that rely on force fields for molecular simulation [4].

Moreover, when it comes to eutectic mixtures, trial and error is still the most popular way to choose the best solvent for the extraction of natural compounds, especially when dealing with innovative, minimally-investigated solvents like deep eutectic solvents (DES). This can result in either an extensive or a poor list of solvents. Therefore, this study aims to present an accurate prediction system such as COSMO-RS to achieve its objective by screening various types of DESs.

The paper will consist of a brief literature review on antimicrobial DESs and COSMO-RS prediction, methodology, results, discussion, and a conclusion.

2 Literature Review

2.1 Antimicrobial Activity of DESs

Due to the rise of resistance to current antibiotics, microbial infections have become increasingly difficult to treat. As a result, the scientific community is focusing on innovative therapeutic options in the current situation. Deep eutectic systems (DES) have attracted scientific attention in recent years due to their exceptional physico-chemical and biological properties, adaptability, and green chemistry metrics, making them significant in the fight against microbe-related infections [5].

Recent research has indicated that the synthesis of DESs with antibacterial properties can be a promising alternative to standard treatments [6]. Two studies have reported these findings. For example, [7] examined the antifungal potential of choline chloride-based DES against four fungus strains and found that DES had decreased acute toxicity against Cyprinus carpio fish. Additionally, Silva et al. [3] investigated the antibacterial characteristics of fatty acid-based eutectic mixtures as therapeutic agents incorporated into innovative medical devices via supercritical particle production.

2.2 COSMO-RS

Conductor-like screening for realistic solvation (COSMO-RS) is an innovative method that predicts thermophysical data for liquid systems, making it a practical alternative to force field molecular simulation and group contribution approaches. Due to its unique quantum chemical approach of solutes and solvents, as well as an effective statistical thermodynamics procedure for molecule surface interactions, COSMO-RS is becoming a "handy" tool for predicting DESs and ILs with desired properties, such as cation–anion screening [4].

Klamt and Eckert introduced COSMO-RS in the mid-1990s, and since then, they have improved its performance, especially in modeling more complicated systems. Many other research organizations worldwide have also used the model to predict various system properties for different applications. For example, studies based on COSMO-RS for ILs have dominated the literature, as the model is useful for calculating activity coefficients, phase diagrams, capacity, and selectivity for such complex fluids [8] and have showed capability to screen a wide range of ILs for a specified application, like the extraction of active pharmaceuticals ingredients [9]. Additionally, COSMO-RS has been used to determine the eutectic temperature as a quick and economical method for screening a stable eutectic mixture [10].

3   Methodology

During this research, COSMO-RS was used to predict the thermophysical properties of various combinations of DESs against selected bacterial cell components. In COSMO calculations, DESs are treated as equimolar mixtures consisting of HBA and HBD. Therefore, the TURBOMOLE program package was used [11], COSMO files of the fatty acids, HBDs, HBAs, bacterial cell components (GlcNAc, DAP, NANA, and MurNAc), and APIs (Paracetamol, Ampicillin, penicillin, and ascorbic acid) were generated as cations and anions using the Becke and Perdew (BP) functional with a triple zeta valence polarized (TZVP) basis set [12]. These files were then imported to COSMOthermX to generate the sigma surface and screen the charge density by generating the sigma profile graphs. The list of the DESs combinations is listed in Table 1.

Table 1 List of DESs used in the screening

HBA	HBD	DES
Butanoic acid	Menthol	DES 1
Decanoic acid	Menthol	DES 2
Hexanoic acid	Menthol	DES 3
Levulinic acid	Menthol	DES 4
Octanoic acid	Menthol	DES 5
Propanoic acid	Menthol	DES 6
Butanoic acid	Thymol	DES 7
Decanoic acid	Thymol	DES 8
Hexanoic acid	Thymol	DES 9
Levulinic acid	Thymol	DES 10
Octanoic acid	Thymol	DES 11
Propanoic acid	Thymol	DES 12
Butanoic acid	Urea	DES 13
Decanoic acid	Urea	DES 14
Hexanoic acid	Urea	DES 15
Levulinic acid	Urea	DES 16
Octanoic acid	Urea	DES 17
Propanoic acid	Urea	DES 18
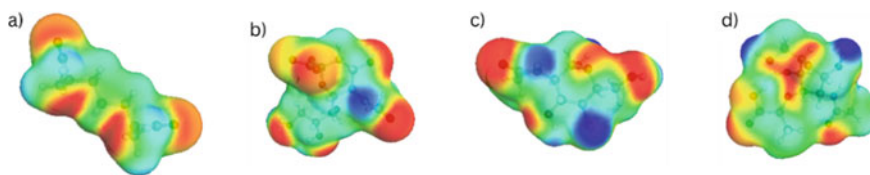
Fig. 1 Sigma profiles of **a** DAP **b** NANA **c** GlcNAc **d** MurNAc

4 Results

4.1 Sigma Surface

To study the interaction of fatty acids and HBDs with bacterial cell components, the sigma surface was analyzed first using COSMOthermX to understand the surface nature of these components. The results revealed that GlcNAc, DAP, NANA, and MurNAc have both negative and positive groups on their sigma surfaces (Fig. 1). When analyzing σ-surfaces, the blue color indicates the presence of an NH group that will donate electrons and become positively charged. The red parts of the surface indicate areas with high charge density, indicating the presence of O- which will accept electrons and become negatively charged. The green color indicates neutral behavior due to the presence of carbon, and there may also be neutral areas represented by the blue color [13].

4.2 Sigma Profiles

To investigate the interaction between the screened DESs and the bacterial cell components, to confirm antimicrobial activity, and to choose the best interactive combination of HBA and HBD, sigma profiles were generated using COSMOthermX. Figure 2 shows the sigma profile of several DESs that consists of Menthol as the HBD, and it showed the highest peak of (53.98) with decanoic acid as the HBA. Figure 3 shows the sigma profile of DESs that consists of Thymol as the HBD, which showed it highest peak at (43.73) with decanoic acid as the HBA. Lastly, Fig. 4 shows the sigma profile where urea was used as the HBD and demonstrated a peak at (30.5) when using decanoic acid as the HBA. All simulated DESs exhibit interaction peaks with all bacterial cell components, whereas decanoic acid produced the best results with all three HBD among the other fatty acids evaluated.
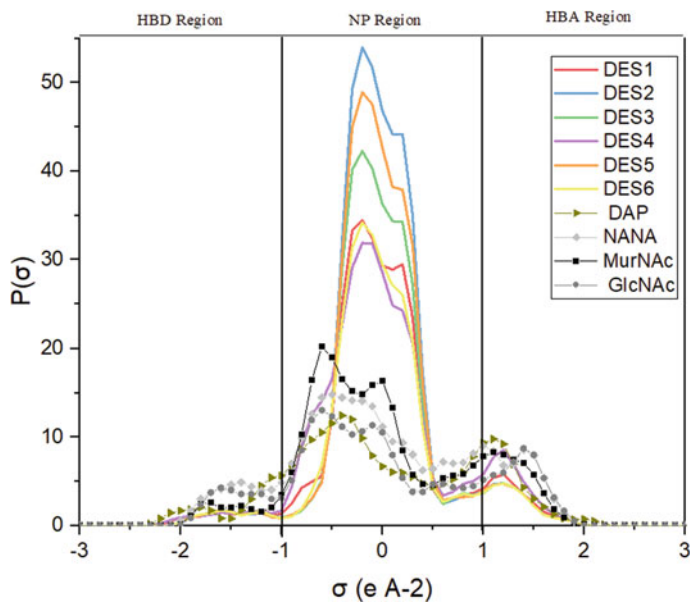
Fig. 2 Sigma profiles of selected DESS using Menthol as an HBD
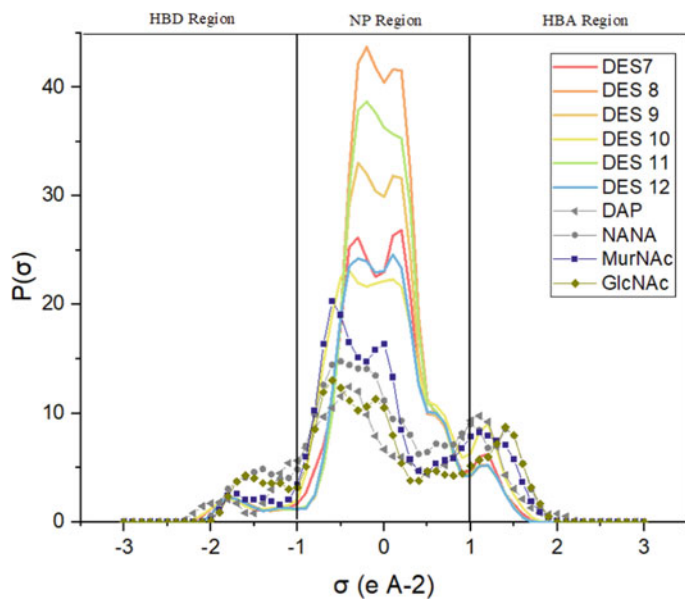
Fig. 3 Sigma profiles of selected DESS using Thymol as an HBD
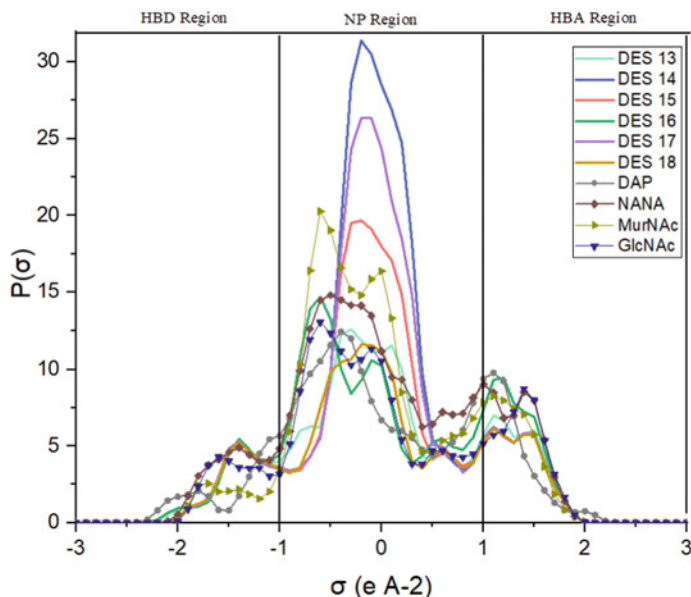
Fig. 4 Sigma profiles of selected DESS using Urea as an HBD

5 Discussion

Typically, DESs comprise three components—salt cation, anion (HBA) and HBD, and the results obtained from the sigma surface and sigma profiles assist to understand how the fatty acids behave as a HBD and HBA in the DESs. The series of peaks obtained from the sigma profiles analysis are divided into three regions: HBA, HBD, and nonpolar region. However, in the study, the 18 screened DESs possess both HBD and HBA, but there were more notable peaks in the HBA region. Moreover, DES2 and DES8 exhibit significantly higher peaks that overlap with the peaks of all four bacterial cell membrane components. Since the peaks overlap, we know that DESs interact with the bacterial cell membrane components, leading to enhanced permeability and greater antimicrobial activity. In general, any peak within the range of $0 < \sigma < 0.01$ e/nm^2, which is the right-hand side of the profile, will interact with the left peak of the bacterial cell components (-0.006 eA -2, which interact with GlcNAc, DAP, NANA, and MurNAc). Based on the figure, it can be observed that for all DESs, the peaks exist between the specified ranges.

However, DES2 has the highest peak among all selected DESs at positive and negative σ values, and this could be due to the hypothesis that fatty acids with longer Alkyl chains enhance the antimicrobial activity [14]. In addition, the combination of decanoic acid, which has a longer carbon chain and is considered an amphiphilic molecule (having both hydrophilic and hydrophobic properties), with

Table 2 Abbreviations used in the paper and their definitions

Abbreviation	Meaning
DESs	Deep eutectic solvents
API	Active pharmaceutical ingredients
HBDs	Hydrogen bond donors
HBAs	Hydrogen bond acceptors
N-Acetyl-d-glucosamine	GlcNAc
2,6-diaminopimelic acid	DAP
N-Acetyl-a-neuraminic acid	NANA
N-Acetyl muramic acid	MurNAc

thymol (DES8, the second highest peak), which is a natural phenol and has demonstrated antimicrobial properties on its own [15], will produce a eutectic solvent with enhanced antimicrobial activity and both polar and non-polar regions. This distinctive structure enables eutectic solvent to dissolve and disrupt the lipid membranes of microorganisms, resulting in their death (Table 2).

6 Conclusion

Due to the distinguished antimicrobial properties of fatty acids, this research presents the potential synthesis of various DESs consisting of fatty acids as the HBA, with menthol, thymol, and urea as the HBD. The study provides insight into the antimicrobial properties of these DESs against four types of bacterial membrane components using COSMO-RS analysis. The results revealed that DES2 (Menthol: Decanoic acid) and DES8 (Thymol: Decanoic acid) showed promising results from the sigma profiles analysis, as they had the highest peaks overlapping the bacterial membrane components peaks, indicating an interaction with all four types of bacterial membrane components.

The two promising DESs consisted of the same fatty acid, decanoic acid, which has the longest carbon chain among the other HBA in this study. The analysis conducted is important due to the wide range of screening that has been done in a relatively short period of time and without wasting resources. This approach is convenient for evaluating equimolar mixtures consisting of cations and anions, such as DESs and ILs.

However, further in vitro experimental studies should be conducted to examine the antimicrobial efficacy of the selected eutectic mixtures and to overcome the limitations of the prediction tool. Additionally, the stability of the synthesized mixtures should be tested with various molar ratios and temperatures.

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The Potentiality of Indian Handicrafts to Be Projected as a Luxury Good to the World

Cherian Thomas and **Madhu Druvakumar**

Abstract This article is an effort to examine the lacuna in making handicrafts of India as luxury goods. Certain features that are ingrained in a luxury good is compared with Indian handicrafts. The richness of Indian handicrafts is it's diversity. This is a vast opportunity to tap. If India does not make use of the potential, some other country will make use of it as is evident from the claim over geographical indications. Indian handicrafts are not used nor preferred by the common man. It is branded as a prized possession only for the rich. However, the rich do not prefer it much since they do not perceive it as a luxury good. This article finds out as to how to bridge that gap.

Keywords Luxury goods · India · Handicrafts · Craftsmanship · Heritage · Brand

1   Introduction

India is very rich and diverse with its culture, language, religion, climate etc. It's reflected in its handcrafts also. Each state and regions have its own unique handcrafts. It raises the importance of preserving these crafts and craftsmanship. Globalization destroyed several handicrafts industry in India. Globalization integrates Indian economy with the rest of the world and that create more options than ever before. Unfortunately, after Globalization, Indians forgot about the rich heritage and culture. The craftsman in India is not treated the way they have to be treated all over the world. They are exploited by the intermediaries and are not getting remuneration they deserve. Many craftsmen shifted to other fields because being in handicrafts was no more profitable and they are not in a position to earn livelihood from the handicrafts sector. There is always a huge demand and acceptance of Indian handicrafts in all over the world because of its non-monotonousness and uniqueness. In the west, there are efforts to protect and preserve the handicrafts and even they are using their handicrafts as a marketing tool for accelerating tourism. Some of the countries are

C. Thomas (✉) · M. Druvakumar
Kristu Jayanti College (Autonomous), Bengaluru, Karnataka 560077, India
e-mail: cherian28@gmail.com

earning huge revenue through the handicraft industry. Tourists from other countries are eager to see as to how these handicrafts are made. If these tourists see it, they will surely buy it and they will share their experiences among their friends and colleagues through social media and other platforms.

However, India failed to protect, preserve and promote handicrafts and craftsman because of several reasons. Certain countries are earning majority of its foreign revenue through Tourism. They are connecting tourism with their culture and handicrafts. The branding and positioning strategies followed for promoting tourism along with handicrafts are really applauded. India is lacking the same. Despite being rich in terms of its diversity, the way in which it is projected has to be changed. If we are able to project our handicrafts along with tourism it will create miracles. India has 28 states and 8 Union territories. Each state and union territory should promote their unique handicrafts along with tourism. There should be a USP (Unique Selling Proposition) for each state or union territories for promoting handicrafts in our country. India will be able to preserve and protect the rich culture and heritage at the same time it can improve the standard of living of the people who are directly and indirectly related to handicrafts and tourism.

Deliberate and conscious efforts must be required to promote handicrafts products as luxury products. The sourcing, processing, production, pricing, marketing and logistics should be arranged in such way to ensure the quality, availability and value of the product, so that it can be branded as a luxury product. A professional outlook is missing when it comes to branding the Indian handicrafts. Tourists must feel pride while buying the handicrafts in terms of its quality and uniqueness. They must consider each handicrafts item as an identity of places they have visited. The manner in which Matryoshka doll is identified as Russian, Indian handicrafts should also be identified by people all over the world as Indian because of its uniqueness. Once it's identified as Indian Handicrafts it's our duty to retain the quality and specialty because many fake products will be available from other countries also. When we are protecting and preserving handicrafts in India we are protecting and preserving the craftsmen as well. They should get a decent or reasonable pay for their efforts and they must be proud to work in this industry. Then only they will be ready to impart the knowledge and craftsmanship to the next generation, this will enhance our visibility in the world tourism space.

The paper has been structured in such a way that the authors have conducted a literature review. The research design was framed. The conceptual model framed and the same was tested using statistical tools. The tests have then been converted to form the findings and suggestions of this study.

2   Literature Review

The review of literature revealed several themes. The following lines showcase the history of handicraft in India. Seth [1] insisted that luxury handicrafts were produced in India during the bygone princely era. Artisans used their skills for the sake of kings.

Karmakar [2] noted that India used to be a handicrafts hub. The invasion of the British brought disorientation and finally handicrafts took a back seat. Seth [1] observed that handmade Indian handicrafts could not compete with western manner of producing handicrafts.

The following reviews analyzed the customer behavior with regard to handicrafts. Garg and Walia [3] noted that urban young did not have affection towards handicrafts since they did not attach cultural aspect to it. Sinha [4] stressed that both the buyer and the seller must be a part of the manufacturing process. The buyer must know the effort and cultural aspects involved behind the production of the handicrafts via tourism. A buyer who knows such things can truly appreciate the product that he or she has purchased. Durrans [5] observed that village handicrafts were made for the daily use in villages and not for the use in semi-urban or urban contexts. In such a case, it is hard to connect these handicrafts as a luxury item to the wider audience. Meitiana et al. [6], found that buyers who buy handicrafts demands authenticity of handicrafts. This is because of the rampant fake products that are in the market. Dasgupta and Chandra [7] demarcated two types of people who have affinity towards handicrafts. Educated and independent males belonging to urban and suburban areas love handicrafts because of love for nature and the artisans. Another group consists of fairly educated independent females who are envious of others' possession of handicrafts, which leads to purchase of handicrafts for themselves.

The following reviews noted the benefits that handicraft sector experienced in the recent times. Tekwani and Raghuvanshi [8] was convinced that Goods and Services Tax (GST) could make the handicrafts as an organized sector. Guha et al. [9] suggested that usage of social media can increase the reach of handicraft among the masses.

The following review points to the developments that are set to follow if handicraft sector is developed. Rogerson [10] stated that empowerment of handicrafts will lead to more rural development, tourism and employment creation.

The above reviews showed that there were no prior studies on credentials necessary for branding Indian handicrafts as a luxury good.

3   Research Methodology

The study was conducted amongst shop owners selling handicraft items in Amaravati, Andhra Pradesh, India. These shop owners were selected since they are adept at knowing the pulse of the customers and has a track on the goods which have a potential to be sold in the market. As per the National Council of Applied Economic Research survey conducted in 1995–1996, Andhra Pradesh accounted for household handicraft units of 76,162 along with 1,20,457 artisans [11]. This makes the state top in handicrafts in the South India region. Although, Andhra Pradesh got bifurcated, it still stands tall area wise.

The study was conducted among 212 shop owners selling handicraft items. The population was unlimited and hence the sample size was fixed thus [12]. The parametric test Pearson's Correlation was applied since the data was found normal. Moreover, the primary data was collected using questionnaire in a snowball sampling method.

4   Analysis and Discussions

The following factors were grouped from observations of other writers. These factors are with regard to the elements that products need to have in order to be branded as a luxury item.

Craftsmanship [13]: The Industrial Training Institutes were set up across India in order to train lay people to be tradesmen. Such an initiative focused on manufacturing industries. In the process, India lost her focus on craftsmen. There are no indigenous training institutes for them. This is because handicrafts have always been a household industry for generations. Certain families hold it as a family or caste legacy and refuse to transfer down generations of technical know-how to the general public. This leads to a lag in generating more craftsmen. Use of technology for making handicraft is also seen in other countries. However, technology has not seeped into handicrafts, thus making it lag further in India. Craftsmen's guilds used to nourish and bring in more knowledge. Such a guild is absent in India, which contributes to absence of newer handicraft patterns or methods. The slow disappearance of monarchy resulted in absence of local promotion of these handicrafts. At present, the handicraft sector has been orphaned and marred with many issues.

Heritage [13]: Indian monuments gained traction due to the recognition of UNSECO (The United Nations Educational, Scientific and Cultural Organization). A classic example is the Taj Mahal being assigned to being Indian since it is in the list of wonders of the world. Such a push is absent in the handicraft sector. Heritage sites in India fail to showcase the local culture and traditions. However, museums do showcase it. The irony is that tourists do not get a chance to be immersed in the local culture and traditions. The heritage of India is locked up in libraries. Any person who is inquisitive is able to find out more. This leads to a dim portrayal of Indian heritage. Villages cannot be questioned due to lack of upholding this heritage since they are in a fight to sustain themselves from poverty and other social evils.

Scarcity [13]: It is a phenomenon that happens due to demand and supply. In handicrafts, it has been affected via mass manufacture of fake handicraft products. This has led to loss of originality. There are no single producer and no government body that takes care of this. One can see a monopolistic competition. The lack of political willingness has led to it. Even rare antiques are not spared as these have duplicates. It is a chaotic market and one can't get a sense of whom to enquire about. A single authority is missing. Private players hesitate to venture since they do not see much returns in the long run.

Brand identity [13]: In India, all the handicrafts are not linked to any particular brand. There was a brand consciousness created by the governmental tourism promotion organizations on tourist places and it ends there. It does not extend to handicraft. India will have to wait till some private players own up the act.

Expensive [14]: It is a wrong notion that since handicraft is part of the heritage, it must be sold at a higher price. The absence of a brand leaves space for doubt if sellers are charging more in order to earn more profit than earning more customers. Miniature handicraft products are out of the reach of a common man. Therefore, handicraft shops are seen as shops that offer no value. A common question that a handicrafts seller can ask is- why is it that common man is ready to pay more for new electronic gadgets whereas they dislike paying more for a handicraft product? Critics would say that an average Indian lacks taste or patriotism. However, they forget that it is absence of value that forces people to restrain from buying handicrafts.

These factors were taken to form a conceptual framework (Fig. 1).

The following hypotheses were formed (Table 1).

H_{01}: There is no significant relationship between Craftsmanship and Handicrafts as luxury goods.

There was a strong, positive correlation between craftsmanship and luxury. However, it was not statistically significant correlation ($r = 0.041$, $n = 212$, $p = 0.549$) (Table 2).

H_{02}: There is no significant relationship between Heritage and Handicrafts as luxury goods.

Fig. 1 Conceptual framework
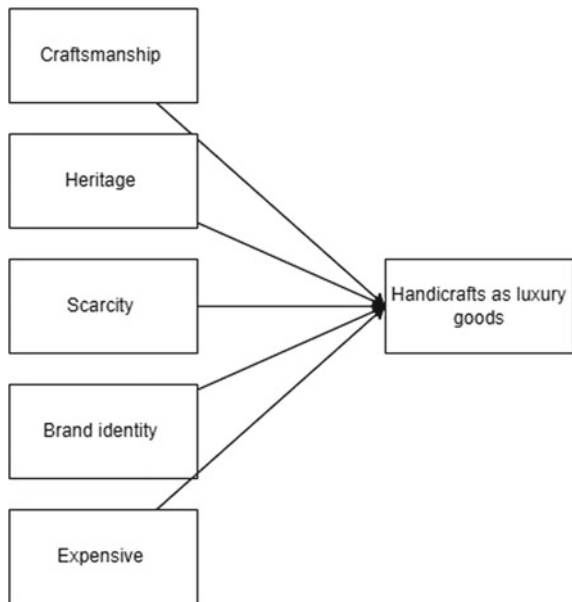
Table 1 Correlation of craftsmanship * handicrafts as luxury goods

Correlations			
		Craftsmanship	Luxury
Craftsmanship	Pearson correlation	1	0.041
	Sig. (2-tailed)		0.549
	N	212	212
Luxury	Pearson correlation	0.041	1
	Sig. (2-tailed)	0.549	
	N	212	212

Table 2 Correlation of heritage * handicrafts as luxury goods

Correlations			
		Heritage	Luxury
Heritage	Pearson correlation	1	0.022
	Sig. (2-tailed)		0.749
	N	212	212
Luxury	Pearson correlation	0.022	1
	Sig. (2-tailed)	0.749	
	N	212	212

There was a strong, positive correlation between heritage and luxury. However, it was not statistically significant correlation ($r = 0.022$, n $= 212$, $p = 0.749$) (Table 3).

$H_0 3$: There is no significant relationship between Scarcity and Handicrafts as luxury goods.

There was a strong, positive correlation between scarcity and luxury. However, there was statistically significant correlation ($r = 0.239$, n $= 212$, $p = 0.000$) (Table 4).

Table 3 Correlation of scarcity* handicrafts as luxury goods

Correlations			
		Scarcity	Luxury
Scarcity	Pearson correlation	1	0.239[**]
	Sig. (2-tailed)		0.000
	N	212	212
Luxury	Pearson correlation	0.239[**]	1
	Sig. (2-tailed)	0.000	
	N	212	212

[**]Correlation is significant at the 0.01 level (2-tailed)

Table 4 Correlation of brand* handicrafts as luxury goods

Correlations			BRAND_ID	Luxury
BRAND_ID	Pearson correlation		1	0.065
	Sig. (2-tailed)			0.347
	N		212	212
Luxury	Pearson correlation		0.065	1
	Sig. (2-tailed)		0.347	
	N		212	212

Table 5 Correlation of expenditure* handicrafts as luxury goods

Correlations			Expenditure	Luxury
Expenditure	Pearson correlation		1	0.390^{**}
	Sig. (2-tailed)			0.000
	N		212	212
Luxury	Pearson correlation		0.390^{**}	1
	Sig. (2-tailed)		0.000	
	N		212	212

**Correlation is significant at the 0.01 level (2-tailed)

H_04: There is no significant relationship between Brand identity and Handicrafts as luxury goods.

There was a strong, positive correlation between brand and luxury. However, there was no statistically significant correlation ($r = 0.065$, n = 212, $p = 0.347$) (Table 5).

H_05: There is no significant relationship between Expenditure and Handicrafts as luxury goods.

There was a strong, positive correlation between expenditure and luxury. However, there was statistically significant correlation ($r = 0.390$, n = 212, $p = 0.000$).

5 Conclusion

The above analysis proved that scarcity and expenditure were the factors that were hindering the Indian handicrafts from being a luxury good. These two can be termed as concerns of the rich as well as the middle class individuals. For the rich, they are concerned about scarcity of original items. The agents that approach them are cheating them with fake handicraft items. On the other hand, the middle class people

are finding it hard to buy such items due to high price. Indians are sensitive to price and this goes against the ethos of the middle class. The challenge here is to strike the right price that is apt for both the rich and the middle class. In both the cases of originality and price, the government is the best player who can solve this issue. A regulatory body that certifies genuineness and monitors the price is needed in India.

Although other factors are insignificant in this study, they are needed to push the Indian handicrafts as luxury goods. There are resources, legacies, heritage and craftsmen in India. A shift to market these Indian handicrafts as a luxury good is the need of the hour. Even though there are government promotion councils who have documented the available rich handicrafts, the next big task is to market them in a manner that befits these Indian handicrafts. In this age of technology, social media is a place from where such marketing can start.

A concerted effort of the government and non-governmental organizations are needed in both India as well as abroad. International cultural festivals such as those held in Dubai are noteworthy places to pitch in the marketing efforts. There are Indian pockets in each country that are places to give an impetus to such handicrafts. Indian festivals are another phenomenon to showcase these as these festivals are gaining more traction in the west even amongst politicians.

A gradual makeover these handicrafts are needed. They are not to be hidden in shelves or are not reserved to a particular place or community. It must be showcased and cherished and only there would be revenue out of these handicrafts. These handicrafts are dying due to lack of people to cherish it.

This paper was written in a shorter time frame and hence contains the limitations when compared with a longitudinal paper. The handicraft surveys focused on the handicrafts that are still prominent in the market. Artifacts and rare pieces of handicrafts long forgotten and no longer produced are not part of this study. A study amongst the wealthy might produce an all together a different result.

This study can be further continued by testing the same in different parts of the world. It can also be connected with the inflow of tourists to a particular tourist spot.

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Banking Efficiency Determinants in Saudi Arabia: Panel Data Analysis

Kais Ben-Ahmed, Naziha Kasraoui, and Amira Feidi

Abstract This study analyzes the effects of competition on Saudi banks' efficiency, measured by the bank productivity ratio. We employed a panel data sample of nine (9) Saudi banks registered on the Saudi Stock Exchange over twelve years, 2008–2019. The bank size, capitalization, ownership structure, concentration index IHH, and concentration ratio were used to gauge competition. Two control variables (Economic Growth and Inflation) also comprised the data used in this study. In addition, we collected annual data from the annual reports of the Saudi banks. Using a linear dynamic panel data model, we explore banking governance mechanisms' role in operational efficiency. Econometric results showed that capitalization, Ownership, banking concentration ratio, HHI index, economic growth, and inflation played an essential role in banking efficiency, as they have negative and significant coefficients at a 5% level. But there was no discernible correlation for Saudi bank size. Findings also showed a lower value of competition concentration for Saudi banks (13.5%), suggesting that Saudi banks operate in a market to perfect rather than imperfect competition conducted by the dilution of the ownership of banks, homogeneity of products, fluidity of capital and informational transparency. Last but not least, this study is unique because it examines the specific features of the Saudi banking system, particularly the factors that affect banking efficiency. In addition, using the HHI Index and concentration level in the Saudi market context is also a methodological contribution.

Keywords Efficiency · Banks · Governance · Control measures · Productivity · Saudi Arabia

JEL Classification E02 · E44 · O16

K. Ben-Ahmed (✉)
Department of Finance, College of Business, University of Jeddah, Jeddah, Saudi Arabia
e-mail: benahmedkaies@gmail.com

Department of Statistics and Economics, ISG, University of Sousse, Sousse, Tunisia

N. Kasraoui · A. Feidi
Department of Finance, IFGT Laboratory, University El-Manar, FSEG Tunis, Tunis, Tunisia

1 Introduction

Banking efficiency has drawn the attention of many researchers last ten years. Usually, the ratio of productivity is a measure of efficiency. Among others, the productivity ratio is the output quantity brought back to the amount of input. As for banking efficiency, there have been several studies on controlling costs in banking double tree of incomes to achieve an objective following an appropriate strategy. Banking governance comprises all the mechanisms that organize the bank's activities. These mechanisms aim to control the bank directly to protect the shareholders of the leaders against any abuse of power. In addition, banking governance mechanisms included regulation of capital and prudent norms (legal and regulatory mechanisms), the board of directors, the participation of the leaders in the capital, remuneration contracts, financial structure and debt, and size (internal mechanisms), a system of property, the nature of the shareholders (external tools), and competition and concentration (control measures).

Several studies link the mechanisms of governments to banking efficiency. Most of these studies examined the relationship between efficiency in the banking system, governance agencies, and control measures such as competition and concentration. For example, Jensen and Meckling [1] define the agency relationship as a contract under which one party, the principal, engages another party (the agent) to perform service on their behalf. The principal will assign some decision-making authority to the agent as part of this. Agency problems arise when we consider that the principal and the agent pursue different objectives. As a result, the agent will only sometimes work in the principal's extremely suitable interests. However, the principal can reduce variations in his interest by encouraging the agent properly or by earning monitoring charges to determine the strangeness of his actions.

Uwuigbe and Fakile [2] assumed that, because of the economy of scale, the big banks are more proximate to the periphery of efficiency than the small banks since the big banks have the power to discriminate in the market and can accomplish objectives. On the contrary, Dietsch [3] finds that size does not affect the efficiency of French banks by establishing a border between efficiency, cost, and profit. Therefore, one might support that all French banks exploit the same technique and optimize their means identically.

Kyereboah-Coleman and Biekpe [4] and Maudos and Guevara [5] examined the causal link between size and banking performance. As a result, they establish a governance mechanism that makes it possible to increase efficiency. However, more consensus was needed between the bank's size and profitability. Undoubtedly, Idries and Gharaibeh [6] determined a straightforward and statistically significant relationship between the size of the bank and its profitability. In the same context, Sufian [7, 8] used the total deposit to measure the size of the Malaysian bank. The findings highlighted that small banks are less active than those of larger sizes that are more attractive on the market. In contrast, Naceur and Omran [9] showed a considerable absence of a relationship between these two variables.

A recent study by Ebrahimi et al. [10] highlighted the favorable correlation between the capital ratio and banking profitability. As a result, compared to their credits, the banks have a high level of equity capital. Pasiouras and Kyriaki [11] conducted a similar study on banks in Greek. They found that capitalization positively impacts the efficiency of Greek banks. While it impacts neither allocative efficiency nor efficiency cost. It is noticeable that several studies examine the association between the efficiency of banks and competition based on the two theoretical approaches Structure-Behavior-Performance or Quiet-Life, and Efficient-Structure or Information Generating. However, the two approaches need to be revised. The first approach is that competition improves the efficiency of banks; however, the second approach shows the adverse impacts of competition on efficiency. For more details, see, for example, Hauswald and Marquez [12], Maudos and Guevara [5], and Chen [13].

Like other previous studies, this article highlights the impact of the governance mechanisms on efficiency in Saudi banks. However, our study was designed differently. As a result, it added to the literature in two ways. First, we link the governance mechanisms of banking efficiency and enrich the relations by including macroeconomic control measures, namely inflation and economic growth. Second, we study Saudi banks, where banking is one of the most important economic sectors. Banks in Saudi Arabia had tremendous growth during the last year, with assets, deposits, and credit facilities increasing by 9.4, 8.2, and 9.7%, respectively [14]. This is one of only a few studies examining the impact of governance structures on efficiency in Saudi institutions. Except for Alsager et al. [14] and Alhassan et al. [15], we conducted most previous investigations before adopting the most recent corporate governance guidelines in 2014.

The remainder of this article is structured as follows. First, Sect. 2 describes the dataset and the modelling framework. Then, we present and discuss the main findings in Sect. 3, while Sect. 4 concludes.

2 Data Sources and Methodology

2.1 Data

Recall that our research aim is to investigate the influence of competition on the efficiency of banks from 2000 to 2019 in Saudi Arabia. To assess banking efficiency, the response variable stands for the productivity ratio in each bank. Nine (9) Saudi banks listed on the Saudi Stock Exchange were used in this study. National Commercial Bank, Saudi British Bank, Saudi Investment Bank, Banque Saudi Fransi, Riyad Bank, Al Rajhi Bank, Arab National Bank, Bank AlBilad, and Bank AlJazira are among these banks. We also gathered secondary data for the study from the sample banks' audited annual reports and the Tadawul website.

2.2 Econometric Model

We employed the bank productivity ratio as a function of governance characteristics such as the size of the bank, the use of the capital structure of ownership, the Hirschman and Herfindahl concentration index, and the ratio of concentration as a measure of competitiveness. Moreover, the bank productivity ratio was used as additional control variables that could influence bank efficiencies like inflation and growth rates. The variables included in the model, and their acronyms are briefly defined in Table 1. Following Bikker and Haaf [16], Park and Weber [17], Maudos and Guevara [5], Uhde and Heimeshoff [18], Naceur and Omran [9] and Amidu and Wolfe [19], we estimate the income to cost ratio (IC) dependent variable as follows.

$$IC_{i,t} = \theta_0 + \theta_1 H_{it} + \theta_2 R_3 + \theta_3 G_{i,t} + \theta_4 I_{i,t}$$
$$+ \theta_5 O_{i,t} + \theta_6 C_{i,t} + \theta_7 S_{i,t} + \delta_{i,t}$$

Table 1 Summary of variables study

Variable	Symbol	Definition
HERFINDAHL–HIRSCHMAN	H	Measure of market concentration and is used to determine market competitiveness
Ratio of banking concentration	R	Used to capture the degree of concentration in the banking industry
Size of the bank	S	Measured as the natural logarithm of the value of total assets in US dollars
Banking capitalization	C	The difference between a bank's assets and its liabilities [20]
Ownership of the Bank	O	Bank ownership is a binary variable with two values: 0 if the bank is privately owned and one if the bank is publicly owned
Rate of gross domestic product (control variable)	G	The Gross Domestic Product Rate (GDP) is a macroeconomic indicator that is often used to measure a given country's total economic activity and growth
Inflation (control variable)	I	Inflation was introduced in several types of research as a control variable in explaining the relation between performance and banking competition

3 Results

Our preliminary findings begin with descriptive numbers for the variables in the study. Table 2 showed that the average cost ratio for sample Saudi banks during the period 2008–2019 amounted to 14.4% and ranged from − 1.7648 to 9.4226 with a standard deviation (SD) of 77.94%. The average cost ratio is normally distributed based on skewness, kurtosis, and Jarque Bera statistics. The average HH index and CR3 for sample banks during 2008–2019 reached 13.57 and 45.24%, respectively. The HH index went from 11.09 to 12.05% with a standard deviation of 0.33%, while the CR3 went from 41.51 to 47.43% with a standard deviation of 1.93%. This finding shows that Saudi banks act in a competitive market. As a result, the average Gross Domestic Product (GDP) was 4.11 to 6.23%, ranging from − 0.511 to 6.23%. In addition, Saudi banks appear to be well-capitalized, with an average capitalization ratio of around 9.16%. The average total assets (SIZE) of Saudi banks from 2008 to 2019 was 14.853 and ranged from 13.7130 to 15.9838. Discussing the standard deviation of bank size, we can document a high value reaching 57.37%. Nevertheless, there are more significant differences in the sizes of Saudi banks, as shown in the standard deviation. Last, ownership concentration means a bank is owned by one or more owners [21]. According to Table 1, average ownership has amounted to 3.65%. This result shows that the Saudi government owns 30% of the Saudi bank's assets.

Before assessing the model, it is obvious to run a few preliminary statistical tests on the constructive variables. The homogeneity test reveals that the model's many elements have low distortion. This finding supports the homogeneity of data. The correlation matrix's modest correlation between other explicative factors showed the lack of a multicollinearity issue. Therefore, we can include all the variables in the same model. Table 3 summarizes the findings. Because the Fisher test yields lower vital statistics at 5%, the model is significant. Error autocorrelation is absent, as shown by the Durbin-Watson statistics ($2 \leq DW \leq 4$). To arrive at this model, we note that the embedded variables account for 9.34% of efficiency in the Saudi banking system. We conclude that all Saudi banks exploit their resources similarly without distinguishing between the different optimizing techniques. As a result, Saudi banks

Table 2 Descriptive statistics for each variable used in the study

Variable	Mean	Max.	Min.	S.D.	Skeness	Kurtosis	J-Bera	Prob
IC	0.144	9.422	− 1.764	0.779	0.392	4.225	5.002	0.094
H	0.135	0.120	0.111	0.003	0.857	3.125	6.855	0.049
R	0.452	0.474	0.415	0.019	0.112	5.487	1.087	0.018
G	0.041	0.062	− 0.005	0.018	0.552	2.662	3.259	0.522
I	0.036	0.061	0.019	0.012	− 0.459	3.687	2.964	0.062
O	0.300	1.000	0.000	0.459	0.661	6.843	9.265	0.056
C	0.091	0.174	− 0.016	0.032	− 0.223	4.284	7.532	0.000
S	14.85	15.983	13.713	0.574	0.3245	2.522	4.587	0.000

need to take advantage of the economy of scale. As a result, they accomplish a crossing or diminishing ladder output. This result complies with the study of Dietsch [3].

Capitalization allows for a negative and meaningful coefficient. As a result, it is critical to the inefficiencies of banking. Saudi banks fail in strategic efforts because capital is a cousin of security against hazards. Because of inefficiency, this decrease in activity leads to decreased productivity. This result is in line with Van Roy [20]. Thus, inside governance structures are not too triggered to handle efficiency in the banking system because size is not involved, and capitalization must moderate daily mastery of efficiency.

The structure of state property hurts the efficiency of banking. The state's existence in social capital undermines all techniques for achieving social value that does not include a financial annuity. These strategies support the Saudi banks in inflating production costs while increasing earnings, resulting in inefficiency and unproductivity. This finding complies with Dinç [22]; Berger et al. [23]; Uhde and Heimeshoff [18]; Porta et al. [24].

Regarding H and R sitting on the Council, the coefficient negatively and significantly impacts the efficiency. The efficiency of the banks rises as the index of concentration falls. This finding lends credence to the idea that reduced market concentration boosts bank efficiency. This result reduces banking efficiency and leads to conflicts to excessive market concentration. Introducing new banks increases market activity, explains this outcome, lessens banking concentration, and offers new approaches to resource optimization besides raising interest rates. Saudi banks will step up their informational efforts in the face of competition. As a result, they will be better able to draw in clients without focusing or making hasty decisions.

Table 3 Determinants of Saudi bank's efficiency—multiple regression analysis

Variable	Coeff	St. Error	t-Statistic	Prob
Intercept	7.4336	1.4367	3.3345	0.0000
S	− 0.0772	0.0694	− 1.7737	0.1662
C	− 4.1121	0.7762	− 3.9156	0.0000
O	− 0.1761	0.1486	− 1.3688	0.0229
H	− 139.8376	49.9155	− 5.3438	0.0002
R	− 2.5111	5.5444	− 4.4445	0.0005
G	− 12.7069	2.6354	− 3.9867	0.0002
I	− 0.9079	2.0003	− 0.2298	0.0136
R^2	0.0934			
Adjusted R^2	0.0521			
Standard error	0.7883			
Durbin-Watson statistics	2.1492			
Fisher statistic	2.2851			
Probability	0.0384			

Economic expansion has shown that banking efficiency is negatively and significantly impacted. Therefore, Saudi banks must focus more on their economies and use their resources effectively during growth. Furthermore, inflation shows that expenses rise when there is an inflationary shock, and the financial system harms efficiency. Uhde and Heimeshoff [18], Amidu and Wolfe [19], and Naceur and Omran [9] have all discovered this conclusion.

4 Conclusion

We investigated the factors influencing bank efficiency in Saudi Arabia in this study. The findings showed that critical variables in determining bank efficiency in Saudi Arabia include capitalization, ownership, banking concentration ratio, HHI index, economic growth, and inflation. However, this study makes no significant assumptions about the relationship between bank size and banking efficiency. As for the model specification, the Fisher test yields less significant value (2.2851), whereas the Durbin-Watson test values vary from 2 to 4. Therefore, one might support that the model was significant at the 5% levels and an absence of error autocorrelation.

This study showed that Saudi banks function in an ideal competitive environment, as seen by their homogeneous product offerings, openness to information, diluted ownership, and flowing capital markets. This market has reinforced the positive impact of competition on banking efficiency. Future research and data collection aims to extend the number of banks further and compare conventional and non-conventional banks in terms of efficiency.

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The Role of Customer Based Brand Equity Towards Donator Loyalty in Lazismu, Central Java

Samsudin and **Ratna Roostika**

Abstract This study aims to analyze the Role of Customer Based Brand Equity (CBBE) on Donor Loyalty at Lazismu, Central Java. A quantitative approach was used for the research method. The number of samples taken was 246 respondents through online questionnaires and analyzed by structural equation modeling (SEM) processed with AMOS 24.0. The SEM analysis results showed that of the 10 hypotheses analyzed, the results obtained were Institutional awareness, Staff Behavior and Institutional Image had a positive and significant effect on CBBE, Perceived Quality had a positive but not significant effect, CBBE had a positive and significant influence on Donor Satisfaction and Donor Loyalty, Donor Satisfaction has a positive and significant effect on Donor Loyalty, Donor Trust has a negative but not significant effect on Donor Loyalty, CBBE has a negative and significant influence on Donor Trust and Donor Satisfaction has a positive and significant effect on Donor Trust.

Keywords CBBE · Donors · Lazismu Central Java · Services

1 Introduction

Since the last few years, Amil Zakat Institutions (LAZ) in Indonesia have continued to grow. The increase in LAZ is influenced by several factors such as the spirit to awaken the people, the spirit of creating professional amil zakat, the spirit of innovation by becoming a bridge between Muzzaki and Mustahik and the existence of regulations that support the zakat management system in Indonesia. The increase in LAZ in Indonesia cannot be denied by the fact that the potential for Zakat Infaq Sadaqah in Indonesia is relatively high, as explained by Dr. Irfan Syauqi Beiq in the webinar: *Unlocking the Potential of Zakat for Poverty Reduction and Covid-19* (Baznas, Outlook Zakat Indonesia 2021) [1].

Samsudin · R. Roostika (✉)
Management Department, Universitas Islam Indonesia, Yogyakarta, Indonesia
e-mail: ratna.roostika@uii.ac.id

Lazismu is a national-level zakat institution dedicated to community empowerment through productive usage of zakat, infaq, waqf and other charitable funds from individuals, institutions, companies and other agencies. Lazismu Central Java is the regional coordinator for the province of Central Java. Lazismu Central Java presents pillars that aim to eradicate poverty. Several Lazismu programs are categorized under six pillars, namely the pillars of education, health, economy, social humanity, preaching, and the environment. The program includes the Sang Surya Scholarship, Mentari Scholarship, Save Our School for MSME Empowerment, IMC (Indonesian Mobile Clinic), Da'i Mandiri, and Muhammadiyah AID. The large number of donors who donate at Lazismu Central Java shows that Lazismu Central Java already has brand strength among the people. With the strength of this brand, it makes it easier for Lazismu Central Java to raise funds from the public or donors.

Research that analyzes the relationship related to the Customer Based Brand Equity (CBBE) effect on consumer loyalty with consumer satisfaction and trust as an intervening variable has been carried out by several researchers in various aspects and fields. Hanif [2] in his research discover that the three dimensions of CBBE have a significant positive relationship with customer satisfaction. The results of his research also indicated that customer satisfaction has an effect on brand loyalty. Customer satisfaction partially intervene the effect of staff behavior, ideal self-congruence, and brand identification on brand loyalty, while simultaneously intervene the effect of physical quality and lifestyle alignment. Nam et al. [3] in his research show that the physical quality and behavior of personnel will have an impact on CBBE. Research by Yap et al. [4] shows that satisfaction has supportive effect on trust and this trust leads to loyalty to the bank. According to research conducted by Tanisah and Maftuhah [5] the partial test results show that service quality, trust and perceived value have a positive and significant effect on customer loyalty, while customer satisfaction has no significant effect on customer loyalty.

It is important to pay attention to the increase in CBBE value for philanthropic organizations like Lazismu, considering that a strong CBBE can give regular donors high confidence to always choose Lazismu as a place to donate. Having loyal donors will facilitate the implementation of the program launched by Lazismu. From these dynamics, the embodiment of CBBE is very interesting when applied to LAZ in Indonesia, especially Lazismu Central Java, to find out the extent of CBBE's effect on customer loyalty of Lazismu Central Java.

This research provides the benefit of adding insight into the role of CBBE on donor loyalty in addition to examine the mediating roles of donors satisfaction and trust in Lazismu, Central Java.

2 Hypothesis Development

Institutional Awareness, Perceived Quality, Staff Behavior and Institutional Image on Customer Based Brand Equity

Raji et al. [6] stated that CBBE is a valid scheme that reflects the mindset of consumers towards what they know, which is reflected through brand awareness, hedonic brand image, functional brand image, and automotive brand image. Other studies were also conducted by Nam et al. [3], which discussed service quality in the scope of "physical quality" and "personnel behavior" and determined that these aspects are an important part of CBBE, so that the physical quality and behavior of personnel will have an influence on CBBE. According to research conducted by Hyun and Kim [7], the brand image is formed by marketing activities such as advertisements and promotions before the customer uses the product. Brand image is considered an important part of CBBE. From the results of these studies, the following hypotheses were developed:

H1: Institutional Awareness influences Customer Based Brand Equity
H2: Perceived Quality affects Customer Based Brand Equity
H3: Staff Behavior influences Customer Based Brand Equity
H4: Institutional Image has an effect on Customer Based Brand Equity.

Customer Based Brand Equity on Donor Satisfaction

Ravald and Grönroos [8] argue that customer satisfaction is the most important criterion in forming customer loyalty, as satisfied customers can stay with a company longer than dissatisfied customers. said to be one. Hanif [2] found that his three aspects of CBBE were significantly positively related to customer satisfaction. The results also show that customer satisfaction impacts brand loyalty. Customer satisfaction partially mediates the impact of brand identity on employee behavior, ideal self-alignment, and brand loyalty, while fully mediating the impact of physical quality and lifestyle alignment increased. From the results of these studies, the following hypothesis were developed:

H5: Customer Based Brand Equity affects Donor Satisfaction.

Customer Based Brand Equity, Donor Satisfaction and Donor Trust in Donor Loyalty

Hanif [2] found that three dimensions of CBBE were significantly positively related to customer satisfaction. The results also show that customer satisfaction affects brand loyalty. Yap et al. [4] showed that satisfaction has a positive effect on trust, and trust leads to bank loyalty. Proper complaint handling by banks also increases satisfaction, trust and loyalty. Furthermore, Surucu et al. [9] showed in their study that customer satisfaction has a significant positive impact on trust and loyalty.. The research from Tanisah and Maftuhah [5] in their partially test results show that service quality, trust and perceived value have a positive and significant effect on customer loyalty. From the results of these studies, the following hypotheses were developed:
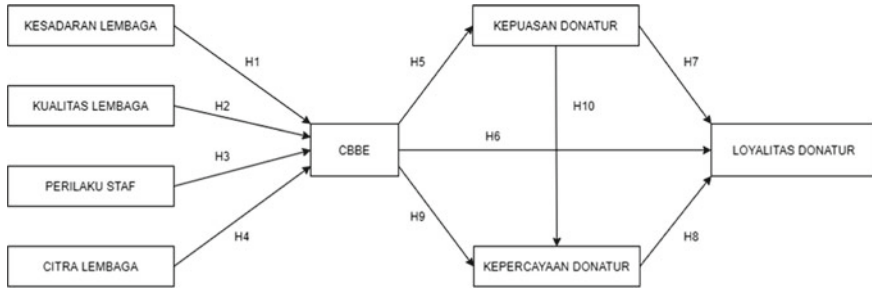
Fig. 1 Research model

- H6: Customer Based Brand Equity Affects Donor Loyalty
- H7: Donor Satisfaction affects Donor Loyalty
- H8: Donor Trust has an effect on Donor Loyalty.

Customer Based Brand Equity and Donor Satisfaction on Donor Trust

Yap et al. [4] showed that satisfaction has a positive effect on trust, and trust leads to bank loyalty. Proper complaint handling by banks also increases satisfaction, trust and loyalty. Surucu et al. [9] show that CBBE is more helpful in creating customer loyalty through customer satisfaction and trust. CBBE, customer satisfaction, and trust had a positive impact on customer loyalty. Trust turned out to be the most important variable proposed to create customer loyalty. From the results of these studies, the following hypotheses were developed:

H9: Customer Based Brand Equity affects Donor Trust.
H10: Donor Satisfaction has an effect on Donor Trust (Fig. 1).

3   Research Methodology

This study uses a quantitative approach, which is used to find relationships between variables in the type to be tested through certain statistical methods. The tools used to process the data in this study are *structural equation modeling* (SEM-AMOS 2.0) [10]. The object of this research is Lazismu Central Java donors, with a population of Lazismu Central Java donors who are not Muhammadiyah members and the sample is part of the population with a minimum number of 204 respondents [11]. Determining the sample in this study use non-probability sampling and purposive sampling method. Data collection uses a questionnaire via Google Form and is distributed online. Data analysis used a seven-level Likert Scale [12].

4 Results and Discussion

4.1 Results

The survey was conducted online using Google Form, with 246 respondents. The descriptive analysis of the characteristics of the respondents shows that 51.6% are male respondents and 48.4% are female respondents. The majority of respondents were aged 25–40 years (43.9%) and over 40 years were 32.5%. As many as 93.5% came from Central Java, with the majority were undergraduate graduates 145 respondents (58.94%) and as many as 196 respondents (82.8%) were still students. The majority of respondents, numbering 103 people or 41.87%, spent between Rp. 1,000,001.00 to Rp. 2,000,00.00 per month.

Data Normality Test

The normality test observes the critical ratio (CR) value of the data used. Study data can be considered normal if the multivariate data values are within ± 2.58 [10]. Data normality test results indicated a multivariate CR of 1.887. This means that it ranges from $+ 2.58$ to $- 2.58$. The data in this study can be described as normally distributed.

Mahalanobis Distance Test

Mahalanobis distance tests were performed using chi-square values at 36 index degrees of freedom at $p < 0.0.001$ is calculated using the formula X2 (36; 0.001) = 47.21 [10]. The outlier analysis results show that the maximum Mahalanobis d-squared value is 47.071, which does not exceed the c-squared value of 47.21. From these results, we can conclude that there are no outliers in the data.

Confirmatory Analysis

Validity Test and Reliability Test

The test results show that all indicators in this study already have loading factor values above 0.5, all variables exhibit constitutive confidences above 0.7, and the extracted variances have values above 0.5 [11]. From this, we can conclude that the questionnaires used in this study were declared valid and reliable.

Goodness of Fit Test

The test results show that the goodness of fit score meets all criteria [11], the value of the marginal fit is still acceptable, which explains the model fit in this study.

Influence Test

The trial results show that the largest direct effect in this study is the direct effect of CBBE on donor satisfaction, 1.134. The largest indirect effect in this study is the effect of CBBE on donor loyalty, 0.823. Furthermore, the largest overall effect is the effect of his CBBE on donor satisfaction, at 1.134 (Fig. 2).
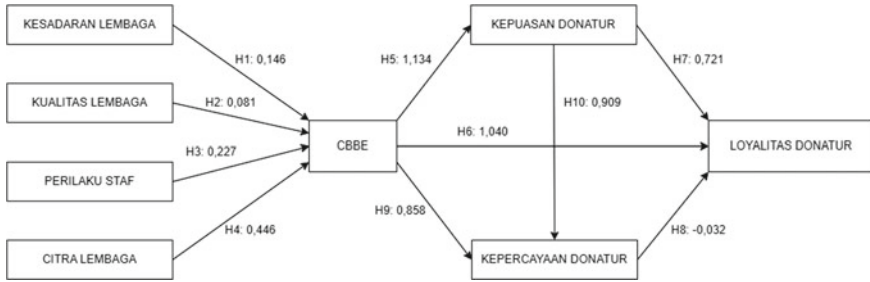
Fig. 2 Final model

Hypothesis Testing

The next test is the Structural Equation Model (SEM) as a whole model for testing the hypotheses formulated in this study [13]. The regression weight test of this study shows the results of the analysis as follows:

1. Institutional awareness has a significant positive impact on CBBE, (P-value < 0.05). H1 in this study is declared supported.
2. Perceived Quality has a positive but not significant effect on CBBE, (P-value > 0.05). H2 in this study is declared supported.
3. Staff behavior has a large positive impact on CBBE, (P-value < 0.05). H3 in this study is declared supported.
4. Institutional image has a positive and significant influence on CBBE, (P-value < 0.05). H4 in this study is declared supported.
5. CBBE has a positive and significant effect on donor satisfaction, (P-value < 0.05). H5 in this study is declared supported.
6. CBBE has a positive and significant influence on Donor Loyalty, (P-value < 0.05). H6 in this study was declared supported.
7. Donor Satisfaction has a positive and significant impact on Donor Loyalty, which is (P-value < 0.05). H7 in this study is declared supported.
8. Donor Trust has a negative and insignificant effect on Donor Loyalty, (P-value > 0.05), namely 0.336. H8 in this study was declared not supported.
9. CBBE has a negative and significant effect on Donor Trust, (P-value < 0.05). H9 in this study was declared not supported.
10. Donor satisfaction has a positive and significant influence on Donor Trust, (P-value < 0.05), namely 0.000. H10 in this study is stated to be supported.

4.2 Discussion

Institutional Awareness of Customer Based Brand Equity

The results of this study support the first hypothesis that there is a positive and significant relationship between Institutional Awareness on Customer Based Brand Equity.

Marketing various Lazismu programs in various media increases public awareness of the existence of Lazismu. The higher the awareness of the community (donors) in recognizing Lazismu Central Java, the higher the CBBE value. These results are supported by the results of previous studies conducted by Keller et al. [14], Raji et al. [6].

Perceived Quality of Customer Based Brand Equity

The results of this study support the second hypothesis, as they establish a positive but non-significant relationship between Perceived Quality and Customer Based Brand Equity. Perceived quality has an influence on the donor's decision to submit their donation to Lazismu or not, but the quality of Lazismu itself does not have a significant influence on Lazismu's branding as a ZIS institution. This can be due to the existence of the Muhammadiyah Organization as the organization that houses Lazismu which has stronger branding than Lazismu. So that the quality of the Muhammadiyah Organization has a more significant influence on Lazismu branding. These results are in contrast to the results of previous research by Liu et al. [15], Nam et al. [3] and Lin [16].

Staff Behavior Towards Customer Based Brand Equity

In this study, staff behavior has a positive and significant relationship to Customer Based Brand Equity. Staff behavior that is good, honest, open and polite when interacting and communicating with donors makes donors feel interested and confident in donating at the Lazismu Central Java institution. So staff behavior has a significant effect on the donor's decision to donate. These findings are supported by previous studies such as Liu et al. [15], Nam et al. [3] and Lin [16].

Institutional Image with Customer Based Brand Equity

The results of the study show that there is a positive and significant relationship between Institutional Image and Customer Based Brand Equity. A good institutional image increases donor confidence that the Lazismu Central Java institution is trustworthy in carrying entrusted funds from donors thereby increasing branding value. Therefore Institutional Image has a significant role in Customer Based Brand Equity. This study is supported by some previous results by Hyun and Kim [7] and Raji et al. [6].

Customer Based Brand Equity and Donor Satisfaction

According to this study, customer based brand equity has a positive and significant effect on donor satisfaction. Customer based brand equity is the ability of consumers, in this case donors, to differentiate the Central Java Lazismu institution based on the donor's experience in using the services of the Central Java Lazismu institution, the better the donor's experience in using the services of Central Java Lazismu in donating, the higher the donor satisfaction. This finding is supported by previous research by Ravald and Grönroos [8], Hanif [2] and Thakur and Singh [17].

Customer Based Brand Equity on Donor Loyalty

Customer Based Brand Equity has a positive and significant relationship to Donor Loyalty. The high awareness of donors about Lazismu Central Java through its various programs and services, the perceived quality of the institution, the behavior of staff in serving donors and also the image of Lazismu makes donors more loyal in using Lazismu Central Java as a channel for channeling donations. These results are supported by previous research by Hanif [2], Thakur and Singh [17].

Donor Satisfaction and Donor Loyalty

Referring to the results of this study, Donor Satisfaction has a significantly positive influence on Donor Loyalty. The higher the donor satisfaction, the higher the loyalty. When the donor is satisfied with the services and programs offered by Lazismu Central Java, then when he will donate again in the future, he will again choose Lazismu Central Java as a place to donate as an intermediary between the money donated and the person entitled to receive it. These findings are supported by previous studies such as Yap et al. [4], Surucu et al. [9] and Tanisah and Maftuhah [5].

Donor Trust and Donor Loyalty

The analysis in the research conducted does not support the eighth hypothesis because it produces a negative but not significant relationship between Donor Trust and Donor Loyalty. Donor trust does not have such an important role in Donor Loyalty because donors in Central Java are more dominated by people who donate infaq or alms. This is evidenced by the fact that the acquisition of ZIS Lazismu Central Java in 2022 is still dominated by Infaq, of the total proceeds from Rp. 157.3 billion, Rp. 114 billion (72.47%) came from infaq and other social-religious funds. Basically, the infaq or alms program is incidental and not something that is routinely done. Therefore, even though donors have confidence in Lazismu Central Java, if these donors have a tendency to donate incidentally, then the distance of residence, offers from other institutions, programs that are more desirable will also have a significant impact. This study contradicts the results of previous research done by Yap et al. [4], Surucu et al. [9] and Tanisah and Maftuhah [5].

Customer Based Brand Equity on Donor Trust

The results of this study show that Customer-Based Brand Equity has a significant negative impact on Donor Trust. The tendency of donors at Lazismu Central Java in donating is to abort their obligations for zakat and want to help others who really need it in the realm of infaq/alms and each donor has different preferences. In addition, if we borrow data from the Charities Aid Foundation (CAF) Word Gifing Index 2021, the Indonesian people have been named the most generous country in the world. This means that the community or donors in Lazismu Central Java are also included in this coverage, so in this case a high CBBE does not affect the trust of donors in donating or donating their wealth. These results contrast with previous studies done by Surucu et al. [9].

Donor Satisfaction and Donor Trust

This study shows that Donor Satisfaction has a significant influence on Donor Trust. Donors who are satisfied with the services and programs provided by Lazismu will have a higher level of trust than donors who are dissatisfied. The higher the donor satisfaction, the higher the level of trust. When the services and programs provided by Lazismu Central Java feel good, satisfying, and are carried out according to the agreement, the donor will be more confident about donating again in the future. This result is supported by previous studies such as Keller et al. [12], Yap et al. [4].

5   Conclusion

The study entitled "The Role of Customer Based Brand Equity on Donor Loyalty in Lazismu, Central Java, examines 10 variables related to Customer Based Brand Equity (CBBE) on Donor Loyalty (LD) through Donor Satisfaction (KD) and Donor Trust (K) in donors who donated at Lazismu Central Java. Analysis model use SEM (Structural Equation Modeling). Questionnaires were distributed to 246 respondents in Indonesia. Of the 10 hypotheses analyzed, the results obtained were Institutional awareness, Staff Behavior and Institutional Image had a positive and significant effect on CBBE, Perceived Quality had a positive but not significant effect, CBBE had a positive and significant influence on Donor Satisfaction and Donor Loyalty, Donor Satisfaction had a positive and significant influence on Donor Loyalty, Donor Trust has a negative but not significant effect on Donor Loyalty, CBBE has a negative and significant effect on Donor Trust and Donor Satisfaction has a positive and significant effect on Donor Trust.

Lazismu Central java strives to continue to maintain Institutional Awareness, Staff Behavior and Institutional Image which are elements of CBBE. Because some of the elements above are the keys that become the basis for donors to differentiate Lazismu Central Java both in terms of programs, services and other aspects that have implications for donor loyalty. Another thing that must also be considered by the management of Lazismu Central Java is to continue to maintain donor satisfaction with various innovations and variations so that donors who have donated at Lazismu Central Java continue to feel satisfied and become a loyal donor.

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Unleashing the Entrepreneurial Competencies of Academic Librarians: Insights from Strategic Thinking

Haziah Sa'ari and Anne Goulding

Abstract This study explores the relationship between entrepreneurial competencies, strategic thinking, and antecedents, including intent focus, system thinking, and intelligent opportunity. We conducted focus group interviews with ten academic librarians from Malaysian public universities and discovered nine (9) novel antecedents associated with strategic thinking competencies. These findings contribute significantly to our understanding of effective strategic thinking in diverse organizational contexts, informing future strategies and human resource development efforts. The implications are particularly relevant for library leaders and policymakers, who can use these insights to enhance the capabilities and performance of academic librarians, improving support for higher education institutions.

Keywords Strategic thinking · Entrepreneurial competencies · Academic librarian · Organisational innovation · Human resource development

1 Introduction

The concept of an entrepreneurial university, as part of the triple helix model [1], expands the traditional roles of universities to contribute to economic development through the transfer of research results. This requires a radical restructuring of academic institutions, including academic libraries. To meet these reform goals, academic librarians (ALs) must be entrepreneurial and creative in areas such as marketing resources, improving services, and decision-making. Enhancing AL

H. Sa'ari (✉)
School of Information Science, College of Computing, Informatics and Mathematics, Universiti Teknologi MARA, Rembau, Malaysia
e-mail: haziah095@uitm.edu.my

H. Sa'ari · A. Goulding
School of Information Management, Wellington School of Business and Govenment, Victoria University of Wellington, Wellington, New Zealand
e-mail: anne.goulding@vuw.ac.nz

competencies is essential to managing demand from stakeholders, meeting user needs, and adopting international standards. Empirical studies support the importance of enhancing these competencies to meet the evolving needs of academic libraries in the changing higher education landscape [2–4].

Strategic thinking plays a crucial role in the growth of multifaceted businesses, including academic libraries. However, despite its significance, the literature on entrepreneurship often overlooks the importance of strategic thinking [5]. This oversight may suggest that the discourse on strategic thinking within academic libraries is similarly limited in scope. Academic libraries are subject to restrictions in their capacity and control over resources, stemming from the mandates and authority of their parent universities. This can hinder the implementation of innovative and practical library planning. Additionally, the lack of engagement in strategic thinking among library leaders and implementation players contributes to these limitations [6, 7].

Effective strategic planning demands that library leaders and ALs at all levels possess strategic thinking competencies. By cultivating participation in the library planning process with these competencies, libraries can foster a dynamic vision for innovative and efficient services [8]. However, in Malaysia, scant research has investigated the competencies of strategic thinking among ALs [9]. Therefore, this paper aims to address this gap by answering the research question: What are the competencies of strategic thinking among ALs in Malaysia, and how is strategic thinking perceived by ALs?

Our paper provides a thorough overview of strategic thinking by guiding the reader through a number of sections that start with an introduction and literature review, then move on to an in-depth analysis of the data and discussion of key findings. Throughout the paper, we explore important implications for practise and policy, providing actionable recommendations for further research and exploration.

2   A Review of Literature

The concept of competency, introduced by McClelland [10], has been widely discussed in various fields of knowledge. It refers to the necessary skills, knowledge, abilities, and behaviours for success. Entrepreneurial competencies, specifically, are the knowledge, skills, abilities, values, attitudes, and personality that contribute to entrepreneurial action and success [11]. The ability to "think strategically" is one of the competencies required for the success and longevity of entrepreneurship, with an entrepreneur's thought pattern playing a significant role in strategic decision-making [12, 13].

2.1 Studies on Entrepreneurial Competencies and Strategic Thinking in Academic Libraries

Recent studies have examined various aspects of entrepreneurship in academic libraries, including the job responsibilities, tasks, skills, and experiences of ALs [14], the development of interdisciplinary instruction for entrepreneurial information literacy[15],establishing partnerships with entrepreneurship competitions on campus and incorporating research and information literacy training into existing entrepreneurship competitions [16], identifying gaps in on-line topic coverage and enhancing entrepreneurship guides through examining subject coverage of guides from other institutions [17] investigating the library's role in fostering entrepreneurial initiatives on campus [18] and fostering entrepreneurial readiness [19].

Among the critical competencies needed for successful entrepreneurship in academic libraries, strategic thinking plays a vital role in identifying and exploiting new opportunities, building innovative solutions, and creating sustainable value. To cultivate strategic thinking among academic library staff, institutions can implement training and development programs that emphasize innovation, creativity, risk-taking, and collaboration, while also fostering a culture of entrepreneurship that encourages experimentation, iteration, and continuous improvement. By incorporating strategic thinking into the competencies of AL, academic libraries can create a supportive environment for innovation and entrepreneurship, leading to the development of new services, products, and partnerships that benefit the institution and its stakeholders [15, 16, 19].

Entrepreneurs who possess strategic thinking capabilities are capable of identifying and capitalizing on unique obstacles faced by new businesses, transforming them into opportunities for achieving entrepreneurial success. The term "strategic thinking competencies" refers to a set of traits, including analysis, creativity, systems thinking, foresight, leadership, strategic planning, communication, and management, that enable individuals to critically and creatively consider the organization's long-term aims and priorities. Strategists, who possess these competencies, can be found in all fields and professions, and they possess a clear vision, common sense, sound judgement, and a willingness to take calculated risks to create jobs and innovate [20–24]. The process of determining, shaping, and achieving an inspired or desired future is known as strategic thinking. This process involves the creative and provocative engagement of people within an organization who may have an impact on the future direction of the business. It also involves developing novel and imaginative strategies for gaining a competitive advantage and imagining potential futures that are vastly different from the present [25].

Higher education is undergoing a significant transformation, which is characterized by increased accountability requirements, intensified competition, and globalization. The focus is on achieving academic excellence, promoting innovative research, and attaining international recognition. Consequently, this transformation has far-reaching implications for library planning, design, structure, partnerships, and

identity. While the library is no longer considered the hub of campus life, institutional leadership still recognizes the library's traditional role [6]. Therefore, libraries are accountable to multiple key stakeholders, including government entities responsible for implementing national education mandates, university management boards, local, national, and international peers, and the general public.

Libraries need to move away from a mindset of renewal and towards a shaping and visionary approach in order to navigate the current landscape effectively. This involves taking a broader view and spearheading a powerful ecosystem of customers, suppliers, and champions to define new markets, standards, technology platforms, and business practices [26]. According to Rowe [27], recognizing the current operating environment, determining the library's desired identity, and setting appropriate performance goals and policies to achieve them in an agile manner is also essential. This approach acknowledges the broader strategic landscape within which the library operates and highlights the importance of clear goals and objectives in achieving success.

Liedtka's [28] model emphasizes the importance of strategic thinking, which involves asking probing questions, challenging assumptions, and anticipating potential consequences. This type of thinking is essential for success in today's rapidly changing business environment, as it enables individuals and organizations to adapt to new challenges and opportunities. The study's theoretical framework comprises five essential components for successful decision-making: perspective/system thinking, intent-focused, intelligent opportunism, thinking in time, and hypothesis-driven. This paper focuses on three of these antecedents (system thinking, intent-focused, and intelligent opportunism) as most relevant to academic libraries in public universities in Malaysia. Adopting this model aims to enhance librarians' understanding of effective decision-making in complex environments, providing valuable insights for practitioners seeking to strengthen their decision-making capabilities in academic library and information services.

3 Methodology

This qualitative case study employs a phenomenological approach to investigate the perspectives of senior ALs from two Peninsular Malaysian public institutions designated as "research universities." The study focuses on senior ALs with 10–15 years of experience working in libraries and related information professions, all of whom held the grade of S41 and were between 40 and 45 years old. The selection of interviewees was based on their attachment to various departments and their involvement in and experience with innovation group projects, as determined by top management. The study excluded three public higher education institutions due to their unwillingness to participate, resulting in a study population of ten senior ALs. To collect data, the study utilized a focus group interview method lasting between 40 min to an hour on average, with individual consent obtained from both the chief librarians and the informants. The interviews were conducted in a professional and

respectful manner and were recorded in MP3 format. The study highlights significant reforms related to the integration of research quality into entrepreneurship, innovative products and services, and commercialization, with a focus on the impact of these reforms on the status of research universities (Table 1).

Table 1 Demographic profile

Elements of sampling	CASE A		CASE B	
Academic library location	Public University-Centre of Peninsular Malaysia		Public University	
Working experience	Multiple department (rotate basis)		Multiple department (Rotate Basis)	
Number of librarian/gender	5		5	
Gender	Female	Male	Female	Male
Race/religion	Malay/Muslim			
	3	2	3	2
Years of experience	10–15 years			
Age range	40–50		40–50	
Overall library staff strength	170–180		170–180	
Overall key performance indicator (KPI)	91–95%		91–95%	
Qualification/number of librarian	Degree/post graduate in library science/information management	5	Degree/post graduate in library science/information management	5
Additional degree	Degree in botany	1		
	Degree in Islamic Studies	1		
	Masters in information management/library science	5	Masters in information management/library science	5
Professional membership	PPM		PPM	
Current position	Senior librarian		Senior librarian	
Geographical location	Peninsular Malaysia (Centre)		Peninsular Malaysia (South)	

4 Findings

This section is dedicated to providing evidence of the three critical antecedents for academic librarians' success: intent focus, system thinking, and intelligent opportunism. Through a deep analysis of the literature and data, we explore each of these competencies in detail, highlighting key findings and uncovering insights that can inform effective practice and policy.

4.1 Intent Focus

Some of the informants stress the significance of a tech-savvy and innovative approach in academic library work, where professionals should stay up-to-date with the latest tools and software, be open to new ideas, and embrace feedback to improve productivity, remain relevant, and provide effective services to patrons. AL-D stated, "*One of our most innovative tools is called e-click, which we use in our acquisition department. It's a game-changing system that monitors every single step of the book subscription process, from start to finish. When a staff member completes a task, they simply click on the system, allowing us to keep track of where materials are located and ensure that everything is running smoothly*".

Some informants noted the value of data-driven decision-making in academic library work. They shared that they had been collecting data from users using e-forms for the past year and then used data mining techniques to identify areas for improvement within their department.

AL-C shared: "*We've been using e-forms for the past year to collect data from users. Once we have the data, we implement data mining to identify the weakest aspects of our department. For example, based on user feedback about slow Wi-Fi speeds, we submitted an analysis report to top management to apply for a budget to upgrade our Wi-Fi system. It's important to have supporting evidence to get the budget approved*".

"*We've been focusing on more specialized, discipline-specific research consultation tasks at the Reference Service Counter. We also delegate a small number of librarians to expand their role as coordinators to ensure excellence and continuous improvement of the reference service. The shift in emphasis is a result of the national and local trend of users communicating with librarians through a wider variety of channels, such as instant message or chat, email, social media, and personal appointments.*" AL-B added.

4.2 System Thinking

The significance of system thinking and strategic planning in decision-making is crucial to optimize resource allocation and efforts, according to informants. They stress that the library's mission and vision statement plays a critical role in shaping its role and aligning services with the institution's needs and priorities. This underscores the importance of collaboration between the financial unit and other library departments to ensure financial goals are aligned with the library's overall mission and objectives.

As mentioned by AL-C, "*Creating a financial unit within the library can improve financial transparency, resource allocation, and decision-making. By centralizing financial management and collaborating with other departments, we can align financial goals with the library's overall mission and objectives. This can contribute to the library's long-term financial stability and growth, and ultimately improve its reputation in the community*".

AL-D shared valuable insights on how libraries can plan for the future by being realistic and strategic. As an academic librarian, AL-D knows first-hand how effective planning can make the most of a library's resources and better serve its users. By prioritizing projects based on identified strengths and weaknesses, investing in staff development, and carefully considering long-term impact, libraries can adapt to future challenges and thrive in the years to come.

As AL-E emphasized, librarians have a unique opportunity to advocate for change within their institutions. By taking an active role in promoting the value of library services and resources, they can lead to meaningful results. This requires proactive and strategic thinking, as well as effective communication and collaboration with others. She said, "*By honing your skills in influence, negotiation, communication, collaboration, and leadership, you can effectively champion initiatives that will benefit your library's users and stakeholders. Whether it's improving access to resources or developing innovative services, your efforts can make a real impact*".

4.3 Intelligent Opportunity

Some ALs noted that they implemented outreach and community engagement initiatives to better serve their patrons. As an illustration, AL-D mentioned, "*We partner with external organizations and corporations, like those in agriculture, to improve accessibility. For example, we obtain materials for interlibrary loan through these partnerships, saving researchers time and expense. We collaborate with universities to expand access to a wider range of materials*".

Academic librarians must be prepared to take corrective action and have confidence in their ability to perform strategically, according to the informants. By maintaining a strategic mindset and continuously evaluating and improving their services,

academic librarians can position themselves as valuable partners in the educational process.

"*Our open access repository offers cutting-edge journals in various fields, providing the latest insights to faculty, students, and researchers. We're preparing to migrate to open-source integrated library systems, staying at the forefront of tech and promoting innovation in academic research*", shared by AL-A.

AL-D mentioned, "*Librarians are superheroes of the Open Access movement! They helped launch a sustainability-focused Open Access journal by providing critical support for peer review, meta data creation, and public accessibility through the institutional repository. This project was a testament to the expertise and value that librarians bring to the academic community*".

The analysis of the research findings has yielded compelling insights into the antecedents of strategic thinking. Figure 1 provides a comprehensive visualization of the major antecedents previously identified, alongside newly discovered factors that enhance our understanding of this critical concept.

This visual representation illustrates the three main antecedents of strategic thinking competencies—intent focus, system thinking, and intelligent opportunism—as they relate to the specific categories and competencies relevant to academic librarians. Each of the antecedents is depicted as a branch of the diagram, with the corresponding competencies listed underneath. The diagram also highlights the interconnections between some of the competencies, such as the relationship between Tech-Savvy & Innovative Approach to Work Processes and Data-Driven Decision-Making within the Intent Focus category. This diagram serves as a useful guide for academic librarians looking to develop and strengthen their strategic

Fig. 1 The building blocks of strategic thinking: A diagram of the three major antecedents and associated competencies among academic librarians (developed by authors)

thinking skills in order to effectively navigate the complex landscape of academic libraries.

5 Discussions

5.1 Similarities and Commonalities with Strategic Thinking Perspectives

ALs play a crucial role in facilitating the research and academic endeavours of students, faculty, and academic researchers within the context of research universities. To effectively serve these constituents, ALs must possess certain strategic thinking skills that enable them to adapt to the dynamic nature of academic research and work. In both instances examined, the ALs acknowledged the significance of incremental innovation in their strategic thought processes. This incremental innovation enables them to remain abreast of the most recent trends and technologies that can benefit their constituents.

In both institutions, the ALs possessed strategic thinking characteristics that were influenced by a variety of factors, including their parent organisations, educational backgrounds, professional traditions, peer networks, and other influential factors. The characteristics include a collaborative approach, adaptability, creativity, and a focus on the user. These characteristics enable ALs to serve their stakeholders effectively, particularly in the context of research and academic work.

However, both entrepreneurial competencies and strategic thinking competencies present a difficult problem with no obvious answer. Entrepreneurial competencies are multifaceted, difficult to investigate and measure, and frequently viewed as intentional behaviour directed at a particular event. Likewise, strategic thinking competencies are complex and challenging to investigate and evaluate. Our findings imply that ALs exhibit deliberate behaviour revolving around a specific occurrence shared by both cases: accomplishing the mission and maintaining the research university's status in international ranking exercises while upholding its objectives. In conclusion, our findings show that incremental innovation plays a crucial role in the strategic thinking processes of ALs in research universities. ALs are able to effectively meet the requirements of their stakeholders, particularly in the context of research and academic work, due to their strategic thinking abilities. The complexity of entrepreneurial and strategic thinking competencies, however, highlights the need for additional research in this area. We can enhance the quality of research and academic work in research universities by comprehending the strategic thinking processes of artificial intelligence (AI).

5.2 Knowledge and Skills

After analysing the data from the two cases, it was clear that librarians lacked the required professional training to improve their strategic thinking skills. In addition, they were not sufficiently prepared to develop their creative abilities and potential, as well as their entrepreneurial skills and innovative mindset. While the data highlighted the relationship between the perceptions and beliefs of the informants and the aforementioned concepts, it did not provide a comprehensive understanding of the theories and knowledge associated with librarians' continuing professional development (CPD) in entrepreneurship and strategic thinking.

The lack of strategic thinking knowledge and skills among ALs can hinder their ability to provide effective services and contribute to the objectives of their respective institutions. Despite having access to a variety of interesting CPD courses throughout the year, there were none that directly or indirectly aimed to improve the entrepreneurial skills and strategic thinking of librarians. This lack of professional knowledge on entrepreneurship and innovative behaviours made it more difficult for the ALs to focus their responsibilities. As a result, they became highly reliant on their previous academic credentials, work experiences, and beliefs, as well as their parent organisations' and superiors' directives.

5.3 Management Issues and Leadership Development

Library professionals need to go beyond their job descriptions and generate innovative ideas to drive progress and success in today's fast-paced environment. However, librarians often lack the support and resources needed to engage in strategic thinking. The lack of resources, time, and encouragement can result in confusion and de-motivation, causing librarians to prioritize other tasks over strategic thinking.

ALs find it challenging to allocate time for strategic planning, given the daily pressures of managing collections, assisting patrons, and providing administrative support. The lack of encouragement and resources to engage in strategic thinking activities like research, conference attendance, or professional associations leads to a lack of creativity and innovation in library services. It also hinders collaboration with colleagues beyond their immediate areas of responsibility.

Institutions must prioritize funding for library resources and recognize the critical role of library leaders in shaping the institution's future. To facilitate effective collaboration between the library and other stakeholders, leadership abilities are required. However, many library personnel lack the necessary training and mentorship to develop these skills.

Parent organizations should prioritize leadership development for library professionals by offering mentorship and leadership training programs, as well as intensive preparation for undergraduates with leadership skills. Recognizing and rewarding

library leaders who demonstrate exceptional strategic thinking abilities and innovation in their work is also crucial. Prioritizing leadership development and recognizing the importance of strategic thinking helps organizations adapt to an ever-changing environment and maintain their relevance in the future.

5.4 Technology Limitations

As technology continues to advance, libraries have become more dependent on it to provide services to patrons. However, this dependence can lead to negative consequences, such as service interruptions or downtime and user dissatisfaction when technology fails. Therefore, it's crucial for ALs to enhance their strategic communication skills and multilingual abilities to effectively engage with a diverse range of users, especially in difficult circumstances. Additionally, the ability to diagnose information needs in reference services is essential to maintain user interest and confidence in AL's expertise. Although AI technologies can assist in ensuring service continuity during technology failures, it's vital to recognize that they can't replace the indispensable expertise of librarians like AL in delivering exceptional services to library patrons. However, the adoption of technology in libraries can be costly and challenging, given their limited budgets and the rapid obsolescence of new technologies. To remain competitive, libraries must strategically invest in technology to avoid investing in obsolete technology [29]. Moreover, as libraries expand their online services, they become increasingly vulnerable to cyberattacks, making it essential for ALs to enhance their ICT skills to implement robust cybersecurity measures and protect user information from unauthorized access. Failure to do so can lead to long-term damage to the library's reputation and user trust.

6 Implications

ALs in Malaysian public universities are at the heart of this study, which aims to explore their capacity for innovative thinking and business acumen. By bridging the gap between academic libraries' professional operations and the theoretical foundations of entrepreneurship and strategic thinking, this research seeks to uncover the key drivers of entrepreneurial and strategic abilities that contribute to innovative endeavours. The need for research based on the daily reality of libraries and their environment is addressed, enabling the identification of incentives driving innovative behaviour and assisting in the development of implementation and change management strategies. This study has implications that extend beyond academic and non-academic enterprises, emphasising the importance of transformational leadership and training to enhance knowledge and skills supporting entrepreneurship and strategic thinking that leads to innovation. Collaboration between the Malaysian Librarians Association and educational institutions can foster an entrepreneurial

spirit and creative problem-solving among the profession's librarians by addressing their needs.

7 Conclusion

ALs are essential components of the academic community, providing resources and services that support research, teaching, and learning. To meet the evolving needs of this community, ALs must possess a wide range of competencies, including strategic thinking. This involves developing a long-term vision for the library, setting goals and objectives, and identifying strategies for achieving them. Policy-makers and institutions play an important role in supporting the development of strategic thinking competencies among ALs. They should prioritize the professional development of ALs, providing opportunities for training and continuing education. It is also important to recognize that public and private academic libraries may have different needs and priorities, and strategies should be tailored accordingly. There is a need for further research to understand the factors that influence entrepreneurial and strategic thinking in private academic libraries. This research can help identify effective strategies for promoting these competencies among ALs and ensuring that they are able to adapt to the changing requirements of the academic community. In summary, investing in the professional development of ALs is key to enhancing the capacity of academic libraries to adapt and thrive in an ever-evolving landscape, ensuring their continued relevance and impact on the academic community.

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The Impact of Brand Image on and Purchase Intentions: A Study of Beauty and Personal Care Products

Mohammed Salem

Abstract This study aims to investigate the relationship between brand image and purchase intentions in the context of beauty and personal care products. A survey-based approach was used to collect data from a simple random sample of the Gazan consumers in Palestine who had purchased beauty and personal care products in the past twelve months. The results indicate that brand image has a significant impact on purchase intentions. The findings of this study provide insights into the importance of building a strong brand image in the beauty and personal care industry in order to increase consumer purchase intentions. This study is unique since it particularly examines the link between brand image and purchase intentions in the context of the beauty and personal care sector. Few researches have examined the particular characteristics of the beauty and personal care sector, which is renowned for its highly competitive and continuously evolving environment. Previous studies have examined the effect of brand image on customer behavior across a variety of industries.

Keywords Brand image · Purchase intentions · Gaza · Palestine

1 Introduction

A constantly expanding market, the beauty and personal care sector offers a wide variety of goods and services to meet the requirements and tastes of its many customers [1, 2]. Consumers have more options as the market grows, which makes it difficult for companies to stand out in the market. In this situation, establishing a strong brand image may be essential to drawing in and keeping customers [3, 4].

The term "brand image" describes how people see a brand in its whole, including its personality, caliber, and recognition. A brand that has a positive reputation may stand out from its rivals, build consumer confidence, and foster brand loyalty.

M. Salem (✉)
University College of Applied Sciences, Gaza, Palestine
e-mail: mzsalem@ucas.edu.ps

Thus, brand managers and marketers in the beauty and personal care sector must comprehend how brand image affects customer behavior [5, 6].

Past studies [7, 8] have demonstrated the numerous ways in which brand image may affect customer behavior. For instance, brand image may impact customer attitudes about a brand, their intentions to make purchases, and their brand loyalty. The majority of these research, however, have concentrated on distinct aspects of brand image, such as brand personality or brand quality, rather than analyzing the combined influence of many aspects on customer behavior.

Furthermore, while several studies [9, 10] have looked at how brand image affects customer behavior across various industries, just a few have particularly targeted the beauty and personal care sector. The beauty and personal care market is distinct in that it is marked by fierce rivalry, shifting customer tastes, and a broad selection of products that meet various requirements and preferences [2]. Consequently, the current study's objective is to precisely examine, within the context of the beauty and personal care sector, the connection between brand image and purchase intentions.

The findings of this study can help marketers and brand managers create successful branding strategies for the personal care and beauty sector. Brands may create marketing strategies that resonate with their target audience, set themselves apart from their rivals, and boost market share and revenues by understanding the influence of brand image on purchase intentions. Overall, this study intends to add to the body of knowledge on brand image and consumer behavior while offering useful recommendations for the beauty and personal care sector.

The remainder of the work is structured as follows. The theoretical foundation and hypotheses are explained in Part 2. In Part 3, the method is clarified. The study's results are outlined in Part 4, and a discussion is included in Part 5.

2 Theoretical Background

2.1 Brand Image

In the beauty and personal care sector, brand image is a crucial variable that affects customer behavior. It comprises a number of elements, including as brand awareness, brand quality, and brand personality, which can influence how consumers feel about a brand. Brand personality is the collection of human traits that are connected to a brand, such honesty, enthusiasm, or expertise. These qualities may affect how customers view a company, making it seem more approachable, reliable, and likeable. Customers that are seeking for new and exciting items, for instance, may be more drawn to a brand that is linked with excitement and adventure [11, 12].

Brand image refers to how customers perceive a brand overall, taking into account factors like brand personality, brand awareness, and brand quality. In the beauty and personal care industries, where customers have a growing number of options, it is a crucial component that might affect consumer behavior [11].

A strong brand image may help a company stand out from its rivals, build customer trust, and foster brand loyalty. For instance, a brand that is linked to a certain personality, like being dependable and trustworthy, might draw customers who appreciate those qualities. In a similar vein, consumers may be more likely to buy from a brand they are familiar with and find more approachable. Last but not least, a brand with a good brand quality may provide customers a favorable impression of the brand, boosting their confidence and trust in it [4].

The target audience, competitors, and market trends must all be taken into account when developing a powerful brand image. Depending on their target market and business goals, brands must carefully select the aspects of their brand image that they wish to emphasize. For instance, a company may decide to make sustainability a focal point of its brand image in order to appeal to consumers who are concerned about the environment. In a similar vein, a brand that wishes to appeal to younger customers may emphasize innovation and technology as important aspects of its brand image [4, 11].

Overall, in the beauty and personal care sector, brand image is a crucial component that might affect customer behavior. Brands may grow their market share and income, build a devoted client base, and set themselves apart from their rivals by creating a compelling brand image that appeals to their target demographic [3, 5].

2.2 Purchase Intentions

Purchase intentions are a consumer's future plans or propensity to purchase a good or service. It is a significant element that can influence consumer behavior, especially in the beauty and personal care sectors where customers frequently base their purchasing choices on a brand's reputation and image. As it aids marketers and brand managers in understanding how customers perceive a brand and how they make purchasing decisions, the influence of brand image on purchase intentions is an important field of research [13, 14].

The beauty and personal care market is influenced by a variety of variables. Reputation of a brand is one such aspect. Customers are more inclined to make a purchase from a company that has a solid reputation and a history of producing high-quality products. Similar to this, brand loyalty can affect consumers' intentions to make purchases. Loyal customers are more inclined to keep making purchases from a company they like and trust. Purchase intentions can also be influenced by a product's quality, packaging, and pricing. Customers are more inclined to buy things that are of excellent quality, attractively packaged, and within their price range [15].

In the beauty and personal care sector, where customers frequently base their purchase decisions on a company's image and reputation, the influence of brand image on purchase intentions is particularly relevant. Positive brand associations with qualities like quality, inventiveness, and dependability can have a favorable impact on consumers' purchase intentions [16–18]. Similar to how a brand viewed as being ethical, socially conscious, or ecologically friendly may draw customers

who value those qualities. On the other side, customers may be less likely to buy products from a company with a bad reputation or unfavorable image, which might have a negative impact on their purchase intentions. It is crucial for marketers and brand managers to comprehend the effect of brand image on purchase intentions in order to create marketing campaigns that successfully reach their target demographic and increase sales [3, 4]. On the basis of the aforementioned, we postulate:

H1. The brand image influences the Palestinian consumers' purchase intentions.

3 Methodology

3.1 Participants

Table 1 reveals that 316 respondents completed the survey and sent it back. The results for the demographic factors were shown in a Table 1.

Table 1 Respondents' personal information ($n = 316$)

Variables	Groupings	Number of respondents	Percentage (%)
Age	30 years or less	146	46.2
	31–40 years	108	34.2
	41–50 years	42	13.3
	51–60 years	16	5.1
	61 years and above	4	1.2
Gender	Male	147	46.5
	Female	169	53.5
Education level	High school or lower	87	27.5
	Diploma	76	24.1
	Bachelor	118	37.3
	Master	32	10.1
	PhD	3	1.0
Marital status	Married	157	49.6
	Single	134	42.4
	Widowed	22	7.0
	Divorced	3	1.0

3.2 Procedures

When the theoretical background was established, the main concerns with the impact of brand image on and purchase intentions: a study of beauty and personal care products were addressed. As a result, the in-person questionnaire was the main tool used to collect data for this study. Given the limitations of the language of the country, the original survey was accurately translated into Arabic. Following that, it underwent a pilot test and was accuracy-checked by two native Arabic speakers. The analysis of statistics was carried out using IBM SPSS version 23.

ers. IBM SPSS software version 23 was used for statistical analysis.

3.3 Measures

A 5-point likert was utilized in the questionnaire. The survey was divided into three parts. Nine question items based on Dam and Dam [3], Sanny et al. [4], and Fianto et al. [10] are used to examine the brand image in the first part. The second part uses eight question items based on Lee et al. [14], Fianto et al. [10], and Shimul et al. [16] to investigate the customers' purchasing intentions. The variables related to demography are covered in the third part.

4 Results

4.1 Factor Analysis

The KMO and Bartlett's tests were applied to assess whether the factor analysis was appropriate for the investigation. With a score of at least 0.7, the dependability test should be achieved. Results from the Bartlett's Sphericity test should typically have a value less than 0.05. The KMO result implies that this analysis is sufficient for the research because it surpasses the allowed cutoff level of 0.000.

The factor score coefficient matrix as a result of principal component analysis is shown in Table 2 and rotated by one main factor through using varimax normalization approach [19–24]. There are 21 different elements that make up the factor. Factor loadings on a range of scales should satisfy a minimum loading criteria of 0.30, according to earlier studies [25–29]. The fact that all of the loadings in Table 2 are higher than 0.30 demonstrates that the scales' construct validity has been preserved.

Table 2 The constructions' reliability and factor loading

Construct	Item	MV	SD	FL	Cronbach's α
Brand image	1	3.52	0.94	0.789	0.784
	2	3.75	0.92	0.767	
	3	3.97	0.87	0.761	
	4	3.62	0.86	0.772	
	5	3.84	0.87	0.781	
	6	3.46	0.79	0.743	
	7	3.42	0.82	0.754	
	8	3.53	0.86	0.763	
	9	3.61	0.81	0.764	
Consumers' purchase intentions	1	3.56	0.89	0.768	0.762
	2	3.82	0.87	0.792	
	3	3.90	0.89	0.782	
	4	3.74	0.91	0.764	
	5	3.59	0.95	0.753	
	6	3.76	0.97	0.764	
	7	3.61	0.93	0.796	
	8	3.59	0.86	0.748	

4.2 Hypotheses Testing

To investigate the connection between the dependent factor (consumers' purchase intentions) and the independent factor (brand image), simple regression analysis was utilized. According to Table 3, independent variable is responsible for 48.3% of the variation in customers' purchase intentions (adjusted R2 value of 0.483). The study also discovered a strong correlation between brand image and customers' purchase intentions ($t = 3.627, p = 0.000$). The conclusion that H1 was well supported followed from this.

Table 3 Simple regression analysis outputs

Model		Unstandardized coefficients		Standardized coefficients	T	Sig
		B	Std. Error	Beta		
1	(Constant)	0.081	0.207		0.294	0.526
	Brand image	0.315	0.057	0.261	3.627	0.000

Notes Dependent variable: Consumers' purchase intentions; adjusted R2 = 0.483, F = 124.109, and sig. = 0.000

5 Discussion

The study on the impact of brand image on purchase intentions in the beauty and personal care industry provides insights into how brand image affects consumer behavior. The findings of the study indicate that brand image has a significant impact on purchase intentions, with consumers more likely to purchase products from brands with a positive image and reputation. This is in line with previous researches [4, 10, 11].

For instance, Sanny et al. [4] findings demonstrated that social media marketing significantly affected brand trust and image. Moreover, purchase intention was significantly influenced by brand image and trust. The purchase intention was explained by brand image and brand trust in 56.1% of cases, social media marketing in 53.6% of cases, and social media marketing in 65.4% of cases. Moreover, Fianto et al. findings [10] showed that brand image plays a key influence in influencing consumer behavior. Nurhandayani et al. [11] contends that this will assist the brand in creating a perception in the minds of consumers, which would then influence their choice of a purchase.

The study has a number of implications for brand managers and marketers in the beauty and personal care sector. First of all, because the study was carried out in a particular area, it's possible that the findings cannot be applied to other cultures or areas. Second, other characteristics that can have an impact on customers' purchasing intentions, such brand awareness and perceived value, were not taken into account by the study. Future studies should take these limitations into account and investigate the effects of different variables on brand image and purchase intent in various contexts.

In conclusion, this study emphasizes the significance of brand image in the cosmetics and personal care sector. As this element has the greatest influence on consumers' perceptions of a brand, businesses should give priority to enhancing product quality and packaging in order to improve their brand image. Also, businesses should work to develop a brand image that reflects the values and beliefs of their target market since this encourages brand loyalty and emotional connections. By doing this, businesses may boost sales, acquire a competitive edge, and develop enduring connections with their customers.

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The Impact of Brand Authenticity on Consumers' Emotional Attachment and Loyalty: A Study of Fast Fashion Brands

Mohammed Salem

Abstract This study examines the impact of brand authenticity on consumers' emotional attachment and loyalty towards fast fashion brands. A survey was created utilizing the explanatory technique to gather information from a random sample of Gazans living in Palestine. 302 citizens' data were collected, and simple regression analysis was used to test hypotheses. The results showed that brand authenticity positively impacts consumers' emotional attachment and loyalty towards fast fashion brands. Therefore, in order to strengthen their emotional connection to consumers and foster greater brand loyalty, fast fashion companies should concentrate on creating and sustaining a genuine brand image. The study adds value by exploring the effects of authenticity on customers' emotional attachment and brand loyalty toward fast fashion companies, as well as the implications for sustainability in the fast fashion sector.

1 Introduction

Brand authenticity is a crucial facet of brand management, particularly in the fast fashion sector, where firms primarily rely on their reputation and image to draw in and keep customers [1]. A brand's perceived genuineness, honesty, and dependability are measured by its level of authenticity. Customers are increasingly looking for genuine brands that share their values and philosophical tenets and with which they can empathize [2, 3].

M. Salem (✉)
University College of Applied Sciences, Gaza, Palestine
e-mail: mzsalem@ucas.edu.ps

Fast fashion brands have become extremely well-liked as a result of their capacity to provide clients with fashionable items at reasonable prices [4]. Fast fashion businesses, nevertheless, are also linked to unfavorable social and environmental effects, which has caused customers to question their legitimacy. In order to draw and keep customers in a market that is becoming more competitive, fast fashion firms must work to establish and maintain a reputation for authenticity [5, 6]. By analyzing the effect of brand authenticity on consumers' emotional connection and loyalty towards fast fashion firms, this study seeks to fill a gap in the literature.

This study adds to the body of knowledge on brand management by exploring how customers' emotional attachment and loyalty to fast fashion brands are affected by brand authenticity. The relevance of authenticity in establishing a company's image and reputation has been the subject of earlier research, but this study goes a step further by studying how authenticity might affect customers' emotional attachments to fast fashion companies and their propensity to stick with the brand. The research's conclusions will provide important insight into the importance of brand authenticity in fast fashion brand management.

The remainder of the work is structured as follows. The theoretical foundation and hypotheses are explained in Part 2. In Part 3, the method is clarified. The study's results are outlined in Part 4, and a discussion is included in Part 5.

2 Theoretical Background

2.1 Brand Authenticity

The degree to which a brand is viewed as sincere, open, and faithful to its principles and identity is referred to as its brand authenticity. Since it enables individuals to connect with a brand more deeply and fosters stronger emotional bonds and brand loyalty, consumers value authenticity in brands [1, 7]. In areas where consumers may be dubious or cynical, like quick fashion, authentic brands are seen as being more trustworthy. Authenticity in the context of fast fashion firms may take several forms, including supply chain transparency, a dedication to sustainability, and a distinct and consistent brand identity [3].

However, in the fast fashion sector, where trends are continuously shifting and speed-to-market is a key objective, ensuring brand authenticity can be difficult [3, 6]. Maintaining a consistent and authentic brand image while meeting the need for new and interesting items is a delicate balancing for fast fashion companies. Concerns have also been raised regarding the fast fashion industry's lack of sustainability and transparency, which may affect how customers view a brand's authenticity [6]. As a result, it's critical for fast fashion companies to recognize the value of authenticity and take action to build and maintain a genuine brand identity while also attending to issues with sustainability and transparency [3, 6].

2.2 Consumers' Emotional Attachment

How emotionally committed and attached consumers feel to a brand is referred to as emotional attachment. A brand's values, identity, and overarching perception can all contribute to the development of emotional connection [8]. Customers are more inclined to stick with and endorse a company when they have an emotional connection to it. As fast fashion firms rely on repeat business and word-of-mouth advertising to keep their consumer base, emotional attachment can be particularly significant in this setting [9].

Consumers' emotional attachment to a brand has been demonstrated to be significantly influenced by brand authenticity. Customers are more likely to have a deeper connection to a brand and a feeling of shared values and identity when they believe it to be real. Moreover, consumers are more likely to feel emotionally attached to and devoted to authentic companies [6] because they are seen as being more reliable. Based on the foregoing, we hypothesize the following:

H1. The brand authenticity influences the Palestinian consumers' emotional attachment.

2.3 Consumers' Loyalty

Consumers' loyalty is defined as their long-term, repeatable purchasing behavior toward a brand [10]. As it demonstrates the quality of the connection between a brand and its clients, loyalty is a crucial business indicator [1]. Consumers' loyalty to a brand has been proven to be positively impacted by brand authenticity since it fosters a relationship of trust and dependability between the brand and its consumers. Even in the face of market competition, customers are more likely to stick with a brand and make repeat purchases when they believe it to be real [11].

Loyalty may be particularly significant in the context of fast fashion companies because these companies frequently rely on repeat business and client retention to achieve sustainable development. Fast fashion companies may boost their consumers' lifetime value and pleasure by putting their attention into creating a genuine brand image. Moreover, establishing a genuine brand may help fast fashion companies stand out in a cutthroat industry, luring new clients and keeping hold of old ones [12, 13]. Based on the aforementioned, we hypothesize that:

H2. The brand authenticity influences the Palestinian consumers' loyalty.

Table 1 Respondents' personal information ($n = 302$)

Variables	Groupings	Number of respondents	Percentage (%)
Age	30 years or less	156	51.7
	31–40 years	86	28.5
	41–50 years	38	12.6
	51–60 years	17	5.5
	61 years and above	5	1.7
Gender	Male	147	48.7
	Female	155	51.3
Education level	High school or lower	78	25.8
	Diploma	53	17.5
	Bachelor	128	42.4
	Master	35	11.6
	PhD	8	2.7
Marital status	Married	145	48.0
	Single	126	41.7
	Widowed	27	8.9
	Divorced	4	1.4

3 Methodology

3.1 Participants

Table 1 shows that 336 respondents filled out and returned the questionnaire. The demographic variables' findings were displayed in Table 1.

3.2 Procedures

The primary issues with the impact of brand authenticity on consumers' emotional attachment and loyalty towards fast fashion brands were addressed after the context had been established. Hence, the in-person survey served as the primary means of information gathering for this study. The original questionnaire was properly translated into Arabic in accordance with local language constraints. After that, it was checked for accuracy and went through a pilot test by an Arabic native speaker. IBM SPSS version 23 was used to do the statistical analysis.

3.3 Measures

The survey used a Likert scale with a maximum of five points. There were four sections to the questionnaire. In the first section, six question items that are based on Uysal and Okumuş [1], Park [3], and Choi et al. [6] are utilized to analyze the brand authenticity. In the second section, the consumers' emotional attachment is examined using five question items based on Theng et al. [8], Ahmad et al. [9], and Choi et al. [6]. In the third section, five questions were used to evaluate consumers' loyalty based on Papadopoulou et al. [10], Noh and Johnson [11], and Bui [13]. The fourth section talks about the demographics variables.

4 Results

4.1 Factor Analysis

To determine if the factor analysis was applicable for the study, the KMO and Bartlett's tests were used. The reliability test must be passed with a result of at least 0.7. The Bartlett's Sphericity test should normally yield results with a value lower than 0.05. Since it exceeds the permitted cutoff level of 0.000, the KMO result suggests that this analysis is adequate for the study.

As a consequence of principal component analysis, the factor score coefficient matrix is displayed in Table 2 and rotated by one major factor using the varimax normalization method [14–18]. The factor is composed of a total of 25 items. Previous studies [19–25] state that a minimal loading criterion of 0.30 should be met by factor loadings on a variety of scales. The construct validity of the scales has been maintained, as shown by the fact that all of the loadings in Table 2 are greater than 0.30.

4.2 Hypotheses Testing

Simple regression analysis was used to examine the link between the independent variable (brand authenticity) and the dependent variables (consumers' emotional attachment and loyalty). Independent variable account for 54.7% of the variance in consumers' emotional attachment, as seen in Table 3 (adjusted $R2 = 0.537$). It also found that there is a positive link between brand authenticity and consumers' emotional attachment ($t = 3.756$, $p = 0.000$). In addition, independent variable account for 50.1% of the variance in consumers' loyalty, as seen in Table 4 (adjusted $R2 = 0.501$). It also revealed that there is a positive relationship between brand authenticity and consumers' loyalty ($t = 3.541$, $p = 0.000$). As a result, it was decided that H1 and H2 were well supported.

Table 2 The constructions' reliability and factor loading

Construct	Item	MV	SD	FL	Cronbach's α
Brand authenticity	1	3.67	0.82	0.772	0.758
	2	3.53	0.86	0.753	
	3	3.72	0.84	0.747	
	4	3.48	0.81	0.758	
	5	3.61	0.92	0.764	
	6	3.69	0.83	0.739	
Consumers' emotional attachment	1	3.49	0.81	0.745	0.746
	2	3.71	0.92	0.738	
	3	3.68	0.94	0.767	
	4	3.84	0.82	0.774	
	5	3.57	0.93	0.746	
Consumers' loyalty	1	3.83	0.82	0.762	0.752
	2	3.76	0.87	0.734	
	3	3.92	0.83	0.748	
	4	3.47	0.84	0.765	
	5	3.52	0.88	0.748	

Table 3 Simple regression analysis outputs No. 1

Model		Unstandardized coefficients		Standardized coefficients	T	Sig
		B	Std. Error	Beta		
1	(Constant)	0.079	0.192		0.367	0.428
	Brand authenticity	0.347	0.068	0.284	3.756	0.000

Notes Dependent variable: Consumers' emotional attachment; adjusted $R^2 = 0.537$, F = 132.216, and sig. = 0.000

Table 4 Simple regression analysis outputs No. 2

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig
		B	Std. Error	Beta		
1	(Constant)	0.097	0.201		0.369	0.397
	Brand authenticity	0.349	0.084	0.293	3.541	0.000

Notes Dependent variable: Consumers' loyalty; adjusted $R^2 = 0.501$, F = 134.526, and sig. = 0.000

5 Discussion

The findings of this study demonstrate that consumers' emotional attachment and loyalty to fast fashion firms are strongly influenced by brand authenticity. According to the quantitative research, brand authenticity significantly increases consumers' emotional attachment to and loyalty to fast fashion companies. Therefore, fast fashion companies should prioritize creating and upholding a genuine brand identity in order to strengthen their emotional relationships with consumers and foster brand loyalty. The finding is in line with previous studies [1, 6, 8].

For instance, Choi et al. [6] indicated that there were seven components that made up an authentic fashion brand: authority, fashionability, consistency, innovativeness, sustainability, origin, and heritage. Authority, consistency, and innovativeness were strong indicators of brand loyalty, whereas fashionability, fashionability, and sustainability were significantly predictive of brand attachment. Between Nike and Adidas, there were disparities in how brand authenticity affected brand attachment and brand commitment. Moreover, Uysal and Okumuş's results [1] showed that customer satisfaction was significantly positively impacted by the subdimensions of consumer-based brand authenticity known as quality commitment and heritage-sincerity. Also, while comparing the domestic brands to the international ones, both of them had distinct effects on customer satisfaction. Additionally, brand loyalty was significantly negatively impacted by the attractiveness of alternatives and significantly positively impacted by customer satisfaction.

The study's limitations should also be acknowledged. First, the study focused on a specific demographic of fast fashion consumers, and the findings may not be generalizable to other consumer segments. Second, the study relied on self-reported measures of emotional attachment and loyalty, which may be subject to bias. Future research could overcome these limitations by examining the impact of brand authenticity on consumers' emotional attachment across different consumer segments and using objective measures of loyalty.

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The Role of Visual and Verbal Packaging Design on Consumers' Purchase Decisions

Samir Baidoun and Mohammed Salem

Abstract This paper investigates the influence of packaging design on the Palestinian consumers' purchase decisions. Based on the review of the relevant literature, the study identifies the key elements of effective packaging design, including visual and verbal elements. The study adopted explanatory approach using a survey to collect data from a small, random sample of Gazan people in Palestine. Dataset from 297 participants was gathered, and multiple regression analysis was utilized to examine it. The results showed that the packaging's verbal and visual design had an effect on Palestinian customers' purchasing choices. The novelty of this article resides in its thorough analysis of pertinent literature on the effects of packaging design—both verbal and visual—on customer behavior, as well as its insights on successful packaging design tactics. The study also addresses the difficulties and possibilities brought about by emerging technology and sustainable packaging trends, offering insightful information for marketers and designers looking to improve their packaging design strategies.

Keywords Visual and verbal packaging design · Purchase decision · Gaza Strip · Palestine

1 Introduction

A product's packaging design is very important in the consumer's choice of that product. It acts as a visual depiction of the brand, giving hints about the caliber, attributes, and advantages of the good [1]. The visual appeal of the product's packaging may leave a lasting impression on customers and affect how much they value

S. Baidoun
Birzeit University, Birzeit, Palestine
e-mail: sbaidoon@birzeit.edu

M. Salem (✉)
University College of Applied Sciences, Gaza, Palestine
e-mail: mzsalem@ucas.edu.ps

it. As a result, businesses make significant investments in packaging design to set their goods apart from those of rivals, grab the attention of the intended market, and eventually increase sales [2].

Researchers and marketers have recently begun to pay more attention to packaging design as a crucial aspect of branding and marketing. Research have demonstrated that buyers frequently base their purchases on the packaging design before they take the product's features into account (see, for instance, [3, 4]). Thus, it is essential for businesses to comprehend how customer behavior and decision-making processes are impacted by packaging design.

This paper's practical applications for businesses looking to enhance their sales and market share through good package design make it important. The results imply that packaging design may distinguish products from rivals and play a significant influence in influencing consumers' perceptions and behavior. Companies may optimize their packaging design strategies and provide a consistent brand image across many touchpoints by knowing the fundamental components of good packaging design and reacting to shifting trends and preferences. The suggestions made in the article can aid marketers and designers in developing packaging design techniques that are more successful.

The rest of the article is organized as follows. Section 2 explains the theoretical framework and hypothesis. The method is described in Sect. 3. Section 4 presents the study's results, and Sect. 5 concludes with a discussion.

2 Theoretical Background

2.1 Purchase Decision

Choosing a product and brand after determining a need and generating possibilities is known as making a buying decision. As a result, it might be viewed as a series of decisions made prior to the actual buying action. Every purchase choice incorporates a number of factors, such as the product's brand and model, the time of purchase, the price range, and the method of payment, among others. The product packaging has a big impact on this choice [5, 6]. Regardless of the situation or level of decision-making, a variety of factors, including internal, external, and marketing factors, affect client purchasing decisions. External variables include things like culture, subcultures, groups, circumstances, socioeconomic classes, and families, whereas internal variables are things like perception, attitude, knowledge, personality, way of life, involvement, and roles. Marketing variables include factors like the product, packaging design, promotion, place, and pricing [7, 8].

To determine where, what, and why customers purchase certain products, marketing specialists look into consumer purchasing behaviors. It could be difficult to ascertain the reasons why customers choose a certain product [9, 10]. Prior empirical work revealed that visuals have an impact on how effectively consumers can

assess products [11–14]. The existence of the packaging affects how easily customers can recognize brands (identification), draws attention primarily via color and shape (attention), and may also affect how effectively consumers judge the primary product (communication) (impact on attitudes).

2.2 Packaging Design

A consumer makes 60–70% of all purchases when they are in the store (physically or virtually). While marketing messages in advertising and social media may have inspired the need or demand, packaging is the final point of contact between a brand and a customer in the retail setting [10]. As a result, packaging is one of the primary means of communication between a brand and a client. The term "packaging" refers to all the designing and manufacturing procedures used to create a product's package, which serves to both sell and protect the goods [15, 16].

Many perspectives have been taken into consideration while examining the elements of packaging. According to Smith and Taylor [17], manufacturers and designers should take into account six key aspects when creating product packaging, including shape, size, color, graphics, material, and flavor. The six different components listed by Kotler [18] are size, shape, material, color, text, and brand. Many aspects must be taken into account while choosing packaging [19]. When it comes to packaging design, Schifferstein et al. [20], Faraghian et al. [21], Underwood [22] make a distinction between aesthetic elements (color, typeface, forms used, and images) and structural concerns (form, size of the containers and materials). The absence of verbal packaging components in these two basic components, which match those described by Smith and Taylor [17], should be noted. Rettie and Brewer [23], who divide the components into verbal (such as brand slogans) and visual (such as visual appeal, photographs, etc.) elements, emphasize the importance of appropriate positioning of package components.

Moreover, Silayoi and Speece [24, 25] separate packaging design into two categories: informational components (such as information provided and technology) and visual components (such as shape, size, graphics, and color). They contend that although informative aspects deal with the cognitive side of the consumer's decision-making process, visual elements connect to the emotive one. The two fundamental components of packaging design are visual and linguistic qualities, according to the body of extant literature. It was discovered via a dearth of significant reference materials and analysis of packages that visual features fell within the heading of items that may be viewed. Graphics, color, form, size, and packaging components are among them. Conversely, verbal qualities are connected to words and contain information about the package. We postulate the following based on the above:

H1. The visual packaging design influences the purchasing behavior of Palestinian consumers.

Table 1 Respondents' personal information ($n = 312$)

Variables	Groupings	Number of respondents	Percentage (%)
Age	30 years or less	169	56.9
	31–40 years	62	20.9
	41–50 years	48	16.2
	51–60 years	14	4.7
	61 years and above	4	1.3
Gender	Male	153	51.5
	Female	144	48.5
Education level	High school or lower	89	30.0
	Diploma	38	12.8
	Bachelor	127	42.8
	Master	34	11.4
	PhD	9	3.0
Marital status	Married	147	50.6
	Single	125	40.7
	Widowed	18	5.8
	Divorced	7	2.9

H2. The verbal packaging design influences the purchasing behavior of Palestinian consumers.

3 Methodology

3.1 Participants

As can be seen in Table 1, 297 participants completed and returned the questionnaire. The table showed the results of the demographic variables.

3.2 Procedures

The context was established, and the main concerns regarding the packaging design and how it impacts consumers' purchasing behavior were addressed. As a result, the in-person survey functioned as the main method of data collection for this study. To adhere to local language restrictions, the original questionnaire was accurately translated into Arabic. Following that, it was reviewed and pilot tested by two native Arabic speakers to make sure it was accurate. The statistical analysis was completed using IBM SPSS software, version 26.

3.3 Measures

The questionnaire employed a Likert scale with a maximum of five points, with one signifying strongly disagree, two disagree, three signifying neutral, four agree, and five strongly agree. The questionnaire consisted of four parts. Eight question items based on Salem [26], Srivastava et al. [1], and López-Mas et al. [2] are used in the first part to examine the visual packaging design. Another eight question items based on Al-Samarraie et al. [3], and Salem [26] are used in the first part to examine the verbal packaging design. Nine questions that were based on Elango and Thansupatpu [5], and Borishade et al. [6] were utilized in the second part to assess customer purchasing behavior. The third portion addresses the demographic aspects (age, gender, education level, and marital status).

4 Results

4.1 Factor Analysis

The KMO and Bartlett's tests were applied to see whether the factor analysis was appropriate for the research. With a score of at least 0.7, the dependability test must be achieved. Results from the Bartlett's Sphericity test should typically be less than 0.05. The KMO result indicates that this analysis is sufficient for the research because it is over the allowed cutoff level of 0.000.

The factor score coefficient matrix, which is the result of principal component analysis, is shown in Table 2 and rotated by one primary factor using the varimax normalization [27–32]. There are a total of 25 items that make up the factor. According to the studies, factor loadings on a number of scales must meet a minimum loading threshold of 0.30 [33–38]. The truth that all of the loadings in Table 2 are higher than 0.30 demonstrates that the scales' construct validity has been preserved.

4.2 Hypotheses Testing

The relationship between the dependent variable (consumers' purchase decisions) and the independent factors (visual and verbal packaging design) was investigated using multiple regression analysis. Multiple regression analysis was carried out by the researcher in order to comprehend how independent factors influenced customers' purchasing choices.

According to Table 3 (adjusted R2 = 0.523), independent factors explain for 52.3% of the variation in customers' purchase decisions. The model's correctness was validated since the F value was significant at 0.000. Table 3 shows a favorable correlation between customer purchase decisions, and visual packaging design (t =

Table 2 The constructions' reliability and factor loading

Construct	Item	MV	SD	FL	Cronbach's α
Visual packaging design	1	3.72	0.89	0.754	0.748
	2	3.47	0.84	0.743	
	3	3.64	0.94	0.761	
	4	3.38	0.91	0.737	
	5	3.51	0.86	0.762	
	6	3.62	0.93	0.758	
	7	3.34	0.87	0.749	
	8	3.56	0.81	0.719	
Verbal packaging design	1	3.52	0.86	0.734	0.752
	2	3.67	0.85	0.728	
	3	3.44	0.84	0.756	
	4	3.34	0.94	0.757	
	5	3.39	0.81	0.739	
	6	3.49	0.93	0.742	
	7	3.74	0.85	0.727	
	8	3.63	0.84	0.746	
Consumers purchase decision	1	3.41	0.92	0.732	0.764
	2	3.64	0.82	0.756	
	3	3.37	0.86	0.747	
	4	3.52	0.88	0.734	
	5	3.63	0.86	0.756	
	6	3.57	0.89	0.748	
	7	3.92	0.95	0.776	
	8	3.64	0.86	0.784	
	9	3.86	0.81	0.756	

4.246, $p = 0.000$), and verbal packaging design (t $= 3.424$, $p = 0.000$) respectively. Hence, it was determined that the data provided adequate support for H1, and H2.

5 Discussion

5.1 Discussion of Findings

The discussion of the role of packaging design in consumers' purchase decisions reveals the importance of effective packaging design in creating a positive impact on consumers' perceptions and behavior. Effective packaging design can help to

Table 3 Results of multiple regression analysis

Model		Unstandardized coefficients		Standardized coefficients	T	Sig
		B	Std. Error	Beta		
1	Constant	0.084	0.186		0.374	0.436
	Visual packaging design	0.372	0.084	0.297	4.246	0.000
	Verbal packaging design	0.326	0.076	0.273	3.424	0.000

Notes Dependent variable: Consumers purchase decision; adjusted $R^2 = 0.523$, $F = 127.416$, and sig. $= 0.000$

differentiate products from competitors, attract the attention of the target audience, and ultimately drive sales.

Visual appeal is one of the most important components of successful packaging design. Consumers' perceptions of the quality and value of a product can be improved by an aesthetically pleasing packaging design, which can elicit positive emotional reactions like pleasure or arousal. In addition, package design may convey the brand's personality and message, strengthening the company's identity and encouraging customer brand loyalty. This outcome is in line with earlier research [1, 2, 26].

The supply of information is another key component of packaging design. Consumers may make educated purchase decisions if packaging includes clear and simple information on the features, advantages, and usage of the product. This is crucial for complicated products, such as medications or electronic devices, where the packaging design may aid in the simplification and clarification of product information. Packaging must be durable, simple to open, and practical to use. In order to lessen the influence on the environment, it should also consider environmental sustainability and use recyclable or biodegradable materials. This outcome is in line with earlier research [3, 26].

Effective packaging design, meanwhile, is not without its difficulties. Finding the right equilibrium between utility and visual value is one of the biggest challenges. While certain packaging designs may be visually appealing, they may be unattractive or difficult for customers. Moreover, different cultural settings may have varied preferences for packaging design, necessitating the adaptation of designs.

The development of technology has both advantages and disadvantages for packaging design. On the one hand, cutting-edge technology like augmented reality and smart packaging can improve the shopping experience and offer more product details. On the other side, they may also result in higher manufacturing costs and a need for more resources and knowledge.

In conclusion, good packaging design is extremely important in influencing customer purchasing behavior. Packaging design may convey a brand's identity, give consumers information about the product, and elicit a favorable emotional

reaction. Effective package design is not without its difficulties, and marketers and designers must take into account usability, cultural preferences, and environmental sustainability when developing packaging designs. Companies may develop a distinct advantage over rivals, foster brand loyalty, and eventually increase sales by improving their packaging design methods.

5.2 Limitations and Further Research

The empirical results of the study had limitations due to context and applicability. Using data provided by residents of the Gaza Strip, we built our findings. As a result, generalizations regarding Palestine are challenging. Although if the findings are relevant to developing nations with comparable backgrounds, like Palestine, they may not be useful for places with diverse cultural settings.

The model could be reevaluated in light of different cultural or contextual contexts as a result of further study on this topic. To further improve understanding of the links and mechanisms behind the current situation, moderating and/or mediating components may be added to the model.

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Local Language Use in Packaging and Its Impact on the Palestinian Consumers' Purchase Decision

Mohammed Salem

Abstract The use of local language in packaging is an increasingly popular marketing strategy, aimed at connecting with consumers. Therefore, this paper examines packaging's use of local language and its effect on the Palestinian consumers' buying decisions. The paper outlines the theoretical underpinnings of language use in marketing, and explores the advantages and disadvantages of using local language in packaging. Using the descriptive-analytical approach, a questionnaire was created to gather information from a simple random sample of Gazan residents in Palestine. The data was collected from 312 respondents, and simple regression analysis was used to analyze it. The findings indicated that the local language used on packaging had an impact on Palestinian consumers' buying decisions. This article contributes to the body of research on the use of language in marketing by offering a nuanced and context-specific understanding of the function of local language in packaging and highlighting the potential of this marketing tactic for influencing consumer behavior and fostering brand loyalty in a variety of cultural contexts.

Keywords Local language use in packaging · Purchase decision · Gaza Strip · Palestine

1 Introduction

The use of language is vital in the field of marketing for conveying to customers' brand identification and product information. Being the initial point of contact between a product and a potential buyer, packaging is one of the main tools for this communication [1]. The language used on packaging is frequently standardized or globalized to appeal to a wide audience in order to increase commercial reach. Local language use, however, may be more productive in some markets or locations for interacting with customers and influencing their purchasing behavior [2, 3].

M. Salem (✉)
University College of Applied Sciences, Gaza, Palestine
e-mail: mzsalem@ucas.edu.ps

The concept "local language" describes the distinctive dialects and slang terms used in a certain area or community, which may be very different from the formal language employed in larger marketing operations. The "seeing of things" that each civilization possesses is reinforced when that society's native speech is used [4]. Language is essential for persuading people to buy goods and services, according to Dyer [5], especially when they are promoted to a certain population, such an ethnic community. Although there are dangers and difficulties with this strategy, careful consideration of local language use may help organizations forge deeper relationships with customers, influencing their purchasing behavior and fostering brand loyalty.

How effectively local language is utilized on packaging depends on a number of factors, such as regional cultural norms, linguistic diversity, and the specific product being sold. On the other hand, utilizing that language on the packaging for a product being promoted in a region where it is widely spoken may be advantageous. A product promoted in a place with a lot of linguistic diversity, for instance, would need to pay close attention to the dialects and idioms used there. Companies must consider any language barriers, cultural sensitivity issues, and the necessity for thorough understanding of local linguistic norms when implementing local language in marketing campaigns.

A number of variables, including local cultural norms, linguistic variety, and the particular product being sold, affect how well local language is used on packaging. In contrast, a product marketed in a location with a dominant language may benefit from using that language in the packaging. For instance, a product marketed in a region with great linguistic variety may need to carefully examine the dialects and idioms used in local languages. When adopting local language in marketing efforts, companies must also take into account any language obstacles, cultural sensitivity difficulties, and the need for careful awareness of area linguistic standards. The risks of alienating visitors or misleading customers who may not be familiar with the local languages used on packaging must also be considered by businesses [3, 6].

The remainder of the paper is structured as follows. The theoretical foundation and hypothesis are explained in Part 2. Part 3 explains the method. The findings from the study are provided in Part 4, which is followed by a discussion in Part 5.

2 Theoretical Background

2.1 Purchase Decision

The purchase decision is the choice of a product and brand made once a need has been identified and options have been generated. As a result, it may be thought of as a series of choices that precede the actual buy activity. Each decision to buy something involves a variety of considerations, including, but not limited to, the item's brand and model, the time of purchase, the price range, and the means of payment. This

decision is significantly influenced by the product packaging [7, 8]. Many considerations, including external, internal, and marketing components, have an influence on customer purchase decisions regardless of the circumstance or degree of decision-making. Although internal factors include things like perception, attitude, knowledge, personality, way of life, engagement, and roles, external factors include things like culture, subcultures, groups, situations, socioeconomic classes, and families. The product, package design, advertising, place, and pricing factors are examples of marketing variables [9, 10].

Marketing specialists examine consumer purchasing behavior to ascertain where, what, and why individuals buy particular products. Customers often pick a certain product for a variety of reasons that are difficult to identify [11, 12]. Aesthetics influence how well consumers can evaluate core products, according to earlier academic research [13–16]. The appearance of the packaging influences how well consumers can recognize brands (identification); packages draw attention primarily through color and form (attention); the appearance of the packaging may also influence how well consumers judge the core product (communication); and the appearance of the packaging may also influence how well consumers judge the core product (communication) (impact on attitudes).

2.2 Purchase Decision

When deciding whether to utilize a single package with many languages or distinct ones that are aimed at different nations, marketers should take into account the local languages used in each market [17, 18]. Many studies have revealed that the majority of customers choose packaging with text in their own language (see e.g. [19]). Consequently, one of the biggest issues that has to be resolved in worldwide advertising is language. It is usually described as being the most important aspect of culture. For multinational perfume makers, the language used in relation to products is crucial.

The choice of particular language might hint at different thought processes and customer motives [20]. For instance, words written in one language may have a different meaning when translated into another [21]. If you want to have a significant influence on what consumers choose to buy, using the right wording on product labels or packaging is essential. Although if English is the most often used language for communication [1, 22] and may even be the official language of the firm, speaking and using a local language can have a big influence. The availability of marketing materials and information in the target country's native tongue shows how seriously perfume producers are prepared to do business there [20, 23]. On the basis of the aforementioned, we postulate:

H1: Local language use in packaging has a favorable impact on the Palestinian consumers purchase decision.

Table 1 Respondents' personal information ($n = 312$)

Variables	Groupings	Number of respondents	%
Age	30 years or less	174	55.8
	31–40 years	63	20.2
	41–50 years	52	16.7
	51–60 years	18	5.8
	61 years and above	5	1.5
Gender	Male	167	53.5
	Female	145	46.5
Education level	High school or lower	97	31.2
	Diploma	41	13.1
	Bachelor	129	41.3
	Master	38	12.2
	PhD	7	2.2
Marital status	Married	158	50.6
	Single	127	40.7
	Widowed	18	5.8
	Divorced	9	2.9

3 Methodology

3.1 Participants

As shown in Table 1, 312 respondents filled out the survey and returned it. The outcomes of the demographic factors were displayed in Table 1.

3.2 Procedures

The descriptive approach was utilized to identify the situation and address the primary issues surrounding the usage of local language on packaging and how it affects customers' buying decisions. As a result, the survey, which was conducted in person, served as the primary technique of data collecting for this study. The original survey was correctly translated into Arabic to abide by regional language constraints. Afterwards, three native Arabic speakers examined and pilot tested it to ensure its accuracy. Version 23 of IBM SPSS software was used to conduct the statistical analysis.

3.3   Measures

The survey used a 5-point Likert scale, with 1 denoting strongly disagree, 2 denoting disagree, 3 denoting neutral or no opinion, 4 denoting agreement, and 5 denoting strongly agree. There were three components to the survey. The first section analyzes the local language use in packaging using ten questions based on Ho et al. [2], Salem [1], and Run and Chin [3]. In the second section, 10 questions based on Panda et al. [6]; Elango and Thansupatpu [7], Rachmawati et al. [23] were used to analyze consumers' buying decisions. The demographic factors are covered in the third section (age, gender, education level, and marital status).

4   Results

4.1   Factor Analysis

To evaluate if the factor analysis was applicable for the study, the KMO and Bartlett's tests were utilized. The reliability test must be passed with a result of at least 0.7. The Bartlett's Sphericity test should normally yield results that are less than 0.05. The KMO value above the permitted cutoff limit of 0.000 shows that this analysis is adequate for the study.

The outcome of principal component analysis is displayed in Table 2 and is the factor score coefficient matrix, which is rotated by one principle factor using the varimax normalization [24–28]. The factor consists of 20 components in total. The study found that 0.30 is the minimum loading threshold for factor loadings on several scales [29–35]. The construct validity of the scales has been maintained, as shown by the fact that all of the loadings in Table 2 are greater than 0.30.

4.2   Hypotheses Testing

Simple regression analysis was used to examine the association between the independent variable (local language use in packaging) and the dependent variable (consumers' purchase decision). The researcher sought to understand how an independent factor affected consumers' buying decisions, so they performed a simple regression analysis.

In Table 3, independent factors are shown to be responsible for 54.8% of the variation in consumers' purchase decisions (adjusted $R2 = 0.548$). Due to the fact that the F value was significant at 0.000, the model's accuracy was confirmed. Table 3 demonstrates a favorable correlation between the use of local language on packaging and customer purchase decisions (t = 2.346, $p = 0.000$). The data indicated that the analysis had a strong H1 support as a result.

Table 2 The constructions' reliability and factor loading

Construct	Item	MV	SD	FL	Cronbach's α
Local language use in packaging	1	3.67	0.84	0.743	0.759
	2	3.53	0.87	0.769	
	3	3.64	0.85	0.767	
	4	3.59	0.86	0.746	
	5	3.72	0.87	0.772	
	6	3.54	0.82	0.739	
	7	3.62	0.85	0.757	
	8	3.39	0.83	0.753	
	9	3.45	0.87	0.794	
	10	3.51	0.84	0.747	
Consumers purchase decision	1	3.52	0.87	0.754	0.756
	2	3.36	0.83	0.763	
	3	3.57	0.85	0.757	
	4	3.61	0.89	0.768	
	5	3.46	0.98	0.746	
	6	3.75	0.93	0.752	
	7	3.84	0.86	0.784	
	8	3.59	0.92	0.729	
	9	3.67	0.84	0.738	
	10	3.53	0.91	0.768	

Table 3 Results of simple regression analysis

Model		Unstandardized coefficients		Standardized coefficients	T	Sig
		B	Std. Error	Beta		
1	Constant	0.172	0.057		2.427	0.000
	Local language use in packaging	0.164	0.063	0.164	2.346	0.000

Notes Dependent variable: Consumers purchase decision; adjusted $R^2 = 0.548$, $F = 113.583$, and sig. $= 0.000$

5   Discussion

5.1   Discussion of Findings

The use of local language in packaging has been shown to have a significant impact on consumers' purchase decisions. This outcome is in line with the findings of the preceding research [1–3, 6]. The theoretical foundations of language usage in packaging and the benefits and drawbacks of utilizing local language in packaging have been covered in the earlier portions of this article. In this part, we spoke about the results' ramifications and how they apply to companies who want to utilize regional languages on packaging.

This study has several significant implications, one of which is how crucial it is to comprehend the target market's cultural and language standards. As previously stated, a number of variables, such as local cultural norms, linguistic variety, and the particular item or service being advertised, can affect how well local language is used in packaging. A product marketed in a location with a lot of linguistic variety, for instance, would need to pay close attention to the dialects and slang terms used there, whereas a product marketed in a region with a dominant language might benefit from using that language in the packaging.

The possible dangers and difficulties linked to local language use in packaging are another significant implication of this study. When adopting local language in their marketing initiatives, businesses must carefully evaluate the potential language hurdles, cultural sensitivity difficulties, and the necessity to carefully regard area linguistic standards. Businesses also need to be aware of the dangers involved in alienating customers who are not local or confusing customers who might not understand the language used on packaging.

Not with standing these difficulties, it is impossible to dismiss the benefits of using local languages in packaging. Local language usage in product packaging may increase consumer attractiveness, foster a feeling of cultural significance, and forge a stronger emotional bond with customers. Also, using the regional language can help firms stand out from rivals, especially in crowded or competitive marketplaces.

The effectiveness of local language use in packaging may also differ depending on the particular product being advertised, it's crucial to note. The impact of local language use on consumer behavior is determined by a variety of factors, including product category, customer demographics, and cultural norms, as highlighted in the prior research (See for example, [2, 3]) examined in this work. Hence, when considering whether to employ local language in their packaging and marketing efforts, firms must carefully evaluate these considerations.

In conclusion, the language used in packaging may have a big influence on what people decide to buy. While this strategy comes with risks and difficulties, companies that carefully consider the cultural and linguistic norms of their target market as well as the particular good or service being marketed can successfully use local language in their marketing campaigns, influencing consumer behavior and fostering brand loyalty.

5.2   Limitations and Further Research

Contextual and application limitations were among the study's empirical findings. We based our results on data supplied by Gaza Strip residents. Thus, it is difficult to draw generalizations about Palestine. The findings may not be appropriate for locations with distinct cultural contexts, even while they are applicable to emerging countries with similar cultural backgrounds, like Palestine.

Future research on this subject could reevaluate the model in other cultural or contextual circumstances. Furthermore, regulating and/or mediating components may be added to the model to better understand the relationships and mechanisms behind the current issue.

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An Analysis of the Relationship Between TQM and Learning Organization Development: The Synergic Effect of Social and Technical QM in Tunisian SMEs

Oumayma Tajouri

Abstract Based on STS theory, the present study aims to examine the effect of social and technical quality management practices on learning organization development in SMEs. A questionnaire survey was conducted on Tunsian-certified SMEs. Quantitative data was gathered from 78 Tunisian SMEs. Collected data were analyzed using a structural equation model. The results indicate that the dimensions of QM practices separately do not have a significant relationship with learning organization. However, when integrated together to constitute a sociotechnical QM system, it shows a significant and positive link with a learning organization. The findings help practitioners to understand how TQM practices contribute to developing learning organization and focus on two dimensions simultaneously in order to ensure continuous learning. Although the amount of literature on total quality management and learning organization, there is a lack of empirical investigation regarding the relationship between social and technical quality practices and the development of learning organization in SMEs. This study seeks to bridge this gap and provide new data about this relation in SMEs operating in the Tunisian context.

Keywords Social QMs · Technical QMs · STS theory · Learning organization · Small and medium enterprises (SME)

1 Introduction

Small and medium enterprises (SMEs) are facing changing environment [26], Mahmud and Hilmi [19]. Many scholars have suggested that building a learning organization may be the only effective response to the current changing and uncertain environment [31]. Pokharel and Choi [25] have identified learning organizations

O. Tajouri (✉)
High Institute of Management, University of Sousse, Sousse, Tunisia
e-mail: oumayma.tajouri@gmail.com

as organizations that are organic entities that have the capacity to learn, adaptive characteristics, and continuous learning at the levels of individual, group, or organization. Consequently, learning can emerge at three different levels namely individual, group, and organizational.

In this vein, many prior studies have asserted that TQM is a valuable method for fostering learning [16]. Successful implementation of TQM practices requires a commitment to direction including the involvement of all the members in order to improve continually [3]. Morrison and Terziovski [24] noted that the adoption of TQM as a philosophy as well as a technique may be considered an enabler for developing a learning organization. An extensive review of the literature shows that TQM was been conceptualized in two different ways. On the one hand, some authors have neglected the different quality practices and they have treated TQM as a single construct [33]. On the other hand, many others have operationalized it as a multi-dimensional construct [38] and they have considered that this multidimensional promised to provide a clear understanding of the relationship between these two concepts. However, limited empirical evidence exists that explains what kinds of relationships exist between soft and hard QM practices and learning organization development.

In the present study, we suggest to adopt TQM as a single construct a well a multi-dimensional construct. From the STSystem theory perspective, this study conceived TQM as a powerful tool to build a learning organization through the combination of both social and technical QM practices. However, learning organization development studies focusing on small and medium-sized enterprises are needed [22]. The objectives of the present study are multiple. Firstly, we aim to examine (1) the impact of Social QMs and (2) the impact of Technical QMs on learning organization development, then, we examine (3) the impact of the impact of TQM on learning development as social technical system. In order to achieve this objective, the following research question guided the study: How do Social and Technical TQM practices influence learning organization development in Tunisian-certified SMEs?

The structure of this paper is organized as follows. The next section describes the extant literature, develops hypotheses, and establishes a research model. The next section presents the methodology and results. Finally, this study concludes with a discussion.

2 Literature Review and Hypotheses Development

2.1 Total Quality Management (TQM)

TQM practices were divided into two main dimensions. Wilkinson et al. [37] classified these as social quality management practices and Technical quality management practices. Social quality management practices are behavior-oriented and technical quality management practices which are technique oriented. That means that social

Table 1 Social and technical dimensions of TQM used in the present study

QM dimensions	S1	S2	S3	S4
Social QM				
Top commitment management	x	x	x	x
Employees involvement	x	x		x
Employees training	x	x		
Customer focus			x	x
Suppliers relationship		x		x
Technical QM				
Process management		x	x	
Continuous improvement		x		x
Data and analysis		x	x	

Source Derived from the following articles: S1: Ershadi et al. [8], S2: Sciarelli et al. [29], S3: Yazdani et al. [38], S4: El Manzani et al. [7]

QM includes practices such as training employees, involving employees and commitment focusing on organizational change and development in the areas of management commitment and leadership, and relations with external customers and suppliers [38], while, technical QM includes elements such continuous improvement, data, and analysis. Table 1 presents social and technical QM measured in the present study.

Total Quality Management and STS theory: The sociotechnical system theory is based on the idea that the organization is essentially composed of human staff who use tools and techniques and mobilize procedures and production processes. From this perspective, organizations are called to combinate between social and technical practices to lead them to excellence. In the present study, the sociotechnical system theory is employed to understand how SMEs could lead to building learning organizations through the implementation of social-oriented practices and technical oriented practices. The sociotechnical system theory affirms that the implementation of both social and technical QM practices allows organizations to perform their results and achieve their goals. This idea was discussed previously by Manzani et al. [7] and Sciarelli et al. [29].

2.2 Learning Organization

The concept of the learning organization has attracted the attention of many scholars [30, 36]. A review of the literature has identified three different process levels of learning within the learning organization. It is should be useful to clarify the difference between learning organization and organizational learning. According to Vera et al. [34], organizational learning is about the way which an organization learns, while a learning organization is about the way which an organization should learn.

Evaluating an organization's capability to learn consists of assessing the perception of members on a different level of learning [6, 20, 21]. Organizational learning can occur at three different levels in an organization. The first level is "individual learning" which refers to acquiring and developing knowledge and skills. This level triggers by the intuition and the motivation of the individuals for learning [6]. Meanwhile the second level "group learning" involves the sharing of individual interpretations to develop a commonly understanding [35]. Group learning affirms that individual learning without dialogues and a continual exchange process is not enough to emerge a shared vision [6]. Finally, the organizational learning level is the creation, possession, and storage of company-specific data and information in the form of methods and procedures [6]. The organizational learning level is not a simple collection of individual learning [9].

2.3 Relation Between Total Quality Management and Learning Organization Development

Social QM practices encompass leadership and human resources management (e.g., employee's involvement and employees training). These elements are considered adequate to occur individual learning [21]. Yazdani et al. [38] have confirmed that social QM practices contribute to creating new knowledge. Indeed, Moreno et al. have pointed out that customer focuses and establishing a relationship with suppliers contribute to creating knowledge. In the same vein, Sitkin et al. [32] have suggested that QL as a form of QM focused on learning capability improvement which allows for identifying new skills, to be able to explore new areas, and to exploit effectively their failures. Moreno et al. [23] have noted that social QM practices could make flexible workers a source of new learning. On other hand, some authors [18] have supported that technical QM practices influence positively learning and cooperative culture. Moreno et al. [23] have argued that process management provides a common language and facilitates knowledge transfer among the groups. Yazdani et al. [38] have shown that the successful implementation of technical QM practices contributes to creating a culture of knowledge sharing.

Based on the above discussions, the following hypotheses are suggested:

H1: Social QM positively affects learning organization development in SMEs.
H2: Technical QM positively affects learning organization development in SMEs.

Prior studies have claimed that organizations that implement TQM practices seek to learn more [21] and can develop easily a culture of knowledge sharing and transfer [16]. These authors have treated TQM as a single construct. Tortorella et al. [33] investigated 133 Brazilian manufacturing and showed that TQM practices have a positive impact on learning organization development. They have shown that control processes and employees involvement build learning organizations. Also, Martinez-Costa and Jimenez-Jimenez [21] confirmed that TQM practices influence
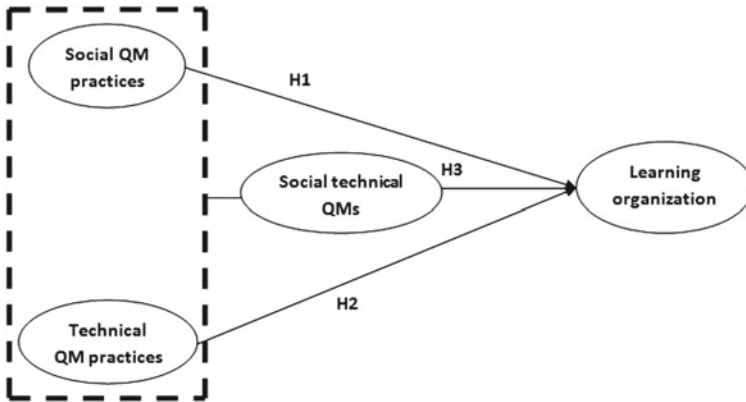
Fig. 1 Proposed theoretical model

significantly and positively learning organizations. They have supported that leadership, training, and continuous improvement led individuals to grow in their work, encourage them to share their points of view in the group, and allowed the structured organization to contain important information. Based on the literature reviewed, the following hypothesis is proposed:

H3: Social and technical QMs positively affect learning organization development in SMEs.

The theoretical model is presented in Fig. 1.

3 Research Methodology

3.1 Data Collection

The present study concerns certified Tunisian SME industries. Our target was defined by the size of the organizations. Based on the number of employees to identify SME is widely used in management research [28] and in research related to TQM [26]. The national institute of Statistics (NIS) qualified an SME as an organization which a number of employees fewer than 200. We used the database of the agency for the promotion of industry and innovation (APII) to select our target. Of 4407 Tunisian SMEs, the questionnaire was posted to 594 certified quality industries. A total of 78 questionnaires were returned.

Table 2 Support for dimensions of TQM and learning organization

Social QMs dimension	Supporting authors
Top management commitment (TMC)	Saraph et al. [27], Gradzol and Gershon [11]
Employees involvement (EI)	Saraph et al. [27], Hunt [17], Zeitz et al. [39]
Employees training (ET)	Saraph et al. [27], Gradzol and Gershon [11]
Customer focus (CF)	Saraph et al. [27], Gradzol and Gershon [11], Hunt [17], Zeitz et al. [39]
Suppliers relationship (SR)	Grandzol et al. [12], Hunt et al. [16], Zeitz et al. [39], Cyole-Saphiro [5]
Technical QMs dimension	*Supporting authors*
Process management (PM)	Saraph et al. [27], Gradzol and Gershon [11]
Continuous improvement (CI)	Saraph et al. [27], Gradzol and Gershon [11]
Data and analysis (IA)	Saraph et al. [27], Gradzol and Gershon [11]
Learning organization dimension	*Supporting authors*
Individual learning (INDL)	Bontis et al. [2], Watkins and Marsick [36]
Group learning (GRL)	Bontis et al. [2], Watkins and Marsick [36]
Organizational learning (ORGL)	Bontis et al. [2], Watkins and Marsick [36]

3.2 Measures

In order to test the hypotheses, the constructs were operationalized through prior studies. Table 2 presents the dimensions of each construct. Each item was measured using a five-point Likert scale where answers ranged from strongly disagree (1) to strongly agree (5).

4 Results

4.1 Descriptive Statistic

A total of 78 Tunisian SMEs have participated giving a 13.13% response rate. With regard to the industry sector, the largest type of industry was the chemistry industries (29,5%), then, 20.5% were mechanical and metallurgical industries, 14.1% were electric, electronic, and household appliance industries, 12.8% were textiles industries, 10.3% were both agro-foods industries and materials, ceramic and glass construction industries and 2.6% other types of industries (heavy industries). In identifying the role in the company, the largest job status of respondents was engineer status (47.4%).

4.2 Measurement Model

Exploratory factor analysis (EFA) we performed a factor analysis with principal component analysis (PCA) in order to purify the measurement instruments. The results of PCA show that several items should be eliminated from the analysis. We eliminated the item that hasn't the satisfactory threshold level suggested. These are the following items EI4, PM2, SR3, DA1, INDL5, INDL6, INDL7, and ORGL4.

After iteration, the Principal Component Analysis and Varimax were adopted. The results demonstrate that the Eigen value of each dimension is superior to 1 and the KMO for all dimensions exceeded 0.50. The reliability was tested by Cronbach's alpha for all the factors. The value of this criteria indicates that are exceeded the traditionally acceptable level of 0.70.

Confirmatory factor analysis (CFA). The confirmatory factor analysis (CFA) can be assessed through the calculation of the convergent Validity and discriminant validity. The convergent validity was examined by using CR, Cronbach's alpha, and the AVE according to the criteria of Hair et al. [13]. The CR, Cronbach's a, and AVE was all higher than the threshold values, indicating the reliability of the questionnaire items (Table 3).

Whereas the discriminant validity is assessed through the means of the Fornell and Larcker [10] criterion in which the AVE of each constructs should be higher than the highest squared correlation with any other construct. Also, the discriminant validity is assessed through cross-loading. The loadings of each indicator on its construct have to be higher than the cross-loadings on other constructs. The estimation results

Table 3 Convergent validity and reliability

Construct	N° of items	Second order construct loading	Loading	CR	AVE
Social QM					
TMC	4	0.842	0.769–0.896	0.921	0.700
EI	3	0.848	0.802–0.841	0.867	0.686
ET	6	0.871	0.756–0.840	0.921	0.661
CF	6	0.720	0.790–0.906	0.934	0.702
SR	3	0.717	0.787–0.897	0.888	0.725
Technical QM					
PM	5	0.935	0.767–0.851	0.903	0.650
CI	4	0.823	0.858–0.943	0.940	0.798
DA	4	0843	0.744–0.839	0.884	0.656
Learning organization					
INDL	4	0.842	0.790–0.842	0.895	0.681
GRL	5	0.846	0.743–0.828	0.887	0.612
ORGL	4	0.899	0.732–0.835	0.872	0.631

verify that the measurement model meets all common requirements and confirm the discriminant validity.

4.3 Structural Model

In order to assess the structural model, we used PLS techniques to examine the path coefficient, R2, and Q2 (Stone-Geisser Criterion) [13, 14]. Chin [4] suggested three values of 0.19, 0.33, and 0.67 for R2 indicating a weak, moderate, and strong respectively structural model fit. In the present study, R2 is 0.681 indicating a strong model fit for this construct.

In order to test the model's predictable capability, Stone-Geisser's Q2 is used to assess the structural model fit [13]. The Q2 of learning organization (Q2 = 0.302) is acceptable due it is superior to 0 [15].

The final step in a structural model tests the path coefficient in order to examine the significance of the relationship between independent and dependent variables. The research adopted a bootstrap re-sampling technique. The results show that H1 is rejected ($\beta = 0.271$, T = 1, 188, $p < 0.059$). This finding indicates that social has not to influence on building learning organizations. Then, the relationship between Technical QM and learning organization development shows a significant effect at the 0.000 significance level ($\beta = 0.557$, T = 4,128, $p < 0.001$) indicating that H2 is supported. The results show that H3 is supported ($\beta = 0.815$, T = 22.383, $p < 0.001$). This finding indicated that social and Technical QM practices influence learning organization building.

5 Discussion and Conclusions

This study used Tunisian SME as its subject and tested the relationship between Social and technical QM practices. The findings of this study support only the direct effect of technical QM practices on learning organization development. This result is consistent with those obtained by Yazdani et al. [38] and Tortorella et al. [33]. In emerging countries such as Iran and Brazil respectively, these studies showed that technical QM like process management and data and analysis enables to share of knowledge and makes learning a continuous process.

Contrary to theoretical suggestions, the results show that there is no significant relationship between the Social QMs and learning organization development in Tunisian SMEs. The findings are partially consistent with the results obtained by Yazdani et al. [38]. They have shown that leadership and customer focus haven't a significant link to sharing knowledge and experiences among employees.

Interestingly, the result shows that the quality practices separately fail to influence positively learning organizations, while the combination and the integration of these practices succeed to build a learning organization. These practices separately are not

sufficient to create an learning organization. The finding of the present study supports the idea that TQM is a complementary form of practice rather than a sum of each side effect separately. Theoretically, the present study is the first research that focuses on the relationship between both soft and hard QMs and learning organization development in Tunisian SMEs. Based on the STSystem theory, this study provides the existing knowledge on the link between TQM practices and learning organization. The findings provide precious implications for Tunisian quality-certified SME industries that look to improve their quality and learning organization. It reveals to adopt TQM as an STS for a successful implementation. From managerial perspective, the findings provide relevant implications for Tunisian quality certified SME industries that look to build learning organization. This study identifies the keys factors which should be implemented. Then, the finding asserts that managers must focus equally on both social and technical QMs practices. The results show that low level of top management commitment, the lack of employees' involvement and the neglect of customers' aspirations should harm learning organization development.

The present study includes some limitations. Since our simple concerns Tunisian SMEs, they cannot be generalized the results. Also, this study used cross-sectional data, it is recommended to replicate this study with a longitudinal study to better understand the causal relationship.

The present study didn't include the industrial practices which developed in the area of Industries 4.0 revolution [1], so, future research could be developed by including them.

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Navigating the Ethical and Legal Landscape of AI in Enterprise Innovation

A Paradigm Shift in Key Dimensions Contemplated for the New Product Development Process in Video Conferencing Services

R. Leelavathi, Ajai Abraham Thomas, Bijin Philip , and Ayesha Samreen

Abstract Innovation is the fittest method for accomplishing it better in the current business environment. Innovation is one way to attain corporate success. Additionally, it is a tool for expanding the company's scope to compete in the current market. Analyzing behavior models, discovering critical variables that influence the new product development process, and constructing models for those critical variables are the study's main goals. An extensive literature review was done to better comprehend the particular domain. The "plan and action gap," or the difference between what people consider or plan and what actions they take for it, is one of the biggest gaps found through literature evaluations. The plan-action gap must be taken into account during the process of creating new products for business initiatives to succeed and for a change in paradigm survival. The development and addition of new features for video conferencing services are enhanced by determining the requirements of the majority of users (lead users). Data from the lead users collected for this article will aid in the new video conferencing service product development process in producing better outcomes. Using a standardized questionnaire, primary data have been gathered from the field. A Likert five-point scale and categorical items make up the research questionnaire. A Likert five-point scale and categorical items make up the study questionnaire. There are two sections on the questionnaire form. The segment opens with a description of the lead users' demographics, which is followed by a list of the major variables that have an impact on how new products are developed. The lead users have been identified by the researchers using judgmental sampling techniques. The 'thought and action gap' in the creation of novel video conferencing services products is addressed in this study.

Keywords New product development · Lead user · Contemplated · Quality enhancement · Video conferencing services

R. Leelavathi · A. A. Thomas · B. Philip (✉)
Department of Management, Kristu Jayanti College Autonomous, Bengaluru, India
e-mail: bijin.p@kristujayanti.com

A. Samreen
Jain University, Bengaluru, India

1   Introduction

The marketplace for video conferencing services reached $ 15.1 billion in the year 2020, and this is projected to rise at a compound annual growth rate (CAGR) of nearly 24% after 2021, before 2027. The sector's development is fueled by the profound interdependence of technology know-how like (AI), Artificial Intelligence, algorithms, and the (IoT) Internet of Things in virtual meeting solutions and products. Additionally, the technology has supported industries in integrating innovative abilities into their current video chat solutions and products, enabling improved meeting experiences for end users. Some of the artificial intelligence (AI)-Automated video conferencing characteristics that also have facilitated companies to grow their final expertise in the field include engaged player-involved phrasing, magnification upgrading, digital backgrounds, active noise cancellation, real-time transcription, face detection, algorithmic taking notes abilities, unique voice helpers, and similarity detection. Due to local state lockdowns, which ultimately resulted in travel bans and the closure of workplaces, academic institutions, and other common get-together spaces, the coronavirus outbreak amplified consumer needs in 2020. Moreover, as a consequence of the workplace closer, workers have commenced working at home, depending on such goods and answers to conduct conversations and conduct regular activities.

New product development in the video conferencing service industry: Growth Driver.

- In the United States and Europe, there is a massive market for the videoconferencing Service sector.
- Working at home and web-based learning are becoming more popular around the world.
- In the Asian Region, there is a massive market for high-connectivity communication infrastructure.
- In North America, cloud platforms are more popular.
- There seems to be a growing desire for organizations to save communication costs.

2   Challenges

The following are some problems of new product development in video conferencing services (Table 1 and Fig. 1).

- Solution costs and complexity
- A competitive environment that is constantly changing
- Establishing Connectivity and network.

Table 1 Market share of the worldwide virtual conference by the firm in 2020

Company name	Market share (%)
Zoom	50
MS Team	23
Webex	11
Cisco	8
Google meet	4
Others	4

Fig. 1 Market share of the worldwide virtual conference by the firm in 2020
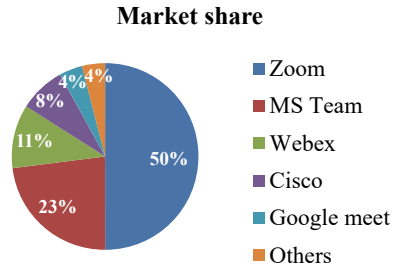
Zoom Videoconferencing held approximately 15% of the international video chat market dominance in 2020. The need for Zoom video conferencing chat services was raised due to the virus outbreak of video conferences and web-based learning. End-user sectors, including educational institutions, the tech-industry, healthcare, and the entertainment industry, rapidly recognized Zoom options for video chat. The company experienced per year now 1st half of 2020; The company had an annual increase of more than 165%, which increased to 345% in succeeding quarters. To preserve identical growth in the following months, the business aims to enhance its facility and product offering through collaborations and updated product functionalities. Zoom platform, for instance, in Mid-2021, collaborated with (AWS) Amazon Web Services Marketplace to market its video chat services to clients in the federal, state, and local governments.

2.1 Growth of the Video Conferencing Industry in India

From 2021 to 2027F, the India Video Chat Industry is projected to rise at a CAGR (Compound annual growth rate) of 1.49%. As a result of the increased participation of most of the country's sectors in video interaction, which has proven to be an appropriate and efficient medium for clear dialogue, the Indian video chat market is expected to grow rapidly shortly. In addition, technical advancements and an increase in the number of new start-ups in India are estimated to drive the video chat service in India to new heights in the coming years.

2.2 Innovation Challenges in Video Conferencing Services

The government introduced the contest in April 2020, only months after the country was shut down because of the Covid-19 outbreak. Due to the apparent shutdown, work-at-home practices grew in popularity, with video conferencing services used by working experts and school and college students to be present in virtual classes.

Zoom, a video chat program developed in the United States, became a success in India, just for the Indian government to release some advice against its use due to information privacy issues. The administration then challenged Indian tech entrepreneurs to create a local video chat service and a proposal for professionals and corporations to develop an app on comparable grounds.

3 Review of Literature

New avenues for descriptive study have been made possible by advancements in communications technology [1]. One of them would be Zoom, a cutting-edge video conferencing platform with several distinct advantages that appeal to convergent parallel mixed investigators. We look at the viability and acceptability of using Zoom to acquire qualitative data from interviews in healthcare research settings to fully understand its usefulness for convergent parallel mixed researchers. The results imply that the Zoom platform is a workable instrument for obtaining qualitative data due to its comparative ease of use, security options, price, and information management features. To critically examine and improve breakthroughs in online methods, further research into the efficacy of Zoom is endorsed [2]. Video conferencing software allows users to communicate over the Internet and provides a solid foundation for virtual gatherings. However, issues with veracity, safety, identification, and verification continue to plague the world. This article shows how biometric know-how, machine learning, and a regionalized hash table paired with blockchain technology can create a regionalized smart identity method for video chat apps. The testing results reveal that a design dependent on blockchain and spread hash tables is more efficient than two alternative architectures that use a common database, but it takes longer to execute [3]. As a result of the constraints on mass assemblies and the burden of social distance to inhibit the banquet of the COVID Pandemic, there has remained an unparalleled acceptance of teleworking and video conferencing as an advanced scientific replacement for the inaccessible job and office management, also known as teleworking or mobile working or "work from home (WFH)." This article addresses a broad range of cyber refuge challenges relating to teleworking and video chatting technologies, with susceptibilities, intimidations, and consequences [4]. The IoT (Internet of Things) made it possible that share a common operating

picture (COP) among numerous contemporary applications. The invention of wireless sensor network devices, which we can link via the network, exchange data, and perform various analyses, allowed us to achieve COP. By eliminating the concept of a centralized server, the IoT uses blockchain (BC) technology to address these concerns regarding privacy and security. This research examines the possible privacy and security risks brought on by better facilitating the Internet of Things and the benefits of the distributed ledger-based blockchain (DL-BC) system [5]. Research on new product development (NPD) has increasingly entwined itself with disciplines including marketing, advertising, logistics, and application development over the past 30 years. This page summarizes the growth of the NPD organization literature, available in 1226 peer-reviewed publications over the last ten years (2008–2018). We exposed the reality of five investigation groups centered on the following key conceptual areas using bibliometric analysis: the connection between new product development (NPD) and business strategy, the NPD process, the function of consumers and customers in the NPD management, the incorporation of different information resources for NPD optimization, and the engagement of vendors in NPD activities [6]. NPD (New product development) is a critical innovation that must be carried out to keep up with changing consumer preferences. This research is noteworthy because it examines new product advances in small and medium enterprises (SMEs) in Indonesia from a sluggish problem perspective to explore customers' expectations, which might be difficult to analyze. This is the first article to examine the association between the cost of ideas and production costs in various SMEs in Indonesia with an inactive problem viewpoint to maximize profitability by taking into account numerous factors that affect SMEs' costs and income. This article also examines the costs of bringing a concept to fruition to maximize profit [7]. The article aims to look into how to grow new product enactment in developing economies experiencing turmoil. The performance impact of CRM and PDM concentration approach in new product progress was investigated using regression analysis (NPD). Founded on a survey of 114 Chinese high-tech businesses, a comprehensive conditional analysis of the market and institutional contexts in emerging economies is also done. The data suggest that in emerging economies, PDM has a higher positive influence on new product performance than CRM and that the market and institutional context have varying effects [8]. In all nations where harsh measures, like lockdowns, were used, the COVID-19 epidemic has resulted in quick modifications in the educational process. Using various video conferencing systems, nearly all stages of education have adopted synchronous teaching. With the help of a proper method based on prefaces and the SUS survey for interactive systems, this study will attempt to evaluate specific applications. A systematic approach with usability and functionality criteria was used to compare five prominent video conferencing programs (Skype for Business, WebEx, Zoom, Big Blue Button, and Google Meet). This research aims to emphasize instructors' perspectives and needs from synchronous education tools to promote online learning at all levels of education [9]. A multi-variable cost task is suggested in this study. This cost task may compute the costs of links based on network properties and application needs. Although meeting participants can

connect using either an established (heterogeneous) network or a fast speeds wireless connection like WiMAX, we build an accessible telephone conferences provider on an intersection system of a true WiMAX network and a copied Web configuration. We then use the recently proposed cost function to build the multimedia distribution tree for the product. Real-world measurement results have demonstrated the new price function's superior performance in the heterogeneous wireless environment's constant change [10]. The primary group of technologies created so far to support teamwork is telephone conference systems and services. When it comes to this kind of technology, videoconferencing is often viewed as a cutting-edge, futuristic communication style that sits somewhere between a phone call and an in-person meeting. This research examines the existing teleconferencing literature and examines the reasons for videoconferencing failure [11]. The study presents a thorough comparison of video-based dyadic interviews and focus groups utilizing newly created techniques for assessing the effectiveness of one method of conducting focus groups over another. Except for the larger groups creating more ideas that moderators judged as distinctive and important, most of the advantages we found favored two-person groups over four-person groups [12]. In recent years, interest in the co-creation of innovation from a marketing perspective has grown. Collaboration in developing new products is recognized as helpful to suppliers and customers. This study investigates how suppliers and consumers use videoconferencing in collaborative innovation engagement processes. From a supplier's standpoint, the arrangement is processual. It has two elements for fruitful cooperative relationships, in-depth interviews with seventeen owners/managers of biotech SMEs were used in an empirical study to draw these conclusions. Arnett [13], this article focuses on the role of innovations during the global pandemic. The majority of materials and procedures used by teachers for remote education today are not inherently student-centered. However, the growing usage of these materials and techniques paves the way for future student-centered approaches. Here's how that path might play out.

3.1   Research Gap Identified

The 'thought and action gap,' which refers to the difference between what people consider or think and the actions they take, was one of the significant gaps that the study primarily uncovered. The think-action gap must be taken into account during the new product development process if company initiatives are to succeed and survive the paradigm change. The development and addition of new features for video conferencing services are enhanced by determining the needs of the lead users. The 'thought and action gap' that is present in the development of cutting-edge new products and services is attempted to be addressed in this study.

4 Objectives

- To understand the behaviour models in the new product development process.
- To determine the critical elements that affect the process of developing new products.
- To create a model for the critical factors influencing the creation of new products.

5 Hypothesis

Ho: Quality Enhancement, Productivity Combination, Privacy, and security has no significant influences on the new product development process.

H_1: Quality Enhancement, Productivity Combination, Privacy, and security have significant effects on the new product development process.

6 Research Methodology

This study was conducted using primary as well as secondary sources. Using a standardized questionnaire, firsthand information has been gathered from the real world. A Likert five-point scale and categorical items make up the study questionnaire. There are two parts to the survey. The demographic characteristic of lead users is included in segment one, followed by the major variables that affect the process of developing new products. To determine the lead users and gather data from 450 respondents, the researchers employed judgmental sampling techniques. The researchers used a pilot test to find the flaw, determine whether the respondent understood and was willing to answer the questions and validate the validity. The pilot study utilized a sample size of 30. The findings show that the variable's internal consistency is good.

Independent variable: Quality Enhancement, Productivity Combination, Privacy, and security.

Dependent variable: New Product Development Process.

Mediate Variable: Challenges and Trust.

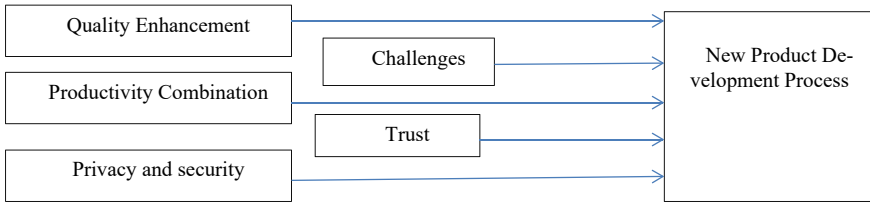**Model**: New Product Development Process of Video Conferencing Services (Fig. 2).

Fig. 2 Proposed model

7 Limitations

The research is limited to video conferencing services, and response bias may significantly impact the study results. The study respondents covered only the lead users in video conferencing services and excluded other users from the survey.

8 Results and Discussion

See Tables 2 and 3.

Table 2 Reliability

Variable No.	Variable name	Cronbach alpha	Result
V01	Quality enhancement	0.88	Reliable
V02	Productivity combination	0.87	Reliable
V03	Privacy and security	0.85	Reliable
V04	Challenges	0.87	Reliable
V05	Trust	0.82	Reliable

Table 3 Correlation

Correlation	QE	PC	PS	Ch	TR
Quality enhancement	1	0.423	0.493	0.400	0.410
Productivity combination		1	0.352	0.590	0.256
Privacy and security			1	0.334	0.425
Challenges				1	0.428
Trust					1

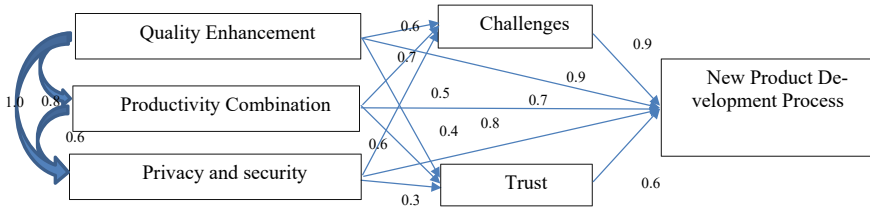*QE* Quality Enhancement, *PC* Productivity Combination, *PS* Privacy, and Security, *CH* Challenges and *TR* Trust

Fig. 3 Extended SEM model

Table 4 Model fit indexes summary

Indexes	CMIN/DF	GFI	CFI	RFI	RMSEA
Values	2.81	0.891	0.976	0.890	0.043

8.1 Confirmatory Factor Analysis

CFA is best characterized as a process spanning model discovery, ideation, variable estimation, information fit evaluation, and projected model revision. The advantage of CFA over experimental methods is that it might disprove models or hypotheses. Still, it could also reveal possible changes that should be investigated further in subsequent analyses. The study's CFA item values are more significant than 0.7.

8.2 Model Fit Indexes Summary

According to Kline [14], the study CMIN/DF value is 2.81, which specifies an acceptable fit. The goodness of Fit Index and Comparative Fit Index values are 0 to 1, and the study values are 0.891 and 0.976, respectively, representing a perfect fit. According to MacCallum et al. [15], RMSEA in the model fit summary field values is 0.043 specifying a better model fit. Overall, study results show that model index values indicated an acceptable fit. Most of the study variables have a significant direct influence on each other (Fig. 3 and Table 4).

9 Conclusion

The present study concludes that the video conferencing services sector increases efficiency, makes life easier, and time-saving lowers transport charges and cheers global participation. The beauty of the video conferencing sector is that it allows

users to take full advantage of all these benefits without needing to trip for face-to-face conversation constantly. However, as per our study, the researchers identified some of the key dimensions, which *include* Quality Enhancement, Productivity Combination, Privacy and Security, Challenges, and Trust, that need to be focused on by video conferencing services providers to enhance, progress, and sustain in the industry. The variables mentioned above have either direct or indirect relationships, and the proposed model index value indicates *a perfect fit.* The video conferring that service providers can optimize the output level of the business and improvise the self-sustainability quotient by adapting the suggested model.

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Degree of Integration of the Post COVID Platformization: Moroccan Territorial Collectives Case Studies

Amina Ech-Chbani

Abstract The objective of this research paper is to explore the integration of the work platformization induced by the pandemic crisis of COVID in Moroccan territorial collectivities. The importance of our contribution is twofold: first to contribute to approaches aimed at providing a clear definition adapted to our research context (the territory). Second to explore a topic that has been unexplored so far, and that has not been the subject of any previous exploration. Based on these considerations, we have chosen to adopt an inductive approach to our methodology, the objective of which is not only to provide conceptual insights of platformization, but also to know the degree of integration of these concepts in the Moroccan territorial collectivities through case studies.

1 Introduction

Due to its subjectivity, the notion of platformization has never been agreed upon in the literature. From a global point of view, platformization enables the company to be a sustainable winner in all areas: customers, staff, process efficiency, organisation and knowledge. Beyond this obvious fact, the scope of the notion remains dependent on the environment and the actors who use it.

From a theoretical point of view, platformization pertains to a set of devices which are linked to an organisational, interactional and processual logic. If we refer to the first level, the approach seems to be an imperative of global reorganisation both in the production and supply of products or services and in the satisfaction demanded by the customer. The interactional aspect of platformization is rather part of a permanent

A. Ech-Chbani (✉)
Laboratory of Studies and Research in Applied Economics and Management LEREMA, Faculty of Legal, Economic and Social Sciences of Agadir, IBN ZOHR University, Agadir, Morocco
e-mail: a.ech-chbani@uiz.ac.ma

progress approach, marked by a daily commitment of all the actors inside and outside the company. The processual dynamic presupposes, among other things, a clear idea of this system of visions and decisions involving a generalisation of knowledge and know-how around a digital culture.

From a practical point of view, it is worth recalling the reasons why this issue, which is becoming more and more crucial, should be addressed. Indeed, far from proposing platformization as a fashionable phenomenon, we propose it because it has become the credo of our local authorities in the face of current constraints linked to the COVID pandemic. The importance of the phenomenon, with its generalisation both at the level of companies and territories, is major. Today, more than ever, it is a question of moving towards a new specific configuration based on this reality.

similarly, if in today's world, socio-economic reasons impose platformization above all on large companies, the approach is all the more relevant as its application in local authorities is exceptional, and has not, to our knowledge, been the subject of any research aimed at finding out the degree of its integration in this category of organisations.

In this respect, the question arises as to the extent to which Moroccan local authorities are involved in the COVID pandemic crisis platform approach.

The objective of this research of a hypothetical-inductive type is thus to provide conceptual clarifications capable of contributing to the reflection on the primordial notions which are attached to it such as the organisational logic, the interactional dynamics or the processual approach. Moreover, it aims at knowing a question of knowing the degree of integration of these concepts within Moroccan territorial authorities, and to emit hypotheses in this direction.

2 Platformization: An Updated Review of the Concept

Platformization is often linked to notions as diverse as socio-technical devices, computer operating systems, or the logistics of intermediation between actors. This notion cannot be described exactly and exhaustively, because it is a subjective notion often linked to the nature of the environment and the agents who use it. The differences in the interpretation of platformization do not allow a unique understanding of what it is. At the level of the enterprise, the transience of platformization makes it impossible to use the classical methods of intermediation, which are applied namely in the case of relationship or exchange management. Beyond this obvious fact, the scope of the notion remains difficult to define, as it seems to depend on the characteristics of the fields it encounters.

Nevertheless, we will retain three main strands of analysis which we believe are essential for understanding this notion, and which are adapted to our research framework, namely the territory.

The first strand relates to an organisational logic that involves the use of organised intermediation processes and devices [6]. This definition shares the idea of a conception of platformization, through the production and provision of products or services of the level of satisfaction demanded by the customer, with particular concern for the welfare of the public.

Therefore, the optimisation of this type of organisation requires a focus on the core business, integrating only the set of activities necessary for the production of a good/service [12]. Depending on the needs of its customers, the company will adapt by combining the central and peripheral characteristics expressed in terms of orders.

The part that relates to interactional dynamics consists strictly speaking of the application of organisational logic [13]. Indeed, if economic reasons impose platformization, it cannot be reduced to a simple commercial argument. Rather, it is a process of permanent progress, marked by the daily commitment of all the company's internal and external stakeholders (suppliers, customers, employees and others). The platformization in question here is that of management, of the deployment of the organisation and not just that of the product or service [5]. The latter follows logically from the former.

We can therefore give three specificities to this processual logic [2]: the first is the 're-intermediation' of production processes involving a maximisation of the actors using a good/service around an 'Application Programming Interface APL' known by definition as a set of processes allowing the creation of direct and indirect standardised links via the internet, with all the partners of the company. Thus, the APL allows by default a permanent communication, within an open and agile ecosystem, allowing a multitude of informational, transactional and social flows, thus winning in terms of multiplication of users and also reinforcing the number of its partners whose added value is brought only once connected [1].

The second specificity is the 'digitalization' of activities generated by the growing use of the web, which allows zero marginal cost hypeconnectivity, optimising the use of massive data in time and space [4]. Supply and demand can be achieved 24 h a day and on an international scale. The algorithmic interconnectivity of the different users allows the company to have hard and soft information, and is then able to use it to build personalised behavioural models applied to the product, thus fulfilling the conditions of objectivity (conformity to market standards), subjectivity (satisfaction of the customer's requirements, expectations and needs).

The third specificity is linked to the generation of new production relationships, i.e. the production process generated by all the operators. Savings can then be made by adjusting to the visions of the various users, who then tend to be implicitly considered as agents of production. A change towards an organisational culture based on the automation of tasks and the transformation of social relations is now being imposed on many productive sectors [7].

The last component depends on a process of knowledge and expertise that must gradually be established, and which therefore calls on all the actors inside and outside the company to develop a digital culture [3]. In this sense, platformization involves a variety of processes relating to management, technology, training and even behaviour.

The challenge for companies is major, and consists of transacting towards a new specific configuration indexed to its reality, and dependent on a number of conditions and prerequisites that must be verified, both at the level of the company and its environment [11].

3 Research Methodology

Based our research objective, we opted for a qualitative, interpretive approach, favouring the use of multiple case studies on a small number of subjects, whose characteristics are fairly precise.

We chose a convenience sample due to the specificities of our research context and the empirical limitations we encountered. Thus, our sample was constructed according to three major criteria:

Firstly, the chosen local authority had to fit our research context. for this reason, we only sought out those that had adopted a platform after the covid pandemic crisis;

Secondly, the communities that have adopted the approach are all urban municipalities governed by the same regulatory framework under the new organic law 14.113 on municipalities;

Finally, a progressive construction of the case studies was operationalised based on the significant answers obtained and the semantic saturation verified. The latter is corroborated when no other case study was added to reach new elements of answer .

Overall, we selected four case studies to achieve credibility (internal validity), which aims at ensuring the relevance and internal consistency of the results generated by the study, in particular through the use of source triangulation techniques [9]. In our exploration, we tried to ensure this principle through the triangulation of sources of organisational information which comes from organisational entities (human resources division, social, cultural, sports and communication division; urban planning and heritage division; general management). Besides, information might be individual as it comes directly from the members of the organisation (managers, executives, supervisors, operators, etc.), in order to compare positions and to ensure the reliability of the information produced. Transferability (external validity) means the application, even if limited, to other contexts, based on, among other things, theoretical sampling [10]. To ensure this principle, our sample has been grouped, in a non-arbitrary way, communities that meet the criteria retained in our research. The multiplicity of the case studies and the hierarchical diversity of the respondents allowed us to compare the data collected from different actors at the same time.

Among the various interview techniques proposed in the literature, we chose the technique of the semi-structured interview [8]. Our choice is justified by our desire to analyse the behaviour and social representations of the actors; this tool also allows us to grasp the ideas as they are perceived and interpreted by the interviewees.

Indeed, the analysis of social representations implies not only identifying the content of the remarks, but also the structure and overall meaning of the representations. In this sense, the use of an interview guide and the reformulation of the interviewee's reasoning can greatly facilitate the content analysis. Moreover, by encouraging a permanent effort to understand the reasoning produced, this technique helps to sustain the interviewer's attention and forces him/her to actively enter the interviewee's world (Table 1).

In terms of the axes selected, we explored the following elements:

- The motivating factors behind the platformization process;
- Actions taken to prepare the community for the process and difficulties encountered;
- The degree of involvement of the community in the process;
- The perceived impact of the approach on the community.

The responses collected were subject to a qualitative thematic analysis, based on a grouping by categories reflecting different perceptions. The thematic analysis seems to be the most appropriate for our research insofar as it will enable us to classify the different themes relating to the context of our research. Indeed, our thematic analysis corresponds to a content analysis, which is in line with Bardin's recommendations concerning thematic analysis: "conducting a thematic analysis consists of identifying the nuclei of meaning that make up the communication and whose presence or frequency of appearance may mean something for the chosen analytical objective". Thus, a horizontal analysis was carried out by hierarchical level, independently of the local authorities, in order to identify in general the degree of integration of the approach in the organisational structures of our sample, the impact on the organisation and the difficulties encountered.

Table 1 Characteristics of local authorities interviewed

Code	City	Number of interviewed people	Quality of interviewees
Local community 1	Tanger	8	– Chief executive officer of the community – Three heads of department – Four employees
Local community 2	Casablanca	9	– Four heads of department – Five employees
Local community 3	Marrakech	5	– Two heads of department – Three employees
Local community 3	Agadir	7	– Chief executive officer of the community – Four heads of department – Two employees

4   Analysis and Discussion of the Results

A manual thematic analysis by category yielded the following:

- **The motivating factors behind the platformization process**: COVID pandemic, external pressure, fashion, obligation, user needs, opportunity, competition, reputation, productivity;
- **The actions carried out to prepare the community for the approach**: training, dialogue, mutual aid, information meetings, qualification, documentation, motivation, coordination, communication supports, mobilisation of personnel, control;
- **Knowledge and expertise processes**: passive resistance, protection of expertise, conflictual climate between managers and employees, inexperience, lack of knowledge, additional workload, insufficient preparation, doubt, constraint;
- **The degree of involvement of the community in the process**: involvement of leaders, direct communication, valorisation, collective adhesion, formalisation of procedures, collaboration, reluctance, cumbersome implementation, disruption, learning, experience, continuous dynamics, systematic management, methodical management, awareness, necessity,
- **The perceived impact of the approach on the community**: measurement indicators, dysfunctions, organisational efficiency, improvement of customer relations, interesting budget, surveys, collective responsibility, efficiency, transparency, digital culture, reorganisation, homogenisation, improvement process, revenue, computerisation, top-down communication, management.

Motivations for platformization: the main result of the categorical analysis is that the motivations for platformization are essentially external to the local authorities. In decreasing order of occurrence, the motivations originate from:

The external pressure seems to act essentially on the local authorities, which consider the platform approach as a means of developing their partnerships; they seem more sensitive than the other organisations to the constraints imposed by the COVID pandemic crisis. Adaptation to the needs of the territory and more particularly to those of the users, whose role in the decision to platform is in fact presented differently according to the interviewees, constitutes another determining factor at the origin of the approach. Competition is another determining factor cited several times among the motivations for the approach. This is particularly apparent when two reminders are necessary to obtain explanations from a general manager on the origin of the platform.

The perceived impact of the approach on the community: several general managers praise an increase in the quality of work among employees, who are now able to monitor their own performance and take charge of their tasks. In one community, for example, it was noted that the employee can now complete assignments or stop voluntarily, which was not the case before the platformization process.

Nevertheless, the change in mentality and habits generated by the approach is not always easily accepted and, in any case, generates various reactions, more or less negative, especially among employees. The degree of reorganisation involved in the process may explain the intensity of the opposition it arouses within the community. In two municipalities, for example, where the preparation for the platform had generated profound changes in the structure. What's more, negative reactions to changes in positions or functions were very high: two resignations of chiefs were noted in the same municipality, owing to conflicts of power and different views on their involvement in the process. Cases of absence during the training sessions were also reported in another community, from chiefs who signalled their disagreement with the approach.

Actions taken to prepare the local authority for the platform: on average, the authorities studied took six months to prepare for the platform. In some of these, factors such as key individuals leaving the local authority (two cases), change of support firm (up to three changes for one local authority), or time taken for staff upgrading increased the time taken.

The methods used by these local authorities to prepare for the process differ. In some, the formalisation work focused more on "documentation, form", whereas in others, as the spirit of platformization was better assimilated, the work was done on the practical aspects and content of the work. The approaches implemented in this way may relate to oral culture and involve the use of communication media. Examples include the circulation of a film based on a dialogue in dialectal Arabic between two employees questioning the foundations of the approach; instructions posted in the corridors in the form of diagrams or images; and the 'direct' communication opted for by a general manager during the preparation phase, choosing to explain the approach to all employees. The approach can also include training, including dedicated courses for all staff. In four local authorities, such training was an essential prerequisite for the platformization process.

Nevertheless, the discrepancy between the mode of preparation, the method adopted for formalising procedures and the dominant culture in the local authority would hinder the integration of the approach and its success.

The degree of involvement of the actors in the process: generally, in the local authorities surveyed, the initiation of the process is the responsibility of the general manager and is the result of an awareness-raising process that took place a few months before its launch. From the outset, his or her behaviour is the first signal that a change is about to take place. Department heads play an important role in the implementation of the platform. They are usually directly and strongly involved in the procedure formalisation stage, where they are asked to translate their expertise. On the other hand, employees are not so much involved in the decision-making

process. They do not actively participate in the formalisation of procedures, which some heads of department justify by the fact that they are only "executors".

The impact of an overall process of platformization is negligeable, not only for what is inherent in external collaborators, but also for citizens. Only two authorities reported strong relationships with their employees on the platform. Nonetheless, It is interesting to note that even for these, it is still difficult to platform all these relationships.

A process of knowledge and expertise that comes up against passive resistance: according to our survey, passive resistance to the process of platformization has displayed itself at several levels:

On the part of the heads of service, it takes shape particularly in the operational part. The expertise of the actors is a factor that can play a role in the acceptance of the approach, insofar as some holders of expertise were reluctant to reveal it. This is the case in particular of several heads of department who do not want to give their expertise on a plate or do not give the details. In one community where the climate was already conflictual before the process, the heads of department experienced the process of formalisation as a loss of the informal power that they had developed within these organisations and tried to turn the employees against the process. On the part of the employees, the first reaction we were told was that they doubted the usefulness of such an approach.

Illiteracy and lack of knowledge were also cited by one general manager as factors blocking the implementation of such an approach with employees. Insufficient, erroneous or misinterpreted external advice was also mentioned as a source of difficulty in developing the knowledge and expertise process necessary for the platform approach. Thus, two local authorities reworked the method provided by the accompanying firm, whereas three others abandoned the collaboration with a accompanying firm.

5   Conclusion

In this article, we have addressed the degree of integration of the platform in Moroccan local authorities in a particular context related to the pandemic crisis of COVID. The identification of this issue is the result of several practical observations stemming from the contemporary situation and constraints of the Moroccan community, but also theoretical ones related to the lack of previous research carried out in this sense.

From an academic point of view, the transdisciplinarity and the diversity of the conceptual framework of platformization led us to propose a synthetic definition adapted to our research context. Three main notional components were retained. The first part is related to an organisational logic which implies the use of organised intermediation processes and devices. The second component is related to the interactional dynamic which considers platformization as a process of permanent progress, marked by the daily commitment of all the actors inside and outside the

company. The third component is processual and calls for the development of knowledge and expertise relating to management, technology, training and even behaviour with regard to digital technology.

From an empirical point of view, this research work tried to evaluate the degree of integration of these three components within Moroccan local authorities that have opted for a post-COVID platform.

Bearing in mind the caution that the limitations of our research call for, we believe that the following results can be drawn:

The organisational logic behind the formalisation of these authorities is essentially short-term and structural. All of them are motivated by a desire to reform as part of a strategy led by the director and mainly reactive to the pandemic. Indeed, the vast majority of the entities surveyed essentially perceive the approach as an essentially external constraint. A constraint that is imposed on the organisation and, more generally, that will contribute to keeping the system alive or in the initial conditions, instead of being a positive and voluntary strategy.

However, the interactional dynamic caused by the approach remains essentially internal. Indeed, although the forms of collaboration instituted at the time of the adoption of the approach initially favoured the mobilisation of internal resources, after adoption there was a hierarchical breakdown, resulting in multiple conflicts between different actors and fairly divergent points of view. The lack of trust and the hierarchical control often associated with the approach do not favour the creation of an interactional dynamic within these communities.

Therefore, it seems that the platformization bore the imprint of its main designers, in this case the general managers. Hence, It is likely that this personalisation of the approach has not been without effect on the interactional dynamics of its appropriation and integration by all the actors. Moreover, the emphasis placed by the platform on the development of a transversal organisation of knowledge and expertise disrupts the balance of power that has been established for years within these communities, so that classic phenomena of resistance to change may appear, without being specifically explained.

The next step in our reflection will be to look at the quantitative testing of these results with a more significant number of Moroccan local authorities.

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"Cognizance, Deeds and Repercussion of E-Waste" Headed Towards Sustainable Environment

R. Rupashree and K. Jagannathan

Abstract *"Environment—Sustainability"* is a mantra all over the world. It's Echoing by all countries to protect the environment. Employing sustainability, numerous initiatives is enchanting by all countries. Water, Land, and Air pollution is drastically augmented as a result of unethical practices of Industries and Human usages like plastic, Glass, Footwear, fibers, metals, poisonous chemicals, pesticides, and consumer goods like disposable bags, Plastic bags, plastic containers, water bottles, and metal cans, etc. Out of countless items, E-waste is one of the foremost items which is consumed by people and is at a higher level in this today's technology world. So the researcher focused on E-Waste management awareness among the public, their behavior, and the effectiveness of practices instigated by authorities to reduce E-waste. The study was carried out with the support of primary data, and the questionnaire was circulated among the public to ensure the factors of the focus areas of the study. The data was confirmed by applying selected tools to check the parameters.

Keywords Awareness · Behaviour environment · E-waste · Sustainability

1 Introduction

E-WASTE is a category of waste management that includes any electrical or electronic equipment that has been abandoned. E-waste accumulates in the land, air, water, and nearby living things, is potentially toxic and is not biodegradable. In order to recover valuable elements from electronic components, open-air burning, and acid baths might release toxic compounds into the atmosphere. Workers may also be exposed to high focuses of pollutants like polychlorinated biphenyls, brominated flame retardants (BFRs), lead, mercury, beryllium, thallium, cadmium, and

R. Rupashree (✉) · K. Jagannathan
Department of Management, Kristu Jayanti College, Bengaluru, India
e-mail: shreerupa91@gmail.com

arsenic, which can have long-term negative effects on health like cancer, miscarriage, neurological damage, and lower IQs.

The community and Government have more responsibility to protect our environment. Nevertheless, Industries and consumers need are unstoppable. Particularly Human needs have no end, so it encourages the industry to fulfill the needs with or without ethical consideration of society and the environment. WhichE-waste is playing one of the major waste management categories to pollute the environment.

The world is captivated with much inventiveness to blow out the Global warming and Environment Protection alertness-related information, news, and videos through various media. An altered approach, strategies, and policies related to waste management are instigated all over the countries. Besides government is taking many trials to implement environmental protection policy initiatives to reach the citizen.

The habit of Electronics and Electrical components, products, and substances are soaring at rocket speed. Technology advancement in all industries and consumer products are high in usage everywhere.

E-waste has emerged as a significant global environmental issue for many nations. According to numerous studies, dangerous elements in e-waste may result in ecological catastrophes and health issues for people if proper recycling techniques are not adopted. This E-Waste increase creates the necessitates to review of the current e-waste management procedures.

Growth of E-waste in India
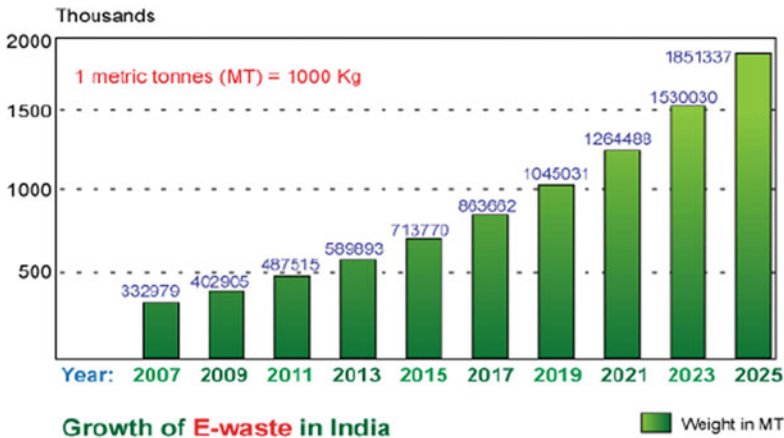
Source: Department of Information Technology   Chart: CopperBridge Media

Source: Lok Sabha 2022
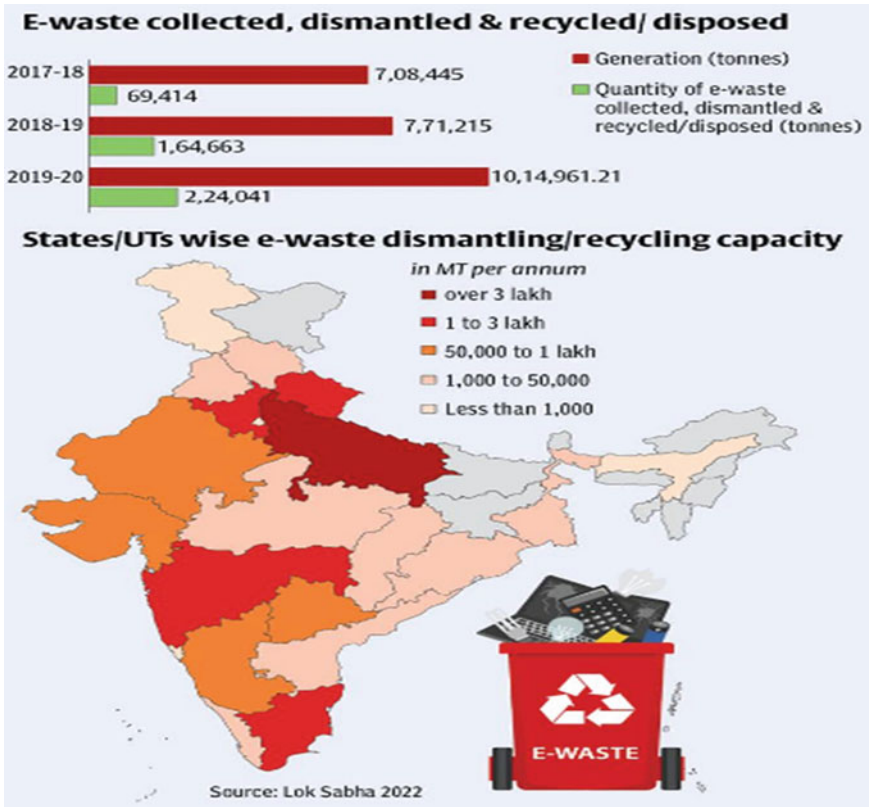
Beholding on the various data, in the future, E-waste will increase irrespective of all places. The government also takes much initiative and frames strategies to reduce and adequately handle E-Waste in society towards environmental protection initiatives.

In addition to examining people's understanding of e-waste management, its generation, and basic treatment techniques, this article intends to shed light on how e-waste management practices contribute to environmental sustainability. For this study, it is important to consider the production, management, type of e-waste components, progressive usage of e-waste management, consumer behavior on e-waste management, and control mechanisms. The results of this survey show that there needs to be more knowledge about how electronic trash is generated and processed and that only a limited population is aware of E-waste management.

2   Review of Literature

According to a study by Mor et al. [1], "E-waste is a huge challenge for the sustainability of developing countries and e-waste management strategies would be more effective if formal and informal sectors work together." This study shows that the formal and informal sectors' collection, treatment, and legal issues provide significant obstacles to the management of e-waste. The authorities' approach and actions to control e-waste should be more successful. Hossain et al. [2], the rapid socio-technical advancements and alterations in lifestyles brought on by recent global economic growth. As a result, a lot of electrical and electronic appliances are generated and will eventually turn into e-waste. Economically poor countries are seeing a growth in e-waste due to the fluctuating process of both newly manufactured, even if economically high countries are the main sources of this garbage. For instance, India, the second-largest country processing e-waste, produces its own waste and imports waste from high-income nations. Mohamad et al. [3] studies reveal that consumer behavior is more connected in e-waste management recycling. The reverse logistic process cannot be operated without their support, which means the recycling of E-waste will be possible only with the help and support of the users. According to that, consumers will be more responsible in E-Waste management systems, and success is only possible with them.

Ikpe et al. [4], according to that research study, there is no practice of 3R waste management system in most residential and commercial areas. Most of the waste is in open dumpsites without any public safety measures. It is the most common place to create all toxic effects on humans while burying without segregation. And also, there is no proper and concrete plan and policies to segregate and convert economic resources through E-Waste. According to the study of Siddiqui [5]. Most of the E-waste occurs from Electrical items like Bulb, plugs, switches, etc., which is thrown into a waste collection place or in a commonplace compared to Electronics items. And also, electronic items like washing machines and refrigeration air coolers can be replaced with new ones or disposed to scrap collectors. Only 26.6% of the respondents were aware of the hazards and the toxic effects of E-Waste. Reena et al. [6] stated the low level of consumer and producer awareness of the risks of improper e-waste disposal. E-waste is frequently recycled in the black market using crude methods like acid. E-waste employees are exposed to major health risks and have little to no knowledge of the poisons in this type of garbage. Ineffective recycling techniques cause significant material value losses. The main issue we have in India is that there is no such technology or clear policy or rules to control how e-waste is disposed of. The majority of backyard recyclers recycle e-waste.

Gaidajis et al. [7] for the recovery of valuable raw materials and key metals, e-waste must be separated from other types of solid trash and recycled. The management system must be carefully planned so that the environmental advantages of collection, transportation, and management, as well as the financial advantages of recovery, do not outweigh the resources and energy requirements for system operation. According to Andeobu et al. [8], E-waste is a noteworthy waste tributary in India

regarding size and toxicity, by the end of 2021, India will have about 152 million old computers, which will provide significant management difficulties and environmental/health issues. India produces about 400,000 tonnes of e-waste domestically each year. As a result, the recycling of electronic garbage in India is a market-driven sector that unofficial actors primarily control. In India, almost 90% of e-waste is unlawfully reprocessed in the unorganized sector by a variety of people, including women and children. Attia et al. [9] stated that participants were asked how frequently they recycled their electronic gadgets, the majority (68.4%) said they never did. Compared to respondents with average to low awareness of e-waste, it is noteworthy that respondents with high awareness contributed the most to recycling their electronic equipment more than once, with a proportion of 50%. With a percentage of 79.8, most respondents said they would be willing to participate in e-waste recycling. According to Mohana et al. [10], the government authorities role is more important than any other to facilitating the stakeholders with connection to the E-Waste management system. The following measures and parameters are very important considerations for controlling E-waste, i.e., Informal sector, policy framework, regulatory enforcement, E-Waste import, and public awareness. According to Kiddee et al. [11], the impact of toxic substances is very high during the recycling of E-Waste. It entirely pollutes the ecosystem, society, and human health. Its create. Its create landfill, air, and water pollution in any form of E-Waste. And more the Government and local authorities also not showing severeness on to minimize or control E-Waste.

2.1 Statement of the Problem

When electrical and electronic equipment is no longer suitable for its intended purpose or exceeds its expiration date, electronic garbage, or e-waste, is produced. Suppose E-waste is disassembled and processed in an imprecise manner using elementary techniques. In that case, it can be very dangerous due to toxic substances like liquid crystal, lithium, mercury, nickel, polychlorinated biphenyls (PCBs), selenium, arsenic, etc. barium, brominated flame retardants, cadmium, chrome, cobalt, and copper. Humans, animals, and the ecosystem are all seriously at risk from e-waste. According to a report presented at the World Economic Forum 2018, India ranks 177 out of 180 nations and is among the worst five nations in the Environmental Performance Index for 2018. This was connected to poor performance in environmental health policy and air pollution-related mortality.

2.2 Objectives of the Study

- To know the level of awareness of E-waste among the general public
- To understand the Behavioural approach towards E-waste

- To identify measures taken by the government to reduce the E-waste

3   Research Design

The researchers conducted a descriptive study, including questionnaire surveys and various fact-finding inquiries. All customers provided the necessary information for the data collection. Surveys, observation, and the description or validation of a particular hypothesis or set of objectives are all part of the research method, which summarises the features of the population or phenomenon under study.

3.1   Sample Size and Sampling Methodology

Totally 186 respondents responded to this study from both urban and rural areas of various cities in the countries. The researcher has used a convenient method to collect respondents related to the study across various cities.

3.2   Methods of Data Analysis

Various statistical tools have been used to carry out the research objectives of the study. To check the reliability, Cronbach's alpha was used, and the value obtained was 0.7, which proves the validation of the questionnaire. Correlation matrix was used to analyze the relationship between age and type of e-waste formed at home. Also, in the study, ANOVA is tabulated for analyzing the significance between Government awareness programs and disposal methods adopted by the public. The measures used served as a tool for the researchers to prove the hypothesis framed for the study.

3.3   Scope of the Study

In India, waste administration essentially refers to all tasks necessary to control garbage from the point of origin to the point of disposal. Waste management primarily entails activities including the gathering, moving, treating, and final disposal of waste with a high level of oversight and control. This study's results can help stakeholders understand the current scenario, consumer opinion, and behavior on E-Waste consumption and management. It also gives somehow to improve; modified modifications can be made in present policies, procedures, and strategies in connection with E-Waste management.
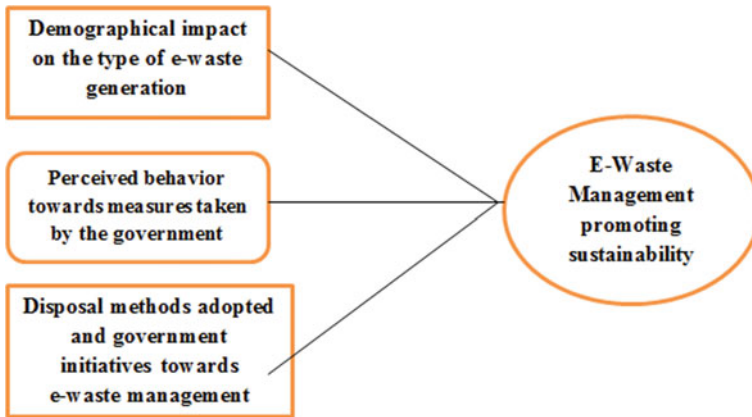
Fig. 1 Conceptual framework of the study. The study framework is placed below for an easy understanding of the connection between variables towards E-Waste Management promoting sustainability

3.4 Hypothesis

H_{01} = There is no significant relationship between Age and type of e-waste from home.

H_{02} = There is no significant difference between Government awareness programs and disposal methods adopted by the public (Fig. 1).

4 Results and Discussion

Table 1 provides a brief snapshot of the demographics of the respondents, who are primarily male and live in urban areas of their town. When the respondents' ages were examined, it was discovered that the majority of them were between the ages of 30 and 40, followed by 20–30. This indicates that the respondents come into the group of young people, the majority of whom hold graduate or postgraduate degrees. And might be possible to use Electronic Gadgets among these age groups.

Table 2 signifying the age of the respondents and the type of e-waste generated at home—categorized as electrical items, electronic items, and home appliances—are related, as evidenced by the correlation matrix result in the table above. Agreeing with the study of Hossain et al. [2], the advancement of lifestyle in recent global growth is also one of the reasons for the turn in to generate more electronic waste. The study's findings demonstrate a positive link between the study's variables since most respondent homes generate more electronic garbage than any other type of waste. The conversation is also influenced by demographic factors, with the bulk of respondents being young people who frequently use electronics. Hence supporting

Table 1 Demographic analysis of the population in the study

Gender	**Male**	**Female**			
	106 (56.9%)	80 (43.01%)			
Type of residence	**Urban**	**Rural**			
	148 (79.56%)	38 (20.43%)			
Age	**20–30**	**30–40**	**40–50**	**50–60**	**Above 60**
	48 (25.80%)	86 (46.23%)	32 (17.20%)	7 (3.76%)	13 (6.98%)
Level of education	**Schooling**	**Intermediate level (PU)**	**Under graduate**	**Post graduate**	**Any other professional degree**
	15 (8.06%)	26 (13.97%)	94 (50.53%)	32 (17.20%)	19 (10.21%)

the alternative theory that there is a correlation between age and the sort of household e-waste generated. The results clearly indicate that the present young generation has many electronic gadgets, which might be one reason for the usage, and E-waste is increasing gradually.

Table 3 the government's efforts to raise awareness and the steps taken for E-waste Management are evident from the findings above. The results of the ANOVA yielded a value of 8.145 for the F statistic test and a p-value of 0.035, which is < 0.05. As a result, the value shows that there is a big discrepancy between the government's awareness campaign and the steps taken to manage e-waste. Thus, it can be inferred that government-initiated awareness campaigns impact the E-waste disposal strategies used by the general people. In India, the publics are least aware of E-Waste. Still, connecting to the study of Reena et al. [6], there needs to be a higher level of consumer and producer awareness of the risks of improper e-waste disposal. These differences between others can interpret the government's importance in creating awareness about E-Waste, and it can make a difference among public.

From the Table 4, above simple statistical measure, it is apparent that the majority of the respondents want to be better citizens by handling e-waste efficiently and also by contributing towards environmental protection. But, from the observed study, it is marked that a maximum of the respondents throw the e-waste generated at home in open spaces on the road. Very few segregate the e-waste and dispose of it through the help of collection services or other means. It is also clear that there is no proper e-waste container available in the localities provided by the municipal corporation for waste disposal. The survey states that the respondents are unwilling to donate to needy people as they know that e-waste carries some monetary value. This result can also be connected to the finding of Ikpe et al. [4], which revealed that there is no proper waste management practice. So, an open dumpster is the only option for the public, and it creates all toxic effects on the human.

The above Table 5 focuses on knowing the awareness level of the respondents towards measures taken by the government for e-waste management. More than

Table 2 Showing relationship between age and type of E-Waste generated at home

	Electrical items (bulb, lights, electrical wires, cables wires etc.…)	Computer components	Electronic components (mobiles, batteries, plugs, power cables etc.…)	Home appliances/ electronic devices and their components (fridge, washing, AC machine, etc.…	Age
Electrical items (Bulb, Lights, Electrical wires, cables wires etc.…)	1	− 0.3258	0.5632	0.7325	1.0156
Computer components	− 0.3258	1	0.4536	0.5369	0.6647
Electronic components (Mobiles, batteries, plugs, power cables, etc.)	0.5632	0.4536	1	− 0.3687	1.05698
Home appliances/ electronic devices and their components (Fridge, Washing, AC machine, etc	0.7325	0.5369	− 0.3687	1	0.9007
Age	1.0156	0.6647	1.05698	0.9007	1

H_{01} = There is no significant relationship between Age and type of e-waste from home

Table 3 Showing the difference between Government awareness programs and disposal methods adopted by the public

ANOVA result					
	Some of squares	df	Mean square	F	Sig
Between groups	1.541	12	1.541	8.145	0.035
Within groups	43.582	174	0.223		
Total	45.123	186			

H_{02} = There is no significant difference between Government awareness programs and disposal methods adopted by the public

Table 4 Showing the behavioral ranking of respondents towards E-Waste management

S. No	Factors	I	II	III	IV	V	T.S	Order
1	Separate different types of E-waste at home	05	12	25	69	75	361	XIV
2	Dispose of E-waste nearby waste container	10	18	26	76	56	408	XII
3	Throw the E-waste in open spaces on the road	86	43	24	21	12	728	III
4	Just throw it in an empty place nearby home	78	49	21	19	19	706	VII
5	Informing to your collection service provider on E-waste	13	19	20	79	55	414	XI
6	Use of collection service	82	49	15	32	08	723	IV
7	Requesting my neighbors to proper handling of E-waste	12	24	32	78	40	448	X
8	Dispose of the E-waste in the dustbin, if it is on my pathway	78	49	21	19	19	706	VII
9	Initiate to dispose and handling of E-waste	58	49	57	12	10	691	IX
10	I will not advise and request my friends about proper handling and disposal of E-waste	83	44	21	19	19	711	V
11	I like to be a responsible citizen in handling E-waste	86	41	28	23	08	732	I
12	I didn't consider others opinion on handling on E-waste	65	54	41	19	07	709	VI
13	I desire to contribute towards environmental protection by at least minimal	86	39	30	23	08	730	II
14	I will follow the advice of others about E-waste	61	58	39	21	07	703	VIII
15	Donating to needy people	07	14	27	67	71	377	XIII

half of the respondents have responded that common e-waste bins are not available in the locality for e-waste collection and are not informed by the e-waste collectors about proper or timely disposal. The survey also found that most of the urban municipal localities or corporations do not take the initiative to promote awareness of e-waste and its management working on its mission of Swatch Bharat along with

the central government. Due to a lack of government initiatives and actions, the analysis conducted further in the study also demonstrated that most of them do not segregate e-waste according to the criteria supplied by the government. To conclude e-waste management, when asked about ties up with NGOs and educational institutions majority of the respondents, i.e., about 75.27%, strongly believe that this strategy would help the government to collect e-waste in the better possible manner where the educational institutions and NGO's can start creating awareness in the mindset of the youngers who are future responsible citizens of the society.

5 Findings

The repliers' periods were examined, and it was discovered that the maturity of them was between the periods of 30 and 40, followed by 20–30. This indicates that the repliers come into the group of youthful people, the maturity of whom hold graduate or postgraduate degrees. And might be possible to use Electronic widgets among these age groups. The advancement of life in recent global growth is also one of the reasons for a turn in generating further electronic waste. The results easily indicate that the present youthful generation has numerous electronic widgets. Awareness campaigns government have an impact on the E-waste clearance strategies used by the general people. The public wants to be a better citizens by handling e-waste efficiently and contributing to environmental protection. The respondents have responded that common e-waste bins are not available in the locality for e-waste collection and are not informed by the e-waste collectors about proper or timely disposal. The survey also found that most urban municipal localities or corporations do not take the initiative to promote awareness of e-waste, and its management is working on its mission of Swatch Bharat along with the central government. Due to a lack of government initiatives and actions.

6 Conclusion

A wealth of information on managing e-waste is available, but what needs the greatest attention is how it affects the general population and society. The study's findings support the conclusion that government initiatives to raise awareness of E-waste, establish an active system aimed at collecting E-waste, and designate a specific location for e-waste disposal are most important for streamlining the waste management system. The use of numerous electrical and technological devices has demonstrated their desire to develop into responsible individuals and give back to society. It is the perfect opportunity to implement a practical strategy for reducing and managing e-waste. Consumers and Government are vital in managing and controlling the E-Waste and creating an environment-friendly society. Sustainability through E-Waste Management can be possible with behavioral transformation amid the public and

Table 5 The statistical table on measures taken by the government toward e-waste management

Sl.no	Statements	Responses	Number	Marginal %
1	Common E-waste collection bins are provided in your area	SA	5	2.70%
		A	10	5.30%
		N	21	11.30%
		DA	83	44.60%
		SDA	67	36.02%
2	Well-informed schedule by the E-Waste collectors	SA	4	2.15%
		A	8	4.30%
		N	18	9.67%
		DA	95	51.07%
		SDA	61	32.79%
3	E-waste collection is as per schedule specified frequency or interval	SA	28	15.05%
		A	55	29.56%
		N	53	28.49%
		DA	31	16.67%
		SDA	19	10.21%
4	The authorities provide the updated E-waste collector's list	SA	14	7.52%
		A	8	4.30%
		N	48	25.80%
		DA	54	29.03%
		SDA	62	33.33%
5	Government is always taking initiated on 3 "R" methods (reduce, reuse, recycle) for the effective use of resources	SA	57	30.64%
		A	40	21.50%
		N	52	27.95%
		DA	24	12.90%
		SDA	13	6.98%
6	Authorities provided sufficient common place to dispose of the E-Waste	SA	12	6.45%
		A	8	4.30%
		N	39	20.96%
		DA	56	30.11%
		SDA	71	38.17%
7	I am happy with the Government initiative and support towards E-waste management	SA	14	7.52%
		A	12	6.45%
		N	39	20.96%
		DA	58	31.18%
		SDA	63	33.87%

(continued)

Table 5 (continued)

Sl.no	Statements	Responses	Number	Marginal %
8	Does your City/Corporation/Local Municipal authority take the initiative to promote awareness of E-waste and its Management? Swatch Bharat Mission of Central Government	SA	18	9.67%
		A	24	12.90%
		N	29	15.59%
		DA	54	29.03%
		SDA	61	32.80%
9	Awareness program initiated by Govt authorities among the public—(Door to Door campaign, road show, announcement, etc.…)	SA	11	5.91%
		A	14	7.53%
		N	23	12.36%
		DA	54	29.03%
		SDA	84	45.16%
10	Do you agree that Tie up with educational institutions and NGOs for implementing E-Waste Management will be effective	SA	97	52.15%
		A	43	23.12%
		N	26	13.97%
		DA	12	6.45%
		SDA	8	4.30%

admirable administration strategies by the government to save our environments and ecosphere. Every person and industry should strive to promote sustainability through managing e-waste for a future sustainable environment and giving the next generation a better eco-friendly environment.

7 Suggestion

Companies, NGOs, and organizations dedicated to environmental protection can take the lead aside from Via a variety of plans, and government engagement and effort can reduce E-Waste. Businesses should increase knowledge before, during, and after the sale of their electrical and electronic products in addition to the consumer perspective. Industries can make arrangements at their points of sale, such as setting up a door-to-door collection service for customers and non-customers, managing and collecting e-waste, and maintaining regular contact with the public and consumers about their e-waste collection. As part of their CSR programs, businesses may do more to manage e-waste, control it, and help the environment.

8 Scope for Further Research

This study attempted only towards Government initiatives and public behavior, not a look at the role of NGOs, Industries initiatives, and Comapany's arrangements to Manage E-Waste are not taken into account. Further, it can be potential to find out the different systems, methods, and initiatives that can give another possible way to reduce and manage the E-Wase better.

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Artificial Intelligence and Forecasting of Traffic Accidents Using GIS

Amro Qarrot and Khaled Alramlawi

Abstract As is the case in most countries of the world Traffic accidents are a major problem in the Gaza City, the number of traffic accidents increased significantly from 2017 to 2018, and the number of traffic accidents was higher than the normal rate. Most of the methodologies that have been developed to identify danger points for traffic accidents do not achieve the required level and decision maker can take correct actions after understanding the local factors that contribute significantly to traffic accidents. In this study, a new methodology will be developed to predict and identify the locations of traffic accidents and to identify the factors that contribute to the occurrence of traffic accidents. Through this study, a distance of 13.06 km was chosen as a case study to predict the locations of traffic accidents on those roads.

Keywords Geographical information systems · Artificial intelligence · Traffic accidents · Prediction of traffic accidents

1 Introduction

Every year, the World Health Organization publishes a new edition of the global status report on traffic accidents. Statistics show that the annual number of deaths is estimated at 1.3 million people annually, and these accidents cost 3% of the country's gross domestic product [1].

Traffic accidents are a source of danger to the population. And improving road safety, reducing the number of accidents on the road and setting appropriate measures is a priority in the Gaza City, as the number of traffic accidents and the number of deaths and injuries is constantly increasing [2].

A. Qarrot (✉) · K. Alramlawi
University College of Applied Sciences, Gaza, Palestine
e-mail: aqarrot@ucas.edu.ps

K. Alramlawi
e-mail: kramlawi@ucas.edu.ps

Reducing the number of traffic accidents will only be possible by knowing the best main factors that contribute to the occurrence of these traffic accidents, however, little research has been done on traffic safety and understanding where and how accidents occurred or the factors that led to accidents.

2   Study Problem

Gaza City suffers from a high population density, and it has many main roads, and these roads are very crowded most of the time [3], and Improving traffic safety on these roads is necessary to reduce traffic accident rates, Determining the areas in which accidents are concentrated on these roads will allow decision-makers to implement appropriate measures to prevent the recurrence of such accidents. Through the research, GIS technology, artificial intelligence and statistical and spatial analysis will be used to map and predict the locations of traffic accidents on Al-Jalaa Street, Al-Sinaea street and parallel roads in the city of Gaza.

3   Objectives

The main objective of the study is to predict the locations of accidents using GIS technology and artificial intelligence. The sub-objectives of this study are:

1. Identifying accident hotspots for 2018.
2. Identify and analyze the factors that contribute to traffic accidents.

4   Study Area

Al-Jalaa Street and Al-Sinaea street in Gaza City, Fig. 1, which is the most densely populated areas is located, which is classified within the main roads that connect parts of the city from the north to the south, which have the high traffic density [2].

5   Research Methodology

Road accidents account for a large proportion of the number of fatalities and serious injuries; However, it is often difficult to determine the factors that lead to the occurrence of such accidents. The study will do the following:

1. Determining the locations of traffic accidents for the year 2018 in the study area
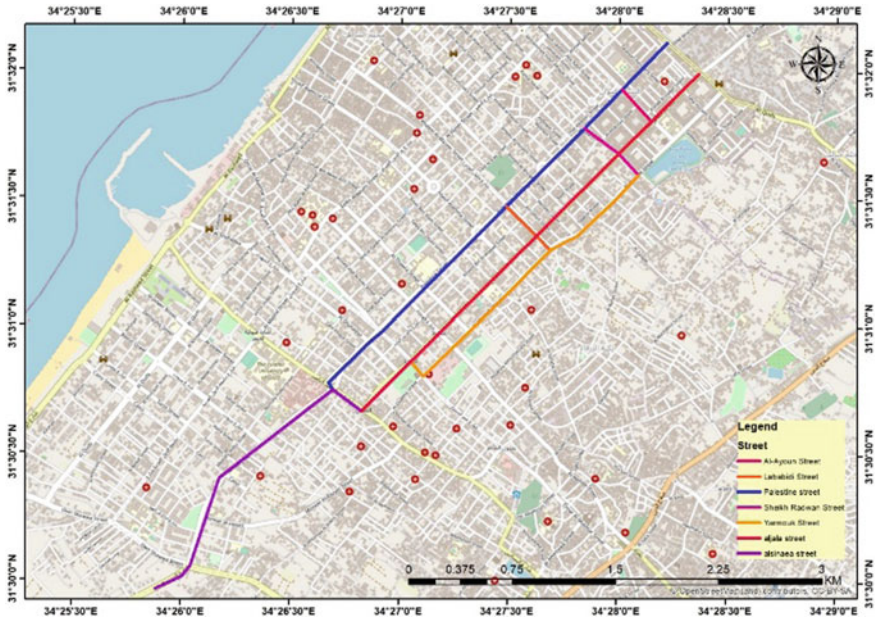2. Factors that cause traffic accidents

Fig. 1 Study area [2]

3. Collect spatial data for the factors that cause traffic accidents
4. Use of spatial analysis and processing tools to analyze the causes of accidents
5. Developing a model that predicts the locations of accidents according to the factors that lead to the occurrence of traffic accidents using artificial intelligence technology
6. Predicting areas that could by traffic accidents.

5.1 Determining the Locations of Traffic Accidents for the Year 2018 in the Study Are (Traffic Accident Fatality Hotspots)

After collecting data for the locations of traffic accidents in the study area for the year 2018, the hot spots in which traffic accidents occur and lead to deaths have been identified Fig. 2. We note that the end of AL-Sinaea street from the southern and the beginning of Al-Jalaa Street from the northern side, the incidence of accidents with deaths is very high.
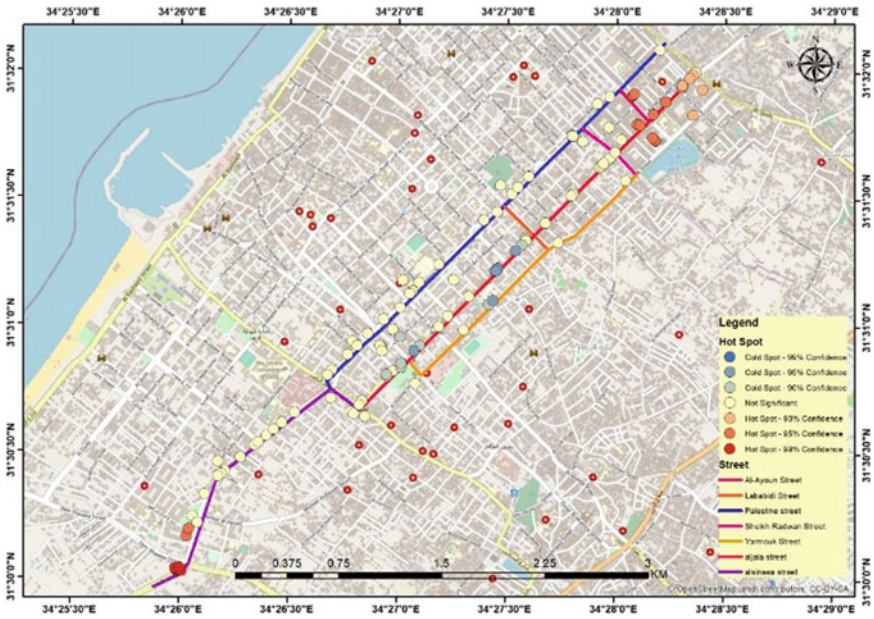
Fig. 2 Traffic accident fatality hotspots

5.2 Factors that Cause Traffic Accidents

Data were collected from the Ministry of transportation in Gaza City on the causes of traffic accidents and a Table 1 showing the causes of accidents and the data needed for the analysis process.

Table 1 Table accidents and data needed for analysis

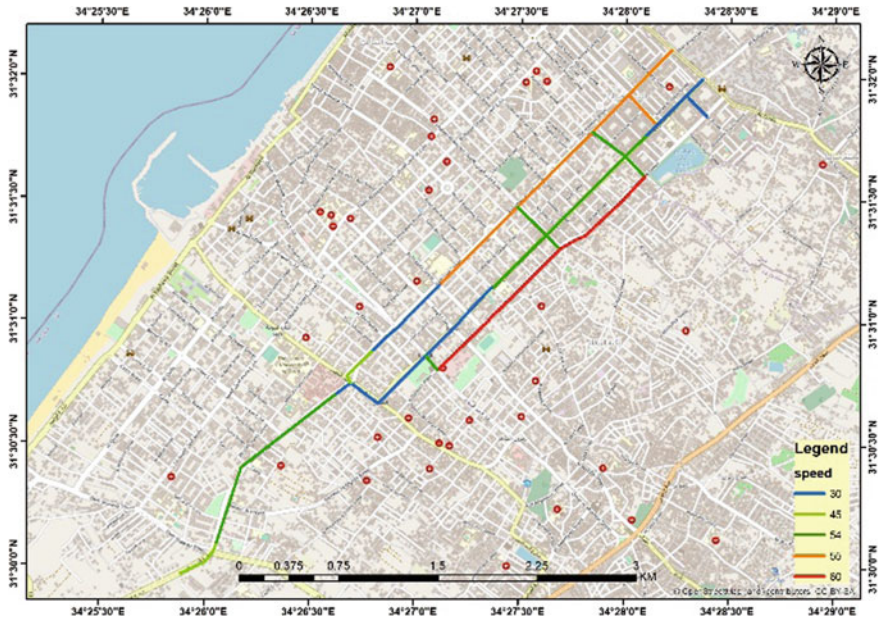| The cause of the most pressing	Data needed for analysis
Speed in excess of 50 km/h	Road layer containing the speed of road
Traffic congestion level (level of service)	The road layer containing the congestion rating (LOS)
Turn sites	Turn layer
Topography of the land that obscure vision	Slope layer

Fig. 3 Speeds on the road

5.3 Collect Spatial Data for the Factors that Cause Traffic Accidents

5.3.1 Speed in Excess of 50 km/h

The speed ratio in the study area ranges between 30 and 60 km/h, and the Fig. 3 shows the speeds on the road, and the faster the vehicle speed is more than 50 km/h, the greater the chance of a traffic accident.

5.3.2 Traffic Congestion Level (Level of Service)

The severity status of the road was rated using the Levels of Service (LOS) method Fig. 4, which shows the traffic congestion rating in relation to the number of cars per 1 mile, and a Table 2 detailing the Levels of Service method, and higher the LOS rating, the higher the chance of accidents.

Fig. 4 Level of risk on the road

Table 2 Level of service [4]

LOS	Speed range (mph)	Flow range (veh./h/tane)	Density range (veh./mile)
A	Over 60	Under 700	Under 12
B	57–60	700–1100	12–20
C	54–57	1100–1550	20–30
D	46–54	1550–1850	30–42
E	30–46	1850–2000	42–67
F	Under 30	Unstable	67

5.3.3 Turn Sites

Turn is one of the main causes of traffic accidents in Gaza City, data were collected about Turn sites in the study area Fig. 5, The closer the car is to the Turn sites, the greater the chance of traffic accidents.

5.3.4 Topography of the Land that Obscure Vision

The heights and depressions of the earth's surface have a major role in the occurrence of traffic accidents, and when the speed is also in excess of the required limit and there is a decrease in the ground, this leads to the occurrence of accidents, for this
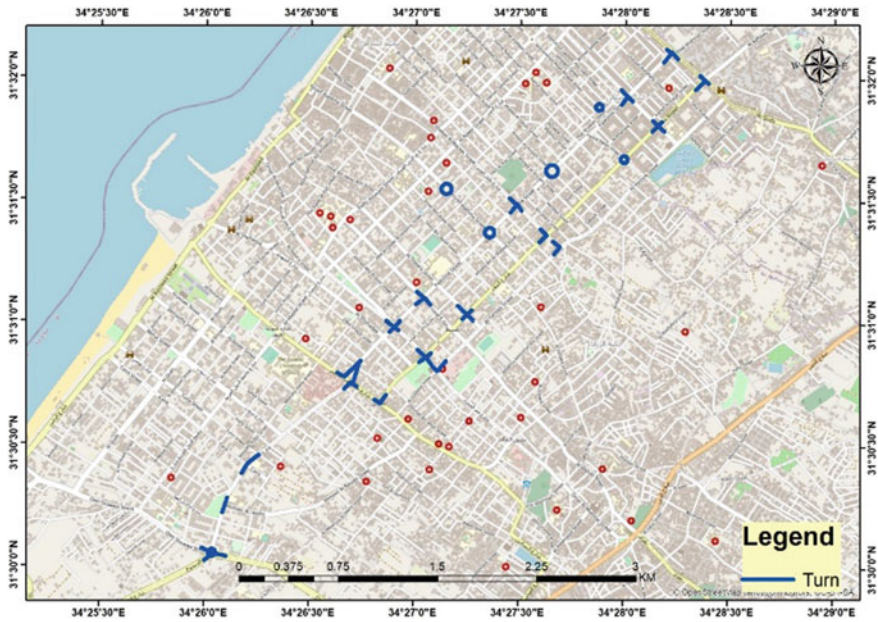
Fig. 5 Turn sites

reason, we have determined the percentage of the earth's slopes Fig. 6, and the greater the size of the slopes, the greater the probability of traffic accidents.

5.4 Use of Spatial Analysis and Processing Tools to Analyze the Causes of Accidents

After the data collection process, We converted the speed and level of service LOS data from Vector to Raster using feature to raster, We determined the distance for the Turn data in the study area using the Euclidean Distance, We did this in preparation for entering that data into the model that will be designed.
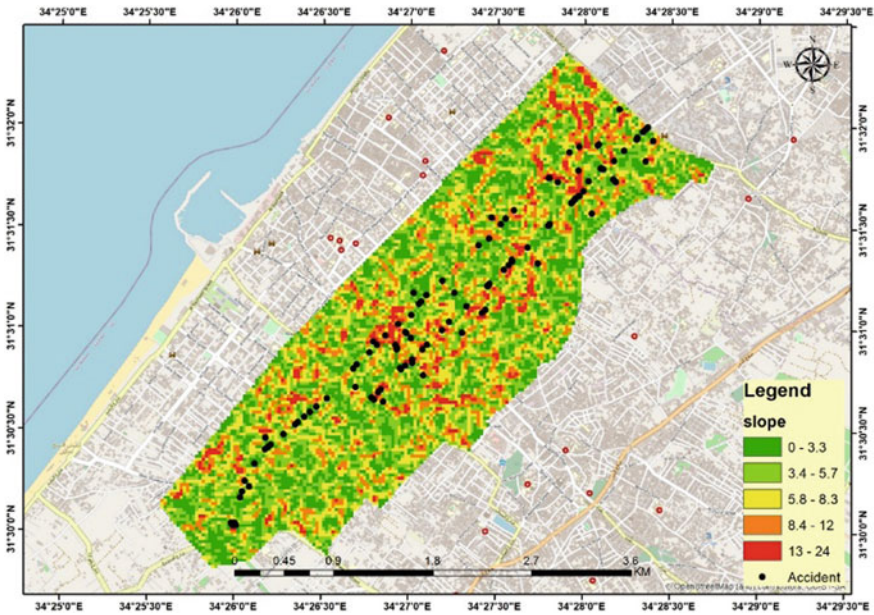
Fig. 6 Slope ratio

5.5 Developing a Model that Predicts the Locations of Accidents According to the Factors that Lead to the Occurrence of Traffic Accidents Using Artificial Intelligence Technology

After completing all the previous processes, we designed a model consisting of a set of processing and spatial analysis tools, Fig. 7, to predict the reality of traffic accidents, And through the model that was designed, the risk ratio (weight) was determined for each of the factors that lead to the occurrence of traffic accidents Table 3.

The risk ratio (weights) was determined by analyzing the causes of traffic accidents that occurred in 2018 in the study area.

5.6 Predicting Areas that Could by Traffic Accidents

After implementing the model that was designed, the Fig. 8 shows predictions of locations where traffic accidents. We note that traffic accidents occur on roads that are close to Turn, which has a high LOS rating.

Fig. 7 Traffic accident prediction model

Table 3 Factor weighted

Layer	Weight %
Speed	10
LOS	40
Slope	10
Turn	30

6 Results

After completing the processing, analysis and forecasting processes, the locations of traffic accidents using artificial intelligence. And It is clear that the areas in which traffic accidents can occur are the following roads.

- End of AL—Sinaea street, which is close to Turn
- The beginning of AL—Sinaea street with the intersection of Al-Tayaran Street crossroads
- The intersection of Saraya Street, the intersection of Dabeed Street, and the intersection of Palestine Street
- The intersection of Al-Jalaa Street with Sheikh Radwan Street
- End of Al-Jalaa Street.

By comparing traffic accident prediction sites with traffic accident sites for the year 2018 Fig. 9. We note that there is congruence with the results and that prediction using artificial intelligence leads to real and realistic results.

We also find that there are locations of traffic accidents for the year 2018 that did not appear to us in predicting the locations of traffic accidents Fig. 8, because there
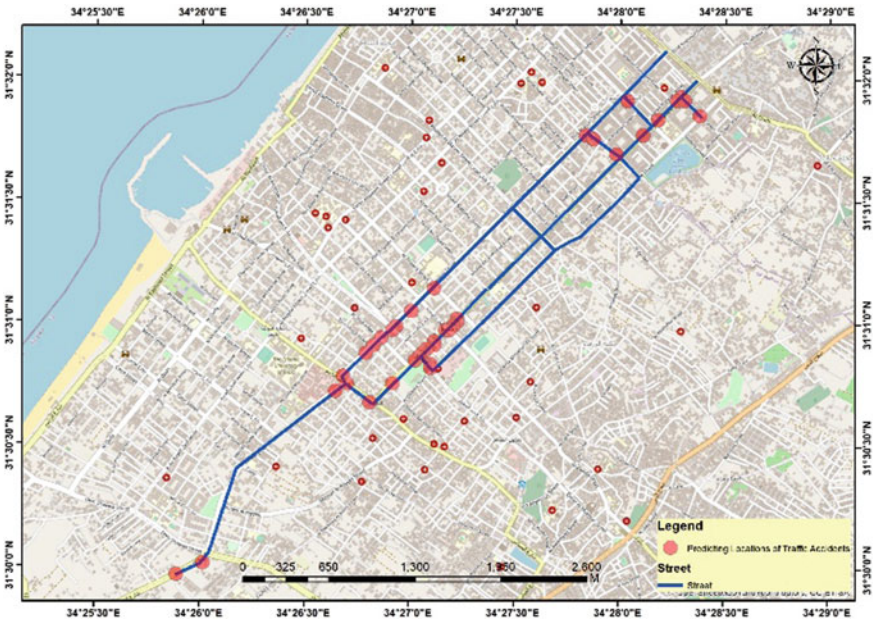
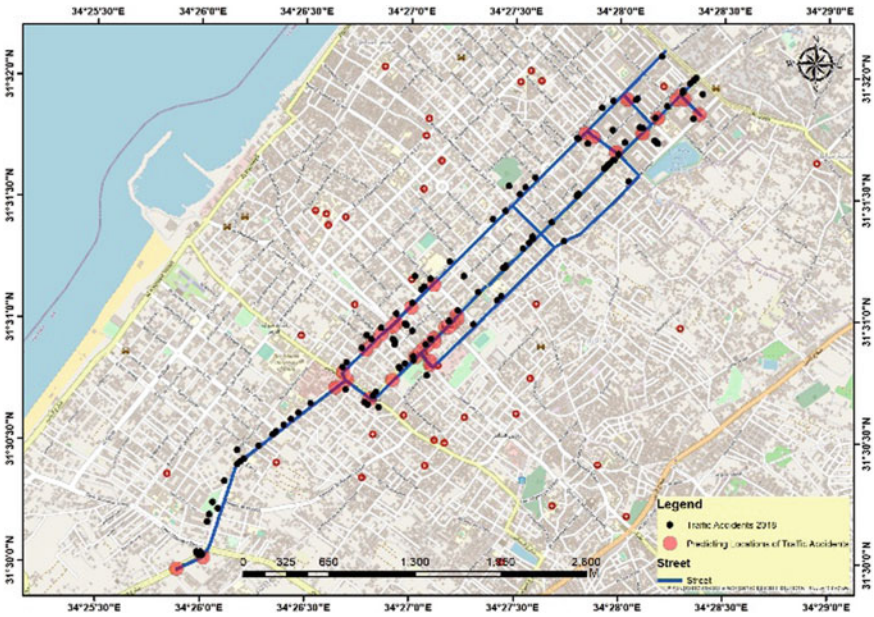**Fig. 8** Predicting locations of traffic accidents

Fig. 9 Traffic accident prediction sites with traffic accident sites for 2018 year

is due to other factors that lead to the occurrence of traffic accidents that were not taken into account because of the lack of data Such as: vehicle type, weather, lighting conditions, driver age.

For the process of applying artificial intelligence technology accurately and effectively, real time data must be provided to predict the locations of traffic accidents, Real time data must be provided and entered into the designed form and updated every 1 min to give the results of predicting the reality of traffic accidents on the map in order for the driver to make the right decision and reduce the occurrence of the traffic accident.

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Attention to Economic Factors and Its Response to Foreign Portfolio Investment: An Evidence from Indian Capital Market

Sathish Pachiyappan, Anchita Kandral, H. N. Shylaja, John Paul Raj V, and Saravanan Vellayan

Abstract Stock market consists of a variety of investors. Among these, Foreign Portfolio Investors (FPIs) is a key investment influx. These investments can change or fluctuate due to several macroeconomic factors which can cause a shift in the dynamics of the markets in India. This paper examines the factors influencing for foreign portfolio investment in long run as well as short run. The sample comprises of 120 monthly observations on Foreign Portfolio Investment (FPIs) and Macro economic variables such as Oil prices (OP), Gross Domestic Product (GDP), Interest Rate (IR), Exchange rate of Indian Rupee with USD (ER), Inflation (CPI), Nifty Index (NSEI), 10 year Bond Prices (BP) and Index of Industrial production (IIP) over a period of 10 years, spanning from January 2013 to November 2022. The study employed Autoregressive Distributed Lag model (ARDL) to establish the long run association with error correction models. The result indicates that there is long run association between the Foreign Portfolio Investment and macro-economic variables. Among this, NSEI, IIP and ER played a significant role to determine FPI investments in the long run, whereas in the short run, FPI was impacted by ER and NSEI significantly.

Keywords FPI · Macroeconomic factors · Equity and debt market · India

S. Pachiyappan (✉) · A. Kandral · J. P. Raj V · S. Vellayan
School of Business and Management, CHRIST (Deemed to be University), Bannerghatta Road Campus, Bangalore, India
e-mail: sathish.p@christuniversity.in

H. N. Shylaja
Department of Commerce, Manipal Academy of Higher Education, Manipal, India

1 Introduction

Post liberalisation, there is an increased influx of foreign investments across the countries. Foreign Direct Investment (FDI) and Foreign Portfolio Investments (FPI) are two modes of investment in another country. While FDI is long term and is of permanent nature, the FPI is rather short term investment in the financial markets of a foreign country and is referred as hot money [1]. Developing countries hope to attract more and more foreign capital as it helps to enhance economic development of the host country [2]. A country's economy from international perspective makes the investment lucrative for institutional investors. Capital inflows presents tremendous economical welfare gains to both developed and developing economies alike. Contribution to host country's capital accumulation, the production capacity, dissemination of new technology, dissemination of knowledge, contribution to host country's BOP, new business opportunities coupled with creation of new markets are few of the benefits of foreign capital for a host country [3]. The developing economies strive to attract foreign direct investments and other capital inflows that ensures long term economic growth of the country [4].

The behaviour of FIIs and DIIs are relatively different from one another [5]. The overseas investors buy more shares when the market index goes up and sell less when the market fall whereas the domestic investors buy less shares when the market increases and vice versa and shows an inverse relationship between the FIIs and DIIs [6]. The institutional investors (FIIs and DIIs) have significantly influenced on the Indian equity market since 2008 [7]. The investment decision of foreign portfolio investors depends not only the performance of the stock market but also depends on the performance of various macroeconomic indicators in the country viz., the Index of Industrial Production (IIP), Money Supply (MS), Exchange Rates (ER), Interest Rates (IR), Gross Domestic Product (GDP), Inflation measured by the Consumer Price Index and Wholesale Price Index (WPI). To take better investment decisions in the emerging stock market, they give importance to every economic indicator. The inflow and outflow of FPIs are determined by internal and external factors which includes market rate of return, inflation, infrastructure facilities, fluctuation of exchange rate and interest rate [8]. In addition, domestic institutional investors' investment decisions are also influenced by different domestic, economic as well as political factors [9]. Therefore, in this unpredictable global environment, it is crucial to analyse the determinants of capital inflows. Economists and investors need to understand the relationship and the long run determinants of FPI as it is seen to have a huge influence on the economic conditions of the country as well as market and is seen to significantly impact the market conditions and in turn their investments. Foreign Portfolio Investment is also seen to be very sensitive to the stability of the home county's economy and other conditions as these investors are seen to invest and disinvest very easily and significantly impact the stock market positively or negatively. With this background, the present study tries to explore the following research questions. Is there long run association between the Overseas Portfolio Investment and Macroeconomic factors? Does the macro-economic factors

have significant influence to determine Foreign Portfolio Investment pattern? What are those macro-economic factors that gets impacted by FPI both in the long run and in the short run?. The duration of the study that spans from 2013 to 2023. With India being the tenth country in terms of GDP in the year 2013, it now occupies the top 5th position. With the kind of changes that has been witnessed in the country economically and the influence it has on other economies as such is varying with time. In this context a study of this order needs to be made to understand those factors which are impacted by the inflow or outflow of foreign portfolio investments.

2 Review of Literature

There are various factors considered by the foreign portfolio investors before making an investment in capital market. Calvo et al. [10] stated that there are various factors that are both internal and external to the country which influence the foreign investors to make investments in developing countries. The determining factors can be internal (pull) or external (push) factors such as increase interest rate in U.S., slowdown in U.S. industrial production and the recession in U.S. Pull and push factors are classified as variables that impact FPI flows, according to Oke et al. [11], who investigated these factors as determinants of FPI in emerging markets from 1986 to 2018. Similarly, Aizenman et al. [12] revealed that FDI and FPI are fundamentally different, with the former linked to ownership and control, while the latter is not. An investment decision of FIIs (inflow/outflow) depends on several factors in the host country such as appreciation of exchange rate, gross domestic product, government policies, industrial growth rate, inflation rate, interest rate difference, sentiment of stock market, risk and return factors [13]. Following that, Prasuna [14] proven that market return is a significant factor to attract more foreign investment into the emerging markets. Likewise, [15] evidenced that foreign investors preferring large cap companies and giving priorities to invest only in shares held by non-promoter companies. The wealthy stock market will attract huge capital flows from the overseas investors stated by Bergman [16]. Particularly, the emerging market like India provides a greater investment opportunity for foreign portfolio investors [17].

There was a huge variability in the behaviour of stock market after the entry of FPI into India [18]. Foreign portfolio investors try to buy more stock whenever the stock markets increase [19, 20]. Based on this aspect, foreign portfolio investors follow positive feedback traders in Indian capital market, which mean they buy more stocks when the market increase and sell when the market decrease [21, 22]. On the other side, Srinivasan et al. [23] argued that foreign investor follows positive and negative feedback trading hypothesis during pre and post global financial crisis respectively. Notably, market risk and return, market capitalization, stock market turnover, interest rate, economic growth and inflation are majorly considered by FIIs to make an investment in Indian stock market [24]. Apart from that, two factors which are related to firm specific characteristics, namely Earnings per Share (EPS) and stock returns are most influencing factors to determine the overseas capital

flow into the market. On the other side, by taking three factors [25] proven that domestic inflation, domestic stock market return and US equity market returns are the determinant factors for the foreign investors. Later, the historical stock return, IIP, return of a MSCI market index and inflation is the most determinant factors of FIIs in Indian equity market [26].

Jain et al. [27] showed that corruption has a negative influence on FPI, while Nzete and Akintunde [28] revealed a strong correlation between macroeconomic parameters and FPI volatility. GDP, external debt, and exchange rate are among the key factors that attract foreign investors to invest in a country, as demonstrated by Haider [29]. These factors, as well as FDI, currency rates, and GDP growth, are major determinants of FPI flows in both India and China [30, 31]. Studies have shown that FDI reduces stock market returns, while FPI increases them [32, 33], and that foreign investors draw additional foreign investors due to the beneficial spill-overs they produce [34]. Factors such as exchange rate, local inflation, and returns on the Indian stock market determine foreign institutional investment (FII) in India, as well as domestic output growth and stock market performance. The level of political risk, neighboring nations, and cultural traits of the countries' source and final destinations play a significant role in determining FPI flows [35, 36]. In addition, studies on the impact of Covid-19 on FPI flows have shown that during the early stages of the pandemic, a bidirectional causality existed from market returns to FPI, while during the later stages, stock returns predominantly drive FPI flows [37, 38]. Based on the earlier discussion, although there has been a significant amount of research on the factors that affect foreign portfolio investment (FPI) worldwide, much of the focus has been on developed economies. Unfortunately, there has been a lack of adequate studies on the long-term determinants of FPI in India, with particular attention paid to both equity and debt markets. Additionally, previous studies have not taken oil prices into account when determining FPI in India, and there have been few studies that use monthly data to understand the determinants of these foreign inflows. Consequently, the purpose of this study is to investigate the impact of oil prices, as well as other macroeconomic variables, on investment pattern of portfolio investment in short run as well as long run.

Based on the above gaps identified, the following is the objective of the present research:

1. To analyse the relationship between select macroeconomic factors and Foreign Portfolio Investment (FPI).
2. To examine the long run and short run impact of various macroeconomic factors on the flow of FPI in debt and equity markets.

3   Research Framework

3.1   Theoretical Framework

Whether at national or international level, the financial system of a country must display the ability to evaluate, check and manage their associated risks if it involves capital of any form: be it foreign or domestic [39]. The financial intermediation and credit allocation and reallocation are the key components for economic development. FPI can be pivotal in economic development and it can be beneficial to host country's economy in more than one ways. Arbitrage Pricing Theory and Capital Asset Pricing Model forms the basis for explaining the theoretical relationship between the macroeconomic variables and the securities [40, 41]. However, there are various factors that are undefined factors that result in deviation of returns from the expected standards which are clearly bought out by CAPM and APT. And thus this theory makes provision to consider various factors that might impact the returns [42, 43]. Sharpe [44], Lintner [45], and Mossin [46] argued that there expected return of any financial asset is a linear function of its tendency to co-vary with market portfolios [47, 48, 49] in their respective studies have found that there is a relationship between some macroeconomic variables and portfolio investment. Thus APT and CAPM serve as the theoretical framework for the study.

3.2   Hypothesis Formulation

To ascertain the relationship between the FPI and the select macro economic variables, the following hypothesis is formulated.

H1: There is a significant influence of industrial growth (IIP) on FPI flows.
H2: There is a significant influence of bond yield (BY) on FPI flows.
H3: There is a significant influence of inflation (CPI) on FPI flows.
H4: There is a significant influence of exchange rate (INR versus USD) (ER) on FPI flows.
H5: There is a significant influence of gross domestic product (GDP) on FPI flows.
H6: There is a significant influence of interest rate (IR) on FPI flows.
H7: There is a significant influence of nifty index (NSEI) on FPI flows.
H8: There is a significant influence of oil prices (OP) on FPI flows

3.3 Data and Model Specifications

3.3.1 Data and Description of the Variables

The study is descriptive and analytical in nature. Also, this study uses monthly time series data on FPI inflow of Debt and Equity and the same is considered as the endogenous variable. To see the prediction on this, the study has considered select macroeconomic variable as exogenous variables. All the exogenous variables are selected after critical review from the existing studies as well as the reason for association between them. The select macroeconomic variables are Oil Prices (OP), Gross Domestic Product (GDP), Interest Rate (IR), Exchange rate of Indian Rupee with USD (ER), Consumer Price Index (CPI) is the proxy of inflation, Nifty Index (NSEI), Index of Industrial Production (IIP), and Bond Yield (BY) for 10 Year Bonds. Monthly observations are taken for the above mentioned variables spanning from Jan 2013 to Nov 2022 over a period of 10 years. All the variable data is gathered from Bloomberg terminal source.

4 Analysis and Discussions

4.1 Testing Unit Root Hypothesis

The variables were checked to establish their integration order prior to starting the ARDL bounds test. This was done in order to ensure that the variables were not I(2) stationary or of a higher order than I(1). The times series must therefore be checked to prevent erroneous results as using of non-stationary time series data leads to the spurious results [50]. For checking the unit root test of each variable, the study used Augmented Dickey-Fuller (ADF) test proposed by Dickey and Fuller [51].

4.2 Unit Root Test

H0: Unit root problem in time series data (i.e., $\Delta = 0$)
H1: No unit root problem in time series data (i.e., $\Delta \# 0$)

The ADF results are presented in Table 1 shows no unit root problem in FPI and IIP at level or the order of integration is *I(0)* while BY, CPI, ER, GDP, IR, NSEI, OP are found to be non-stationarity at level. Hence, the unit root problem of those variables are converted into stationarity after making the first difference i.e. *I(1)*. It is evidence that none of the variables are stationarity at *I(2)*.

Table 1 Summary of augmented dickey fuller test

Variables	At level		First level difference		Decision
	T-statistics	Probability	T-statistics	Probability	
FPI	− 7.3732	0.0000*	–	–	I(0)
IIP	− 4.6091	0.0000*	–	–	I(0)
BY	− 1.3881	0.5859	− 6.1928	0.0000*	I(1)
CPI	0.6618	0.9908	− 7.0988	0.0000*	I(1)
ER	− 1.1055	0.7120	− 10.9927	0.0000*	I(1)
GDP	− 1.9305	0.3174	− 12.3073	0.0000*	I(1)
IR	− 1.1968	0.6742	− 8.0960	0.0000*	I(1)
NSEI	0.1375	0.9673	− 10.9929	0.0000*	I(1)
OP	− 1.9182	0.3230	− 7.6533	0.0000*	I(1)

*Indicates significance at 1% level. *Source* Authors' own calculation

4.3 Descriptive Statistics

Table 2 presents the descriptive statistics of the variables undertaken in the study. The average of all macroeconomic variables undertaken is positive during the study period. As it is seen in the table, the Nifty index (NSEI) displays the highest mean value (M = 10,492.1200, SD = 3433.1850) followed by Oil Prices (M = 4570.2660, SD = 1566.3280) and FPI (M = 721.5214, SD = 3727.7430). IR has the lowest observed mean value (M = 6.6271, SD = 1.7058) whereas, BY has the lowest Standard deviation (M = 7.2490, SD = 0.8465). The minimum of FPI is negative (− 14,635.0000) and the highest maximum return is recorded by NSEI (18,012.2000) followed by FPI (10,929.0000). The direction of deviation from the distribution curve has been recognized through Skewness and Kurtosis. Negative skewness has been observed in FPI, IIP, ER, GDP where as positive skewness in BY, CPI, IR, NSEI and OP. The Jarque–Bera test shows that the normality of the data of each variable. Only BY CPI, ER and IR are normally distributed since the *p* value of Jarque–Bera Test is > 5%.

4.4 Correlation Analysis

Table 3 shows the correlation coefficients between the FPI and the macroeconomic variables, which are used to determine how closely the variables being studied move together. From the above table it could observed that FPI has a positive and significant relationship with DNSEI (r = 0.5166, $p < 0.05$) followed by DGDP (r = 0.1456, $p >$ 0.05). This depicts that an increase in DNSER and DGDP have a positive impact on FPI. On the other hand, FPI shows an inverse relationship with DER (r = − 0.3998,

Table 2 Summary of descriptive statistics

Frequencies/variables	FPI	IIP	BY	CPI	ER	GDP	IR	NSEI	OP
Mean	721.5214	121.1231	7.2490	137.64	67.9643	348.4503	6.6271	10,492.1200	4570.2660
Median	619.0000	122.1000	7.3980	136.4500	67.4550	349.9900	6.5000	9997.5000	4282.8700
Maximum	10,929.00	148.8000	9.0440	176.7000	82.7700	432.2900	10.2500	18,012.2000	9119.5500
Minimum	− 14,635.00	54.0000	5.8370	104.6000	53.2600	235.3800	4.2500	5471.8000	1603.0200
SD	3727.7430	12.9056	0.8465	18.5831	6.0645	50.4440	1.7058	3433.1850	1566.3280
Skewness	− 0.4109	− 1.1653	0.1535	0.2710	− 0.0425	− 0.1452	0.0846	0.7261	0.6549
Kurtosis	4.8518	7.8120	2.1342	2.1726	2.6665	1.7600	1.9244	2.6274	2.9338
Jarque–Bera	20.0121	139.3659	4.1491	4.8102	0.5822	7.9068	5.8282	11.0511	8.3867
Probability	0.0000	0.0000	0.1256	0.0902	0.7474	0.0191	0.0542	0.0039	0.0150

Source Authors' own calculation

$p < 0.05$) followed by DBY (-0.1831, $p < 0.05$). Also, it is observed that FPI does not have significant relationship with IIP, CPI, ER and OP.

4.5 Estimation of Ordinary Least Square

Table 4 depicts the analysis of the ordinary least square method to check the influence of macroeconomic variables on FPI. The overall model explains that about 0.32%, which is represented by the coefficient of determination (R^2), indicates that 32% changes in the FPI are explained by variations in DBY, DCPI, DER, DGDP, IIP, DIR, DNSEI and DOP. The beta coefficient (B) explains whether each exogenous variable has a positive or negative effect on the endogenous variable. DGDP and DNSEI have a positive and significant impact on FPI, while FPI does not have significantly influenced by IIP, DBY, DCPI, DER, DIR, and DOP. It could be inferred that with a 1% change in DGDP and DNSEI, FPI will increase by 39.7028 and 3.5086%, respectively and vice versa. In addition, all the exogenous variables have a jointly significant impact on the endogenous variable, which is indicated by Fisher statistics (F = 8.0254). This model avoids the spurious regression which is been identified through the Durbin Watson test (DW > R^2). In addition to this, the study applied residual diagnostics to check the estimated OLS model is appropriate or not. It is found that there is no heteroscedasticity, no autocorrelation in the error term in the estimated model.

4.6 ARDL Bound F Test for Co-integration

The next process is to examine the co-integration among the selected variables by estimating the bound F test which is presented in given table.

Table 5 presents the long run relationship between the foreign portfolio investment and macro-economic variables. The first column shows the level of acceptance or rejection, second and third column presents the critical bound test value and the next column shows the computed F value. The estimated bound test indicates F statistic value is 10.1305 which is greater than the upper and lower bound critical value at 1, 5 and 10% significant level. Hence, the rejection of null hypothesis indicates there is long run relationship between foreign portfolio investment and macroeconomic variables.

4.7 Long Run Coefficients

The estimated long run coefficients are presented in Table 6.

Table 3 Correlation analysis

Variables	FPI	IIP	DBY	DCPI	DER	DGDP	DIR	DNSEI	DOP
FPI	1								
IIP	− 0.0670	1							
DBY	− 0.183**	0.004849	1						
DCPI	− 0.0952	− 0.198**	0.1584	1					
DER	− 0.399**	− 0.0679	0.1805	0.0765	1				
DGDP	0.1456**	0.4043**	− 0.0753	− 0.319**	− 0.0579	1			
DIR	− 0.0674	0.1266	0.3088**	0.0813	0.1571	0.0047	1		
DNSEI	0.5166**	− 0.0546	0.0196	0.1840**	0.488**	− 0.0442	0.0509	1	
DOP	− 0.0649	0.1823	0.3555**	0.1135	0.1115	0.2763**	0.1383	0.1067	1

** Correlation is significant at 5% level. *Source* Authors' own calculation

Table 4 Ordinary least square method

Endogenous variable	Exogenous variable	B	T-Stat	P-value	F-Stat	R^2	DW
FPI	C	5310.5170	1.7476	0.0834	8.0254	0.3282	1.606
	IIP	− 38.2682	− 1.5529	0.1234			
	DBY	− 1983.0740	− 1.2344	0.2197			
	DCPI	− 486.3049	− 1.3540	0.1786			
	DER	− 357.8982	− 1.2778	0.2041			
	DGDP	39.7028	2.0981	0.0382[**]			
	DIR	− 52.7646	− 0.0472	0.9624			
	DNSEI	3.5086	5.2805	0.0000[**]			
	DOP	− 0.6956	− 0.9032	0.3684			

[**]OLS is significant at 5% level. *Source* Authors' own calculation

Table 5 ARDL bound test

Level of significance (%)	Critical values for FPI		
	Lower bound I(0)	Upper bound I(1)	F-statistic
1	2.62	3.77	10.1305[**]
5	2.11	3.15	
10	1.85	2.85	

[**]Denotes computed F statistic more than the critical value at 5% significance level. *Source* Authors' own calculation

According to monthly observations, the FPI investment is positive and significantly influenced by previous month investment done by the foreign portfolio investment in the long run as shown in Table 6. On the other side, Exchange rate does have negative and significant influence on the FPI and positively influenced by the previous month interest rate. Also, changes in the bond yield price does have inverse and significant influence on FPI. Further, the majority of the Foreign portfolio investment is predominantly determined by market index represented Nifty index and show positive impact. If the stock market index is performing well, the investors would start to invest bulk of amount in equity as well as debt market. The overall R^2 shows that 59% which indicates FPI is influenced by the above-mentioned exogeneous variables in the long run.

Table 7 displays the estimated output of error correction model. Column 1 shows the number of variables used in this model, Column 2 and 3 presents the beta coefficients of each series and its standard error value, the calculated test statistics (coefficient/standard error) presents in column 4 and the last column indicates the acceptance or rejection decision based on probability value. As discussed in the long run coefficient results, the error correction model result shows that investment made by FPI has been negatively influenced by previous month investment of FPI at lag 1 in

Table 6 Estimated ARDL long run coefficient

Dependent variable-FPI				
Regressor	Coefficient	Standard error	*t*-statistic	Probability
Constant	7708.7610	2693.750	2.8617	0.0051
FPI(−1)	0.0740	0.0909	0.8141	0.4175
FPI(−2)	0.1920	0.0800	2.3979	0.0184**
DBY	− 2796.1170	1378.5630	− 2.0282	0.0452**
DCPI	− 387.8108	305.3179	− 1.2701	0.2070
DER	− 630.3195	252.8864	− 12.4994	0.0141**
DER(−1)	− 363.7349	246.5084	− 1.4755	0.1432
DER(−2)	− 327.5761	225.8864	− 1.4501	0.1502
DGDP	7.2095	17.8893	0.4030	0.6878
DIR	490.6962	983.9492	0.4987	0.6191
DIR(−1)	2229.4300	1019.3790	2.1870	0.0311**
DNSEI	3.4213	0.5652	6.0531	0.0000*
DNSEI(−1)	2.1397	0.6491	3.2959	0.0014*
DOP	− 0.4454	0.6572	− 0.6778	0.4995
IIP	− 59.3760	21.6266	− 2.7455	0.0072*
R^2	0.5994		F-statistic	10.5831
Adjusted R^2	0.5428		Prob(F-statistic)	0.0000
Durbin-Watson stat	2.1060			

*, **Indicates significant at 1 and 5% level. *Source* Authors' own calculation

the short run. There was a major impact identified in the foreign portfolio investment negatively due to changes in the exchange rate while negatively influenced by exchange rate at lag 1. FPI investment has positively impacted by market index at one percent significant level in the both short run as well as long run. It is evidenced that market index performance is one of the major factor which is considered by foreign portfolio investors since the route of investment is stock market. However, the interest rate is not considered by foreign portfolio investors. The coefficient of error term shows negative sign and significant, which reveals that − 0.73 or 63% of the short run deviations of the FPI will get adjusted for each month towards the long run equilibrium level of FPI. In other words, the disequilibrium is corrected by 63% speed of adjustment. The explanatory power of the model is represented by R^2 is 0.68% and the adjusted R^2 is 0.67%. The probability of F statistics shows significant with high value implies that all the explanatory variables jointly influence on FPI net investments. Furthermore, the model avoids spurious results which indicates R^2 < DW test.

Table 7 Error correction mechanism

Variables	Coefficients	SE	t-statistic	Probability
D(FPI(−1))	− 0.1920	0.0645	− 2.9761	0.0037[*]
D(DER)	− 630.3195	163.7355	− 3.8496	0.0002[*]
D(DER(−1))	327.5761	182.2065	1.7978	0.0753[***]
D(DIR)	490.6962	649.9104	0.7550	0.4520
D(NSEI)	3.4213	0.4057	8.4326	0.0000[*]
ECT(−1)	− 0.7339	0.0698	− 10.5126	0.0000[*]
Serial correlation LM test	− 0.213592 (0.4712)		R^2	0.6877
Heteroscedascity test	1.2617 (0.2450)		Adjusted R^2	0.6733
F-statistic	10.1305		Durbin-Watson Stat	2.1060

[*],[**],[***]Indicates significant at 1, 5 and 10% level. *Source* Authors' own calculation

4.8 Stability Test

At last, the study adopted stability test such as Cumulative Sum of Recursive Residuals (CUSUM) to check the stability of long run coefficients along with short run dynamics, tested which are presented graphically in Graph 1. Since, the blue line lies between the two dotted red lines in above two plots, it is indicative that the short run and long run coefficients are stable at 5% significant level in the ARDL UECM model.
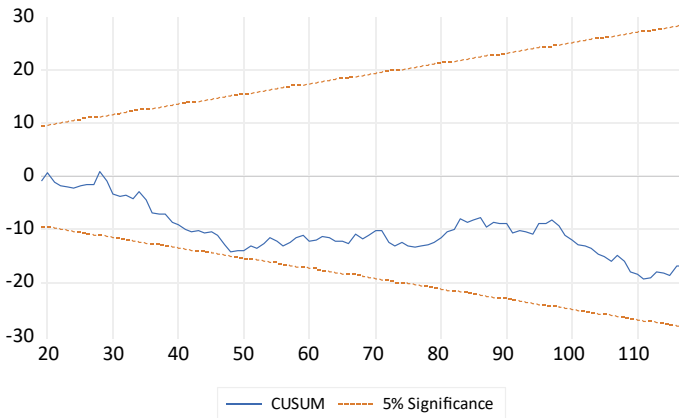
Graph 1 CUSUM of squares. *Source* Authors' own calculation

5 Policy Implications

The findings of this study imply that certain macroeconomic variables have significant impact on FPI flows to India. Therefore, it is important for the government to ensure that these variables are stabilized to increase investments in the country, which can further aid in the economic growth and development of the nation. Analysing the numerous variables from 2013 to 2022, the study shows that Exchange rate of USD with INR, Nifty Index and Index of Industrial Production show significant impact on FPI flows. These results are crucial to be analysed and studied by multiple stakeholders which involves—The Government, Companies listed on the exchange, Institutional investors, Domestic investors and Asset Management Companies (AMCs) and can further be used by them to develop a framework to regulate these flows. India has made multiple reforms over the last few years to encourage and increase inflows of such foreign investments in the country. The implication of this study is that an emerging market, such as India, should continue to adopt and implement policies that aim to improve the exchange rate, nifty and industrial production index to stimulate FPIs. In the long run, NSEI, IIP and ER have a long term relationship with FPI. This long term relationship signifies the overall growth and stability of an economy. A short term relationship between Exchange rates and Nifty index is also observed. The current study demonstrates that stock market performance affects FPI, indicating the need for regulation of the stock market and control of its abrupt fluctuations. This can be done by setting up strict regulations and monitoring the market, which is undertaken by SEBI. They also indirectly control the markets through policies for various industries and controlling other macroeconomic factors like Interest rates.

The performance of various industrial sectors within the Indian economy is shown by the Index of Industrial Production (IIP). Government ministries and agencies including the Finance Ministry and the RBI use the Index while setting policy. Additionally, it is used to project quarterly Gross Value Added for the manufacturing sector and advance GDP forecasts. IIP is also directly affected by the inflation levels (CPI) in the economy, i.e., due to the increasing demand by customers. FPI increases with increase in IIP due to high demand, and thus economic growth. Manufacturing and production in India should be focused at with policies like Make in India. This also involves implementing policies that encourage FDI inflows in the country by reduction of tariffs and ensuring ease of doing business in India.

The Exchange rate elucidates the movement of INR in relation to USD, also known as the Petrodollars. This movement is of high significance as it plays a major role in any country's trade performance, in turn affecting its growth and ranking in terms of trade, throughout the world. It is important that our currency is rightly valued to attract investors and ensure safety of their investments as well as for future prospects and economic growth of the country. These exchange rates can be influenced or controlled by the government majorly though government spending as an increase in government purchases causes the exchange rates to appreciate and so increase consumption significantly in emerging economies, which in turn encourages FPI

inflows in the nation. All these factors can be directly or indirectly controlled by the government by using various monetary and fiscal policies.

6   Conclusion

The study's primary objective was to analyse and measure the impact of various macroeconomic variables including Oil prices (OP), Gross Domestic Product (GDP), Interest Rate (IR), Exchange rate of Indian Rupee with USD (ER), Inflation (CPI), Nifty Index- NSEI, Index of Industrial Production (IIP) and Bond Yield (BY) of 10 year bonds on the Foreign Portfolio Investment (FPI) inflows to India. There are various studies which have been previously conducted, that have examined the impact of such macroeconomic factors on FPI in India, however, this study mainly focuses on both debt and equity inflows under FPI and Oil prices is one such significant variable that has not been considered in such studies. It is crucial to study the impact of Oil prices on FPI due to the recent fluctuations and the crucial impact it has had on the economies of various nations.

The stationarity test conducted shows that all factors excluding FPI and IIP, which were stationary at level, are stationary at first level of difference. Under correlation analysis, it was observed that Bond yields and exchange rate have a significant and negative relationship with FPI. It was also concluded that Nifty index (NSEI) has a positive and both strong and significant relationship with FPI flows. The F bound test shows that the variables are co-integrated when FPI makes up the dependent variable. The Error Correction Model (ECM) exhibits 67% rate of adjustment to the disequilibrium in the short run. Additionally, the CUSUM test was run to check for structural breaks in the model. The results from this study have dual benefits as it allows the investors as it allows companies and governments to make sound decisions and develop policies in accordance to the factors that would significantly affect such inflows. It is however, important to note that these factors are closely related to FPI flows but are not the only factors that influence the same due to their complex and dynamic nature. Findings of this paper indicated that NSEI, IIP and ER impacted FPI in the long run, whereas in the short run, FPI was impacted by ER and NSEI significantly.

7   Limitations and Scope

The current study examines the economic determinants influencing FPI flows in India, although the availability of data restricts its scope. Future research may take into account including additional variables including political, social, and environmental aspects in order to alleviate this constraint and provide a more thorough understanding of how economic issues influence FPI. The 10-year time frame of the

current study may not be long enough to adequately reflect the long-term relationship between economic conditions and currency rates. Future study can take this into account by thinking about lengthening the data collection period for analysis to provide a more precise picture of these linkages. Furthermore, the study is only applicable to the Indian market and does not take into account the global perspective. The study also ignores the global perspective and is only applicable to the Indian market. Future research can broaden the data sources used in the analysis to include other nations and areas in order to overcome this constraint, improving the conclusions' robustness and reliability.

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An ABSK Model for Competency-Based Appraisal of Management Professional's Reinforcement

Sen B. Mathews, Amala Sen, Bijin Philip, and Jinu Mathew

Abstract Modernization and knowledge are the two most fundamental hurdles to developing new technologies for society. Only by gaining the skills necessary to mitigate the impending challenges and technological demands of Industry 5.0 can it be guaranteed that innovation will be created during the real sprint. When confronted with and resolving global challenges, individuals must learn the necessary facts, skills, morals, and attitudes to live productive lives, make informed decisions, and contribute locally and internationally through education. Technological advancement has also impacted pedagogical and academic standards to the point where curriculum designers must be vigilant to provide students with abilities that meet market expectations. This paper aims to identify the disparities between the perceived skillset and students' competence regarding employability skills. The data demonstrate considerable variances in the perceived value of teamwork, leadership, and essential, technical, and ethical skills. Furthermore, the study's findings indicate that the students believe they are not provided enough exposure to develop such abilities. Graduates must have twenty-first-century skills such as problem-solving and analytic thinking, decision-making, organization and time management, risk-taking, and communication. The findings inform curriculum developers and policymakers about the necessary interventions that should be implemented to improve graduates' employability abilities.

S. B. Mathews
School of Management, Kristu Jayanti College Autonomous, Bengaluru, India

A. Sen
Department of BBA Aviation Management, Koshys Institute of Management Studies (KIMS), Bengaluru, India

B. Philip (✉)
Department of Management, Kristu Jayanti College Autonomous, Bengaluru, India
e-mail: bijin.p@kristujayanti.com

J. Mathew
Department of Professional Accounting & Finance, Kristu Jayanti College Autonomous, Bengaluru, India

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1 Introduction

In the new era, graduates must possess many competencies and skills to succeed personally and professionally. Industry 5.0 is an emerging trend emphasizing the importance of collaboration between humans and machines to achieve better results. To succeed in this new era of industrialization, people must obtain the essential skills and knowledge to work alongside machines and utilize the latest technologies effectively. This requires a focus on education and training that enables individuals to adapt to new technologies and use them to solve complex problems.

We know lifelong learning is essential for a successful profession and staying on top of an ever-changing world. However, new themes, science areas, and technology developments have exploded in recent years, which is also fleeting. Hard talents that someone learns may become obsolete after only a few years. This has an impact on the workplace. Back then, you could receive an education and work in this area for the rest of your life. Today, you may be educated, but in 10 years, 60% of employment may not be the same or even exist when you begin high school or university.

An adage may be more relevant than ever when hiring and educating employees. Hire for attitude rather than talent. We must look much more closely at our particular characteristics, lay strong foundations, and seek out skills that can be applied globally.

According to a recent World Economic Forum report, the average half-life of a skill is 6 years, and it is expected to drop to 2.5 years by 2030. This means that in < 10 years, the ordinary individual will be required to learn new skills more than twice as frequently as they do now.

We live in an era in which the future is more unpredictable than ever. Most of this uncertainty stems from one basic, unavoidable fact: the world continually changes. New words and phrases have been created. Jobs have changed, and skills have evolved. The age of disruption has here. If the next generation is to survive and thrive in this new employment market, a significant revamp of the educational system is urgently required.

2 Review of Literature

Di Gregorio et al. [6] the indicated exploration examines how digital revolutionization has impacted retailing careers by evaluating the copious sought-after retailing skills and pinning down opportunities for succeeding retailing professionals. The study outlines five types of employability skills and 29 talents and capabilities, and the importance of such categories is likewise examined in both low- and high-digitalized enterprises. This study adds to the debate over recent graduates' employability. It

brings forth essential recommendations to high-level education institutes, tertiary education universities, and businesses towards promoting the retailing talents of the time ahead.

Galster et al. [7] the goal of the mentioned paper is to check out (a) what soft skills are relevant in software engineering, (b) how soft skills connect to hiring organization characteristics, and (c) how reliably we can automatically identify soft skills in job advertisements to assist their continuous analysis. Employers expressly request soft skills, and our findings back up earlier research emphasizing communication's significance. The indicated soft abilities, on the other hand, only partially overlap with those described in other skill classes.

Guimarães et al. [8] the researchers observe a continual tension between traditional means of producing knowledge through disciplines and the pressing need to broaden and transform knowledge production and organization, not least to understand and address the future and its difficulties. Unique motivations, attitudes, abilities, and behaviors define ITDR personalities. However, the academic atmosphere and career choices do not appear prepared or suited to ITDR types.

Robles [9] the top ten soft skills traits deemed crucial by corporate executives were found in this study. Even while all of the soft skills appear to be very significant, not all are seen to be equally crucial by business executives. According to this survey, the most critical interpersonal qualities for success are communication, integrity, and civility.

Cable and Judge [10] the researchers evaluated 96 active job seekers across three periods, from their initial job search activity to their intended turnover from the employment they accepted, to investigate job seekers' and modern employees' subjective person–organization (P–O) fit assessments. According to the findings, job seekers' judgments of P–O fit are predicted by the congruence between their beliefs and their perceptions of the values of recruiting organizations, but not by their demographic similarities with organizational representatives. P–O fit perceptions were also found to project one and the other job choice purpose and work thoughts, regardless of controlling for the desirability of job features. In closing, the findings indicated such job-seekers might organize themselves to work attitudes by considering P–O fit in particular job selection selections.

Akkermans and Tims [11] the Author attempts to persuade the reader of how professional competencies might improve a candidate's subjective career in terms of perceived employability and reliability in the workplace and at home thru work-related behaviors. According to the findings, businesses or organizations can encourage job-crafting behaviors among employees or candidates by cultivating career abilities through HR practices such as career development programs, etc. The job crafting technique has boosted employee career achievement, effectiveness, and various factors.

Akkermans et al. [12] the study proposes to investigate the mediatory function of professional competencies in the Job Demands—Resources paradigm. According to

the data gathered by the researcher, career competencies have a positive relationship with work resources and engagement but strain one's ability to handle demands at work and take an emotional toll. In conclusion, the research indicates that professional competencies, like personal resources, may significantly impact employee well-being and work engagement. These results emphasize the need to integrate studies on career development and work design to improve the well-being of workers.

Ahmad et al. [13] the evaluation intends to analyze every association among career success, career resilience, and career competencies and how each of the abovementioned variables influences the other. The study's Author used several methods for gathering data to gather information from 284 staff members of Islamic banks. The exploration ended in the affirmative, specifying that career competency significantly predicts career resilience. Career resilience is subsequently a substantial predictor of career accomplishment, and showing career resilience negotiates the relationship between career expertise and career accomplishment.

Meijers et al. [14] the topic of attention of the investigator's research revolves around the effect of career guidance and education among students in the Netherlands who have been enrolled in prevocational and secondary-level vocational schools and are around the age range of twelve and nineteen. Three thousand four hundred ninety-nine students representing 24 various institutions took the exam. The outcome assuredly stood in the way of training motivation, professional excellence of study choice, the knowledgeable fit of option with swotting tasks, and a knowledgeable fit for an apprenticeship. Profession identity results were strongly affected by career identity, and career discussion had a more significant impact on professional outcomes than the requirements interventions.

3 Objectives

- To identify the technical, managerial, and human competencies required for the job
- To measure the required and current competencies gap and recommend a solution to develop it.

4 Methodology

This study is based on both primary and secondary data. The primary data has been collected from management students through a structured questionnaire using a convenient sampling method. One hundred eighty-two samples were collected, and the data was validated using Cronbach's Alpha. The researcher has adopted confirmatory factor analysis to identify the key competencies that management students need. Various articles and websites are also used as secondary sources of data.

5 Results and Discussion

In the new era, graduates must possess many competencies and skills to succeed personally and professionally.

Some of the essential competencies and skills required by graduates in the new era include:

- Digital Literacy: Graduates must be proficient in using various digital tools and technologies, including social media, cloud computing, data analytics, and artificial intelligence.
- Critical Thinking: Graduates need to be able to analyze information, evaluate evidence, and make logical decisions based on facts and data.
- Problem-Solving: Graduates need to be able to identify problems, develop creative solutions, and implement them effectively.
- Communication Skills: Graduates must communicate effectively through various media, including oral, written, and visual communication.
- Collaboration and Teamwork: Graduates need to be able to work collaboratively with others, including people from diverse backgrounds, cultures, and perspectives.
- Adaptability and Flexibility: Graduates must adapt to change and respond to new challenges and opportunities.
- Entrepreneurship and Innovation: Graduates need to be able to identify and pursue new business opportunities, develop innovative products and services, and create value for their customers.
- Cultural Competence: Graduates must work effectively in multicultural environments and demonstrate respect for cultural diversity.
- Emotional Intelligence: Graduates must understand and manage their emotions and empathize.
- Lifelong Learning: Graduates must be committed to continuous learning and professional development throughout their careers.

The picture below represents the competencies required for a graduate to succeed in the corporate world (Fig. 1).

For the building competency pointers and a 5-level ability valuation scale, 185 surveys were collected from management students. All 24 proficiency indicators have reliability values greater than 0.9. Through exploratory factor analysis, four competency domains were identified: knowledge (K), skills (S), attitude (A), and behavior (B). The confirmatory factor analysis confirmed the fit of the scale (CMIN/DF < 4; CFI > 0.9; IFI > 0.9; RMSEA $\leq$ 0.08). The significant competency gap was in the knowledge domain (K): $-$ 1.52 and $-$ 1.41, respectively. Among new graduates, the most crucial gap was found in the field of skills (S) ($-$ 2.08), with the knowledge gap ($-$ 1.91) trailing closely behind. Also, the behavior of the new generation has a considerable gap ($-$ 2.25) (Fig. 2).
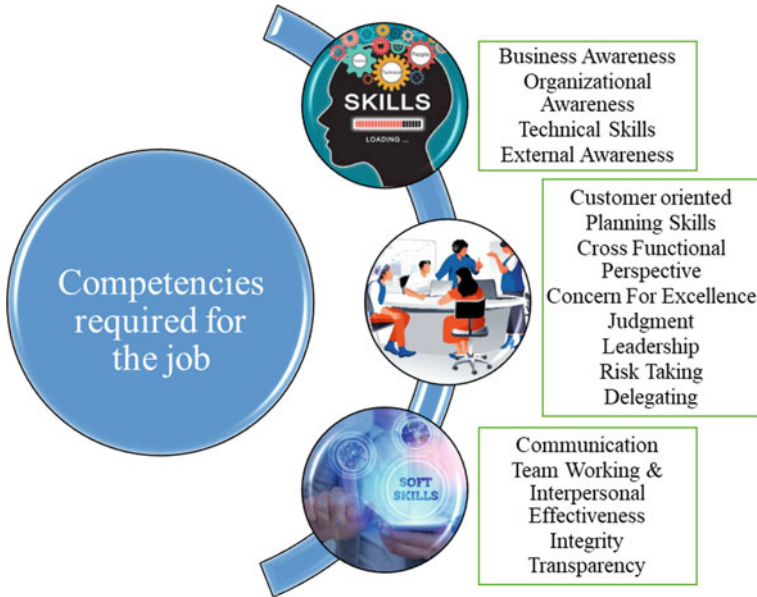
Fig. 1 Competencies required for the job

Fig. 2 Four competency fields were recognized through exploratory factor analysis

6 Conclusion

A competency-based valuation method is proposed to evaluate management students' competency progress in four areas: knowledge (K), skills (S), attitude (A), and behavior (B). The method comprises 24 competency indicators, a 5-level rating scale, and a gap analysis to track competency progression through four critical signposts in a management student's professional career. The discovered competency gaps can serve as evidence-based guidelines for management students' ongoing development and future management curriculum enhancements.

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Glimpses on the Current Scenario of International Migration

Tinto Tom and **S. J. G. Preethi**

Abstract Migration is the term used to describe the movement of people from one location to another. Internal migration occurs when people move from one location inside a country to another. International migration occurs when people move from one country to another. Migration is a frequent human trait that has been evident since prehistoric times. The abundance of technology, communications tools, and transportation infrastructure supports migration. Migration is encouraged by liberalization and globalization. It offers people a huge variety of chances and sources of income. The fictional global village will come to pass shortly. Since there are no constraints on movement, this facility will benefit both the individual and the economy.

Keywords Migration · International migration · Internal migration

1 Introduction

Human migration is the movement of people from one location to another with varying purposes, such as permanent or temporary settlement. It is a common phenomenon. This process has been taking place for very long back. We can find many examples in great scriptures like Bible and Quran etc. Migration has a lot of positive and negative effects. When we compare the effects of migration, developing countries are getting more benefits in monetary terms. On the other side, developed countries are getting more human resources. Due to this migration, the home countries especially developing countries can manage their excess human resources appropriately. On the other side, developed countries can use their resources with the help of migrated workers. Internal migrations are widespread now the days because, in search of jobs and education, people use to migrate from one place to another within the country. The transport facilities and communication facilities encourage

T. Tom (✉) · S. J. G. Preethi
Kristu Jayanti College, Bengaluru, India
e-mail: tintotom@kristujayanti.com

migration, especially international migration. People move from their home country to another country by seeing the prosperities in other countries. The young generation often prefers to move to other countries for different reasons. Education, employment opportunities, comforts, etc., attract the young generation to other countries.

There are country-to-country corridors, a strip of land connecting one country to another. It may be the route through sea or land. People who want to move from one place to another without proper valid documents prefer these corridors. There are famous corridors around the world that help people to move from one place to another, such as Mexico–United States of America corridors and the Syrian–Arab Republic Turkey corridor is the famous corridors. As per the data for 2020, more migrations occurred through these two corridors. When an emergency or natural calamities occur in the area, people use these corridors to escape from one place to another. The UN adopted sustainable development goals or Global goals in 2015. It is considered a universal call to action to end poverty, protect the planet, and ensure that all people will enjoy peace and prosperity by the end of 2030. There are 17 SDG goals integrated. It conveys that development must balance social, economic, and environmental sustainability. There are various causes for migration like, quality education, employment opportunities, living standards, etc. are some of the reasons for it. Therefore countries are benefiting by receiving and sending remittances. Some countries lack human resources, and some have substantial human resources, so migration supports the countries' development. Countries like India and Bangladesh is a good examples for it.

Migration and poverty are both connected. One of the primary reasons for migration is poverty. To overcome poverty, people migrate from one place to another to generate more income. But to a certain level, these migrations, whether rural to urban or international, helped overcome poverty. Some states attained economic development and growth with the support of migration. The state, called Kerala is an example. Countries, which are lacking population, can encourage immigrants. So they can utilize their resources properly. In that way due to migration, health conditions and facilities improved. To meet their medical needs, now the day's, people migrate or move from one place to another. Even students are migrating to other countries and learning and gaining medical education. Later stage, they come to their home country and practice it. It helps the native people to get different health facilities. Even the home country can use various available equipment in other countries because of migration. Various health practices we adopt that now the days because of the migrant workers they introduce to their family members, even the same others copied, helped them to improve their health.

One of the primary reasons for migration is the availability of quality education. Education and skill acquisition lead to many positive externalities. That may bring prosperity to the home countries. People migrate from their home country or place to another to get a better or advanced education. More facilities, career advancement, or better field opportunities encourage people to move from their home country. During their education, immigrants may be going through various problems and issues, but the final possibilities give them the perseverance to overcome those problems. Language is one of the significant problems everyone is going through. But learning

the respected languages can be covered in an internal migration scenario. But in international, immigrants are facing racial issues. That isn't easy to manage. But time will heal these problems and issues. Depopulation is the final result of present migration. All young people move away from their home countries to get an education and then settle in their home countries filled with aged people. If it continues, it may lead to long run problems in our country. So to avoid this kind of issue actions have to take now itself. Otherwise, the brain drain will reach its peak.

The paper is organized as an abstract, which summarizes the whole article. The paper's introduction discusses migration and its consequences on humanity. The three goals of the study—country-to-country corridors, the contribution of migration to human development, and remittances—are heavily emphasized. Numerous studies on migration have been undertaken; those studies are considered in the literature review. The data were evaluated, and draw conclusions based on available sources.

2 Objectives

The following are the primary objectives of the study.

- To know the world's major country-to-country corridors.
- To understand the relationship between human development and migration.
- To realize the contributions of countries towards receiving and sending remittances.

3 Review of Literature

Cduygu conducted a case study that suggests the issues of transit migration and readmission agreements appear to be at the top of the agenda, although the fact that a shift from migration control to migration management has become an integral part of EU-based political struggles and policy practices relating to irregular migration over the past decade. From this perspective, irregular transit migration from Turkey to the EU is excellent for examining how irregular migration affects European migration and border regimes. Exploring the relationship between EU-Turkey membership talks and migration issues is fascinating, as "migrant management" becomes a conditionality for the advancement and conclusion of membership talks.

Baastia and Skeldon's research on migration and development reveals various eras of migration between Germany and Turkey, with a focus on their effects on the development of society and culture: (1) academics fleeing Nazi persecution to Turkey (1930–1950); (2) small-scale entrepreneurial migration from Turkey to Germany (1950–1960); (3) guest worker recruitment beginning the official labor migration

(1961–1973); and (4) settlement phase with family unification (1973–1989). (2000–present). We dispute the concept of the migratory corridor and argue that it ought to be severely regulated, as it implies a uniform and frequently unidirectional flow of people. We advocate for a complex interpretation of a migrant corridor due to the fluctuating mobility and two-way flows between cities and regions over time, which result in corridors inside countries.

Newland conducted a study on cyclical migration and human progress. The study investigates the consequences of circular migration on human development in countries where it occurs naturally and in regions where governments actively support it. The paper discusses various concepts and definitions of circular migration and concludes that there is no inherent good or bad about it in terms of human development; rather, how it affects development depends on the circumstances under which it occurs, the restrictions surrounding it, and, most importantly, the degree to which individuals have control over their mobility. The human-development lens distinguishes between de facto circular migration and circular movement within the parameters of government activities.

Brandford studied the international model of poverty and migration. The study states that, after World War II, most countries restricted immigration even though it affected the international capita; flow. The study conveys that migration significantly increases total output and the income of developing countries. If migration increases, it will help to reduce the level of poverty. But it may negatively affect the income of the developed country. At the same time migration completely opening up migration is not politically feasible. The effects of freer migration be the primary concern of the policy makers and researchers.

Le and Nguyen researched about impact of migration on poverty based on Vietnam scenario. The study reveals that migration and remittance improved households per head income. It helped to reduce the poverty level or incidence of poverty. International migration played a crucial role to reduce the poverty level. The role of migration should be considered and more policies and assistance to encourage migration. Since remittances improve income and reduce poverty, migration-related policies must be paid more attention.

Shah et al. studied poverty and migration in India. The study conveys that the new shift of migration leads to reduced poverty and economic development. Developing countries like India had a perception that migration won't help the economy. So didn't support the migration. But the evidence from the micro level indicates that migration helped many poor to improve their living standard and avert poverty.

Marotzke et al. studied the economic connection between climate change, migration, and poverty. The study conveys that climate change leads to floods, droughts, heat waves, etc., primarily affecting the poor population. The impact of this climate change leads to poverty; to overcome this issue, people move from one place to

another. The new economic labor migration theories convey that emigration decisions are made among groups such as families. Still, the current situation, especially climatic changes, requires migration from one place to another.

Lokshin et al. studied work-related migration and poverty reduction in Nepal. As a result of work-related migration, the poverty rate in Nepal decreased significantly from 1995 to 2004, according to the study. Foreign migration for economic reasons significantly reduces poverty. To alleviate poverty and achieve development, nations must consider international and internal migration. According to the report, about 20% of the poverty drop in Nepal between 1995 and 2004 can be ascribed to increased migration. Without migration, the poverty rate would rise from 30.0 to 33.6%, and the average per capita expenditure would fall from 15,000 NPR to 14,000 NPR. Hence, the government should evaluate and incorporate various migration trends.

Acharya and Gonzalez studied the quest for good education, international remittances, and rural–urban migration in Nepal. The study indicates that in Nepal, people may not have sufficient income and low consumption levels. However, they still invest in human resources by sending their family members abroad or urban areas and educating them. The study conveys that better education is one of the important motivations for migrating to urban areas. In the other way we can say that the search for human capital investment is one of the primary reasons for the migration. It may be because of international migration exposes households to higher returns to quality education in international labor markets, and international remittances help finance the costs of rural–urban migration and children's education.

Amare et al. researched rural-to-urban migration and employment quality in Thailand. The study indicates that migrants are more educated, even though the general education level in rural areas is poor. One of the explanations for the continued existence of a large rural–urban disparity in welfare may be that impoverished rural households tend to spawn poor migrants. The critical relevance of high-quality education for migrants to attain higher-quality work necessitates increased investments in rural education quality.

Crivello studied being an individual, youth transition through education, and migration. According to the research, young people and their parents view migration as a means of "becoming somebody in life" and have high educational aspirations. This is related to intergenerational ties and children's roles in reducing family poverty. Nonetheless, many individuals are still unaware of the importance of education. Since universal education does not correspond to universal opportunities. Based on the situation in Peru, more than fifty percent of children do not complete secondary school.

4 Data Analysis
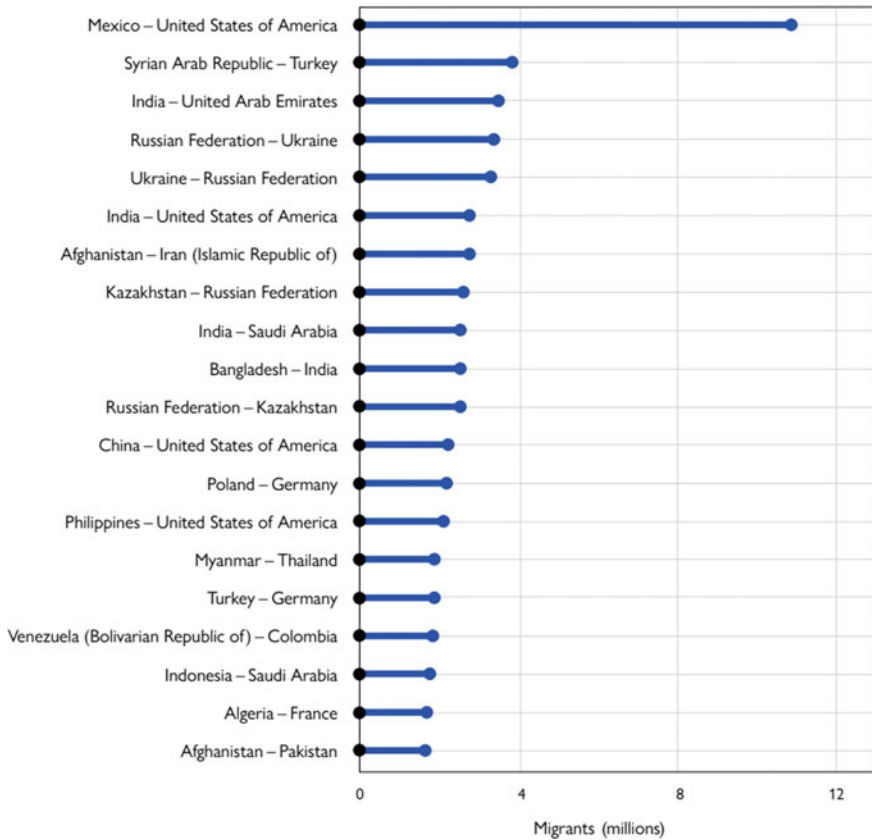
Top 20 international migration country to country corridors, 2020. *Source* UN DESA

The country-to-country migration corridor 2020 data from the UN conveys that complete migration occurs between Mexico and the United States of America. There are various reasons for it. Poverty, unemployment rate, etc., are some reasons for it. People prefer to migrate to the USA to escape these kinds of problems. As per the data more than 11 million people migrated with this corridor during this particular time period. The second major corriodor is from Syria to Turkey. Almost 4 million migrations occurred in 2020 and third most corridor is India to UAE. More than 3 million migrations occurred during this particular period. The same kind of scenario is visible in other corridors as well. Here the major reason for migration is more or better opportunities or life security compared to their home countries. Another common peculiarity is that migration occurs from developing countries to developed countries or underdeveloped countries to developing or developed countries. Life

security, opportunities decent standard of living every individual expects, if not they seek and move to where they get it (Table 1).

The developed countries possess the best human development index. At the same time, they have good ranks in the fragile states index, based on the data UNDP Index 2019. On the other side, developing and underdeveloped countries hold low ranks. The people's living standards, security and opportunities, and ultimately the happiness level are low. At this point, people from underdeveloped and developing countries tend to move from their home country to a better place than developed countries. The fragile condition of the underdeveloped countries is also a reason for migrating from their home country to a better place. People from developed countries have a high satisfaction or happiness level, which is why HDI is more. At the same time, they are getting sufficient opportunities to work and maintain a decent living standard. So, they are peaceful and controlled. That's why the fragile index is good for them. Based on all these, their passport rank is also good.

Origin					
1995			2020		
Country	Emigrants	%	Country	Emigrants	%
Russian Federations	11.38	7.1	India	17.7	1.3
India	7.15	7.9	Mexico	11.07	7.9
Mexico	6.95	7	Russian Federations	10.65	6.8
Ukraine	5.6	9.9	China	9.8	0.7
Bangladesh	5.37	4.5	Bangladesh	7.34	4.3
China	4.7	0.4	Pakistan	6.14	2.7
United Kingdom	3.61	5.9	Ukraine	6.05	12.2
Pakistan	3.33	2.6	Philippines	6.01	5.2
Kazakhstan	3.3	17.2	Poland	4.82	11.3
Italy	3.2	5.3	United Kingdom	4.62	6.4

Origin					
1995			2020		
Country	Immigrants	%	Country	Immigrants	%
United States of America	24.6	9.3	United States of America	43.3	13.1
Russian Federations	11.91	8	Germany	14.22	17
Germany	7.28	9	Saudi Arabia	13	37.3
India	6.69	0.7	Russian Federations	11.58	7.9
France	5.96	10.3	United Kingdom	8.92	13.1
Ukraine	5.77	11.3	United Arab Emirates	8.43	85.3
Saudi Arabia	4.94	26.5	France	8.09	12.4
Canada	4.69	16.1	Canada	7.81	20.7
Australia	4.11	22.9	Australia	7.41	29.7
United Kingdom	3.99	6.9	Spain	6.63	29.1

HDI

Very high   High   Medium   Low

Top countries of origin and destination by number (million) and proportion of the total population. *Source* UN DESA (2021a)

The people from those countries with low human development index are migrating from their home country to developed countries. In the Indian scenario, the migration is very high. India belongs to the group which has low HDI. This means long and

Table 1 Human development, fragility and passport ranking for selected countries

Level of human development	Country (in HDI rank order)	Human development Index 2019	Passport index 2021	Fragile states index 2020
		Rank	Rank	Rank
Very high human development	Norway	1	8	177
	Germany	6	3	166
	Australia	8	9	169
	Singapore	11	2	162
	Canada	16	9	171
	United States	17	7	149
	France	26	6	160
	Italy	29	4	143
	Malaysia	62	12	120
High human development	Sri Lanka	72	99	52
	Mexico	74	23	98
	Thailand	79	65	82
	Tunisia	95	72	95
	Lebanon	92	100	40
	Libya	105	101	20
	Indonesia	107	72	96
	Egypt	116	90	35
Medium human development	Kyrgyzstan	120	79	73
	Iraq	123	109	17
	Moroco	121	78	80
	India	131	84	68
	Bangladesh	133	100	39
	Cambodia	144	88	55
	Kenya	143	72	29
	Pakistan	154	107	25
Low human development	Uganda	159	75	24
	Sudan	170	100	8
	Haiti	170	92	13
	Afghanistan	169	110	9
	Ethiopia	173	96	21
	Yemen	179	106	1
	Eritrea	180	98	18

Table 1 (continued)

Level of human development	Country (in HDI rank order)	Human development Index 2019	Passport index 2021	Fragile states index 2020
		Rank	Rank	Rank
A number 1 ranking means		Very high human development	Mose mobile passport citizenship	Most fragile country
The lowest ranking means		Low human development	Lease mobile passport citizenship	Least fragile country

Source UN DESA (2021a)

healthy life, access to knowledge, and a decent standard of living are low. Due to this reason, a prominent group of people are migrating to developed countries, especially those with high HDI. Examples like USA, Germany, Saudi, etc.

Top 10 countries receiving/sending international remittances (2005–2020) (current USD billion)

Top countries receiving remittances							
2005		2010		2015		2020	
China	23.63	India	53.48	India	68.91	India	83.15
Mexico	22.74	China	52.46	China	63.94	China	59.51
India	22.13	Mexico	22.08	Philippines	29.8	Mexico	42.88
Nigeria	14.64	Philippines	21.56	Mexico	26.23	Philippines	34.91
France	14.21	France	19.9	France	24.07	Egypt	29.6
Philippines	13.73	Nigeria	19.74	Nigeria	20.63	Pakistan	26.11
Belgium	6.88	Germany	12.79	Pakistan	19.31	France	24.48
Germany	6.86	Egypt	12.45	Egypt	18.33	Bangladesh	21.75
Spain	6.66	Belgium	10.99	Germany	15.58	Germany	17.9
Poland	6.47	Bangladesh	10.85	Bangladesh	15.3	Nigeria	17.21
Top countries sending remittances							
2005		2010		2015		2020	
United States	47.75	United States	50.53	United States	60.72	United States	68
Saudi Arabia	14.3	Saudi Arabia	27.07	United Arab Emirates	40.7	United Arab Emirates	43.24
Germany	12.71	Russian Federation	21.45	Saudi Arabia	38.79	Saudi Arabia	34.6
Switzerland	10.86	Switzerland	18.51	Switzerland	26.03	Switzerland	27.96
United Kingdom	9.64	Germany	14.68	Russian Federation	19.69	Germany	22.02

(continued)

Top countries receiving remittances									
France	9.47	Italy	12.88	Germany	18.25	China	18.12		
Republic of Korea	6.9	France	12.03	Kuwait	15.2	Russian Federation	16.89		
Russian Federation	6.83	Kuwait	11.86	France	12.79	France	15.04		
Luxemburg	6.74	Luxemburg	10.66	Qatar	12.19	Luxemburg	14.2		
Malaysia	5.68	United Arab Emirates	10.57	Luxemburg	11.19	Netherlands	13.92		

Sources World Bank (n.d., accessed June 2021)
All numbers are in current (nominal) USD billion

The data shows that India has been receiving huge amounts of remittances from 2010 onwards, and it may also increase in the upcoming years. In 2010 India was getting 53.48 billion USD. Again in 2015 again it increased 68.91. In 2020 data India received 83.15 billion USD. It is much higher than the second-highest receiver. China received only 59.51 billion USD. The typical peculiarities of the huge remittance receiver among the top 10 more than 50%, are from developing countries. Among the Asian countries India and China are getting the most benefit. Egypt and Nigeria are the top African country which is receiving highest remittance. India and China have continuously maintained top positions in the last two and a half decades. On the other side developed countries send the remittance. The United States of America have been sending huge remittance from 2005 onwards. In 2020, 68 billion USD sent by US. After US, United Arab Emirates sends a huge remittance from their country. As per the data 43.24 billion USD sent by them. Among the top 10 ten massive remittance senders, all are developed countries.

5 Conclusion

Due to the overwhelming amount of information individuals are receiving today, migration from developing countries to developed ones will increase, in the coming years. People from poor countries relocate to new locations that provide more opportunities. Using a country's corridors can make travelling between locations austere. It causes a great deal of social concerns and problems while also giving them a lot of opportunities. In particular, HDI, fragility index, passport index, and other characteristics that could provide them with additional benefits are considered by migrants when deciding whether to migrate to a new location. Many developing nations, including India, are making significant financial gains by transferring the people. At the same time, by embracing migrant labour, industrialized nations like the US get access to more human resources. The government of each country should take into account the positive and negative impacts of migration otherwise in the long run, they will face significant economic difficulties.

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Exploring the Relationship Between Consumption Expenditure and Comorbidity Status—A Case of Wayanad District of Kerala

Rachel Reji 🔘**, K. P. Jaheer Mukthar** 🔘**, Giovani Villegas-Ramirez** 🔘**,**
Robert Concepción-Lázaro 🔘**, Edwin Hernan Ramirez** 🔘**,**
and Carlos Huerta-Soto 🔘

Abstract Lifestyle diseases are in a rising trend which is caused by many factors. Consumption patterns of people have changed over a period of time, people have begun unhealthy eating habits leading to non-communicable/lifestyle diseases. The main objectives of this study are to analyze the consumption expenditure and to analyze the co-morbidity status in the study area. A descriptive cross-sectional survey approach was adopted for the present study; the survey was conducted using Google Forms and purposive sampling technique was used to recruit 50 samples for the study. Data were analyzed using correlation, SPSS software. In the survey, the mean age of the subjects was between the age of 18–65 years, where 32% of the household samples are suffering from Hypertension, 12% of the sample household are suffering from Diabetes Mellitus, 6% of the sample households are suffering from cardiovascular diseases etc. The correlation was used to analyze the relationship between consumption patterns and co-morbidity status, revealing a strong positive correlation (0.339) between consumption patterns and co-morbidity. This could be because of various other factors. To conclude, the study surveyed the people to ascertain if there is a relation between consumption patterns and co-morbidity status. The survey has shown a significant relationship between consumption patterns and co-morbidity.

Keywords Consumption · Co-morbidity · Lifestyle diseases · Food pattern · Non-communicable diseases

R. Reji · K. P. Jaheer Mukthar (✉)
Kristu Jayanti College Autonomous, Bengaluru, India
e-mail: jaheer@kristujayanti.com

G. Villegas-Ramirez
Universidad Nacional Santiago Antunez de Mayolo, Huaraz, Peru

R. Concepción-Lázaro
Universidad San Pedro, Chimbote, Peru

E. H. Ramirez · C. Huerta-Soto
Universidad Cesar Vallejo, Lima, Peru

1   Introduction

Health is an important aspect of a human being, and health has become the greatest concern for humanity. Good health can increase productivity and economic growth, which shows a country's economic condition. The health condition of the population lies in the hand of the population. As a proverb says, 'Health is Wealth'. Maintaining one's health depends on illness prevention, treatment taken for diseases and social context. This shows a direct relationship between consumption expenditure and health status.

According to World Health Organization (WHO), health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity (World Health Organization, n.d.).

Kerala has been well known for having one of the best healthcare systems in the world for a long time. According to experts, despite having a low per capita income, Kerala's health system has succeeded and consistently attracted national and worldwide attention. According to numerous health surveys, including the analysis reports of the federal government, Kerala outperforms many other states in terms of having high standards of healthcare, increased life expectancy rates, low maternal and infant mortality rates, and low rates of maternal death. Women's empowerment and high literacy rates have contributed substantially to this accomplishment. Kerala, however, is in the era of an emerging riddle due to its high morbidity rate, low death rate, and significant growth in non-communicable diseases (NCDs), according to multiple historical experiences and studies [6].

Obesity, hyperlipidemia, heart attacks, and strokes are all prevalent. In Kerala, male cancer mortality is significantly higher than the national average. According to a report by the Achutha Menon Centre for Health Science Studies, Thiruvananthapuram, the NCD situation in the State has gotten worse. One in three people has Hypertension, and one in five has diabetes, according to the report. The study also showed that, even after early detection and therapy, the level of normalcy obtained for blood sugar and blood pressure is noticeably below the requirements.

Moreover, the State is dealing with geriatric issues, diabetes, Hypertension, coronary heart disease, cancer, and other lifestyle diseases (non-communicable diseases). Major concerns include the rising prevalence of communicable diseases like swine flu, dengue, leptospirosis, and chikungunya. In addition to this, there are new risks to the State's health environment, such as mental health concerns, suicide, drug and alcohol misuse, teenage health problems, and an increase in traffic accidents. Making concerted, dedicated efforts while properly coordinating across sectors to address issues is imperative [3].

1.1 Statement of the Problem

Health is an essential aspect of a human being, and health has become the most significant concern for humanity. Good health can increase productivity and economic growth; health condition shows a country's financial situation. The health condition of the population lies in the hand of the people. As a proverb says, 'Health is Wealth'. Maintaining one's health depends on illness prevention, treatment taken for diseases and social context. It shows a direct relationship between consumption expenditure and health status. Nowadays, people consume more junk, resulting in more Non-communicable Diseases (NCDs). Considering the bigger picture, the study aims to identify the existence of comorbidity in Kerala (Wayanad) based on consumption expenditure. It helps to understand the Comorbidity status between the districts of both states.

The article is structured as follows, starting with introduction which discusses the macro scenario of consumption expenditure and health status, followed by the objectives and methodology used for the study. The results and discussion part analyses the data collected and investigate the correlation between consumption expenditure and morbidity status of the study area. The article ends with.

2 Objectives of the Study

- To examine the consumption expenditure pattern of the study area.
- To analyze the comorbidity status of the study area.

2.1 Research Methodology

The present study analyses consumption expenditure and morbidity status in Wayanad and Bangalore districts. The study is based on both primary and secondary data. Purposive sampling was used to get primary data from 50 samples. Karl Pearson Correlation and other statistical methods were used to evaluate the data using SPSS software. The secondary data was gathered from government websites, journals, and publications.

2.2 Review of Literature

An attempt has been made here to provide a concise review of critical concepts based on the literature that is currently accessible regarding this subject in the context of consumption patterns and health status. This chapter provides a survey of the literature on this subject.

The study highlighted that one or more chronic diseases linked to a poor diet affect all American adults, with severe direct and indirect economic consequences. Dietary patterns may be more relevant for predicting health outcomes than individual diet components, according to the 2015–2020 Dietary Guidelines for Americans (DGA). Based on the evidence of positive associations with many chronic disease risk factors and outcomes, the DGA recommended three healthy patterns [8].

The study highlighted that the goal was to combine large-scale sales data from grocery stores with demographic and health information to identify key food consumption patterns associated with well-known lifestyle disorders to correlate with food consumption substantially. The methodology used is a qualitative analysis which has taken from the year 1997–1998.

The study examined convenience foods consumption habits and potential health effects in everyday life. As food technology advances quickly, the term "convenience food" is extensively utilized in the catering industry. The study found that one of the main reasons obesity and other non-communicable diseases are becoming prevalent is the over-intake of convenience meals [2].

The aim was to evaluate the study area's spending habits, look at Kerala's overall health, and assess the study area's morbidity rate. Primary and secondary data were used as a method of data collection technique. The mortality rate and life expectancy of Kerala's population, which reflect the State of its current health, are more comparable to those of nations with far greater per capita incomes. Although Kerala achieved impressive feats in terms of mortality and fertility, the level of sickness is reportedly high, which sparked a discussion on the "low mortality and high morbidity syndrome" in Kerala. More ailments were reported because people were more aware of their health and because there were so many medical services. More than that, the State's illness pattern has undergone significant alterations. It combines the illnesses of both prosperity and poverty. The prevalence of lifestyle diseases is also on the rise in Kerala [5].

The researcher has analyzed that the increasing burden of non-communicable disease morbidity and Chronic illness is forcing Kerala households to pay unavoidable costs. The most common healthcare payment method is out-of-pocket (OOP) financing. These costs frequently cause low-income families to face calamity, and many were forced to live in poverty. The current study evaluates many variables, including a morbidity pattern's socio-demographic, economic, and health aspects. Three regions of the State were chosen, and a cross-sectional survey was carried out in urban and rural settings [9].

The researcher analyses that unhealthy eating habits are a significant, preventable risk factor for non-communicable diseases (NCDs), but their effect on disease burden has not been extensively assessed. This study aimed to evaluate the consumption of essential foods and nutrients across 195 nations and determine how their inadequate intake affected NCD mortality and comorbidity. This study paints a thorough picture of the potential effects of an unhealthy diet on NCD—mortality and morbidity, emphasizing the need for better diets worldwide. Our results will guide the implementation of scientifically supported dietary treatments and offer a framework for assessing their effects on human health each year [1].

The researcher analyses the current and future generations to remain healthy throughout their lifespans, and proper diet is crucial. A balanced diet lowers a child's chance of developing chronic diseases and promotes healthy growth and development. Adults who follow a healthy diet have a lower risk of obesity, heart disease, type 2 diabetes, and several malignancies. They also live longer. People with chronic conditions can control their ailments and prevent complications by eating healthfully [7].

The study highlights that Kerala is located in the most excellent epidemiologic transition zone, according to a state government effort to control non-communicable diseases, which has significantly impacted the State's morbidity and mortality rates. Regardless of the area or income strata, the State's widespread urbanization and modernization had permeated down to the lowest levels of government, influencing people's lifestyles and creating the State an ideal environment for non-communicable diseases to proliferate. Over time, the mortality and morbidity caused by lifestyle diseases started to outpace those brought on by RCH problems and infectious diseases.

3 Brief Overview of Wayanad's Health Status

Wayanad is the 12th district of Kerala, situated in an elevated mountainous region of Western Ghats. Wayanad has an area of 2,132 sq. km, of which 40% is forest land and has a cherished history. 31% of the Scheduled Tribe (ST) population in the State live in this district. As of the 2011 Indian census, Wayanad had a population of 816,588. Males constitute 49.14% of the population and females 50.86%. Wayanad has an average literacy rate of 89.32%; the male literacy rate is 92.84%, higher than the female literacy rate of 85.94%, the sex ratio (female per 1000 males) of Wayanad is 1035 and the density of the population is 383 per sq. km.

There are 6 Large Industries, 4 Medium Industries, 152 Medium Industries, 3217 Micro Industries, and one mini-industrial estate. The prominent investment sectors are Agro Food Processing, General Engineering, Cement Product Manufacturing and Readymade Garments. The per capita income (2016–2017) at a constant price (INR) is 101243. An article by Deccan Chronicle showed that Wayanad stands 5 in Kerala for lifestyle diseases, the researcher chose Wayanad for conducting the study (Table 1).

Based on health development indices, Kerala stands first, followed by Andhra Pradesh, Maharashtra, Gujarat and Punjab. The success of Kerala among the Indian States has been linked to historical causes that aided in high literacy and women's empowerment.

Figure 1 shows the estimates of per capita expenditure in rural and urban areas were Rs.1141.56 and 1276.42, respectively, and per capita, non-food expenditure in rural and urban areas of Kerala was Rs. 1391.75 and Rs. 1879.43, respectively. Per capita non-food expenditure was higher than per capita food expenditure in rural and urban areas (Table 2).

Table 1 Health development indices of Indian states

States	Health index	
	Base year	Reference year
Kerala	77.53	74.65
Andhra Pradesh	60.84	65.31
Maharashtra	61.76	64.53
Gujarat	62.61	63.72
Punjab	65.83	63.41
Himachal Pradesh	61.84	63.10
Jammu and Kashmir	61.02	62.92
Karnataka	59.39	61.77
Tamil Nadu	64.05	60.50
Telangana	56.12	59.42
Haryana	47.59	54.08
Chhattisgarh	52.69	53.97
Jharkhand	48.25	53.67
Assam	45.84	50.02
Rajasthan	37.35	43.23
Uttarakhand	44.61	39.61
Madhya Pradesh	40.77	38.69
Odisha	40.19	36.35
Bihar	39.10	32.43
Uttar Pradesh	34.44	29.16

Source [4]
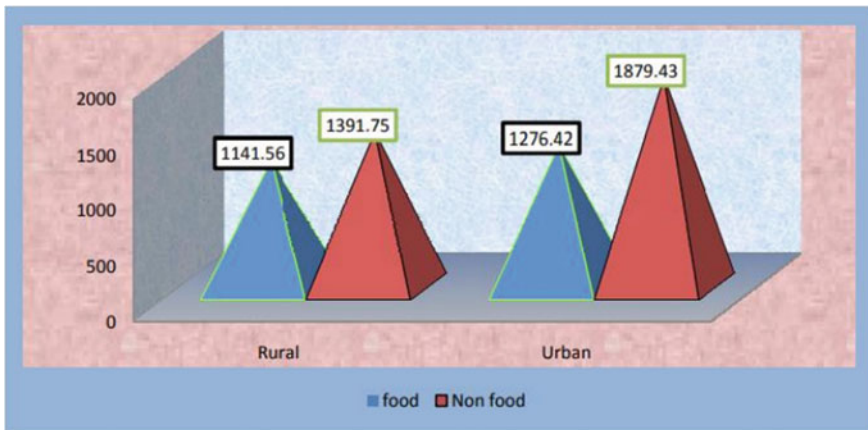
Fig. 1 MPCE of food and non-food items in rural and urban areas of Kerala. *Source* NSSO

Table 2 Percentage share of food groups to total MPCE

District	Rural	Urban
Kasaragod	48	46
Kannur	47	45
Wayanad	43	42
Kozhikode	47	46
Malappuram	40	43
Palakkad	51	41
Thrissur	39	34
Ernakulam	44	36
Idukki	47	38
Kottayam	41	40
Alappuzha	46	46
Pathanamthitta	52	47
Kollam	49	48
Thiruvananthapuram	46	39

Source NSSO

Table 3 shows a clear idea about the variation of the percentage share of food groups in total expenditure over the districts of Kerala. It has been seen that the percentage share of the food group of total MPCE was less than 50% for all districts except the rural areas of Palakkad and Pathanamthitta.

Table 3 shows that, in some instances, the MRP estimate is higher than the district-level URP projections. The MPCE calculated using the URP approach for the urban areas of Malappuram, Alappuzha, and Thiruvananthapuram was higher than the MPCE calculated using the MRP method. The MPCE calculated by the URP method for the rural region in Thrissur, Ernakulam, Kottayam, Pathanamthitta, Kollam, and Thiruvananthapuram was higher than the MPCE calculated by the MRP method.

*URP—Uniform Reference Period *MRP—Mixed Reference Period *MMRP—Modified Mixed Reference Period.

Figure 2 shows that the significant states other than Kerala listed here were taken from the following table, which provides estimates of MPCE for other states. The MPCE was produced via the MMRP method for India, significant states, and districts of Kerala in 2011. Urban MPCE was highest in Andaman & Nicobar Islands (Rs. 4642) and lowest in Manipur (Rs. 1483), as well as highest in Lakshadweep (Rs. 2924) and lowest in Jharkhand (Rs.1006).

Table 4 shows the value of consumption of food and non-food items per household for 30 days for each quantile class of MPCE, with a reference period of clothing & bedding, footwear, education, medical and durable goods.

Table 3 District-wise, MPCE was obtained by using a different reference period

District	Rural average MPCE			Urban average MPCE		
	URP	MRP	MMRP	URP	MRP	MMRP
Kasaragod	1521.99	1736.91	1950.61	1723.37	1965.8	2238.32
Kannur	1792.3	1964.72	2113.32	1963.49	2178.01	2300.45
Wayanad	1572.22	1772.27	1980.24	1873.79	2085.43	2474.26
Kozhikode	1696.15	1889.68	2189.87	2023.29	2264.06	2385.1
Malappuram	1586.07	1863.54	2202.12	1974.15	1962.89	2253.8
Palakkad	1881.41	1885.94	2368.88	2278.69	2437.08	2820.08
Thrissur	2808.76	2775.13	2785	3004.93	3153.85	3490.22
Ernakulam	2732.25	2685.01	2784.56	2858.29	3062.92	3746.6
Idukki	2604.71	2782.72	2825.36	3208.58	3599.94	3974.88
Kottayam	3306.78	3133.67	3162.56	3543.98	3457.65	3470.91
Alappuzha	2594.85	2643.47	2943.96	3007.45	2988.94	3660.99
Pathanamthitta	2858.7	2791.06	3080.85	2798.32	3257.11	3471.05
Kollam	2777.02	2446.44	2582.89	2343.05	2576.94	2641.78
Thiruvananthapuram	2579.87	2393.27	2651.76	4217.71	4053.25	4142.21
All	2284.18	2308.25	2533.3	2700.53	2833.77	3155.85

Source NSSO
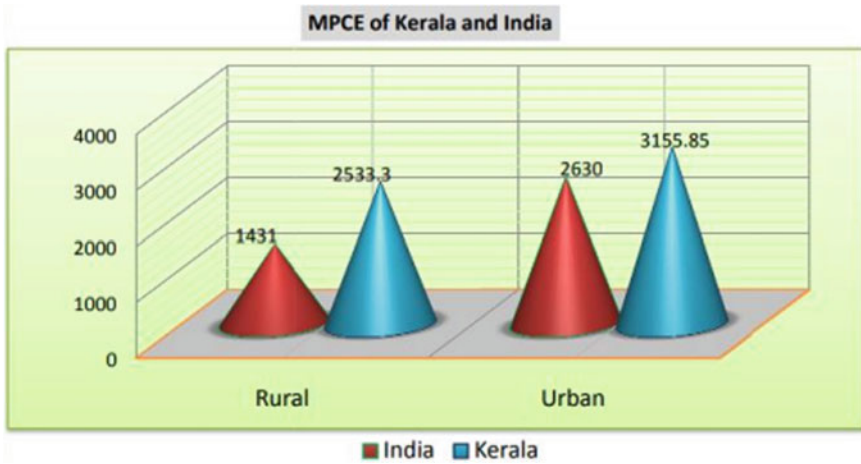
Fig. 2 MPCE of Kerala and India. *Source* NSSO

Table 4 Value of consumption (in Rs) of food and non-food per person for 30 days for each quantile class of MPCE (MRP): Reference period for clothing & bedding, footwear, education, medical and durable goods of Wayanad district

Wayanad	Quantile class of MPCE						No. of households reporting consumption	
	1	2	3	4	5	All	Per 1000 households	Sample
Total food group	456.14	570.38	640.17	839.7	1028.58	685.62	1000	352
Total non-food group	500.86	704.93	924.15	1246.57	2433.45	1101.25	1000	352
Total exp	956.93	1275.31	1564.35	2086.24	3462.04	1786.85	1000	352

Source NSSO

3.1 Results and Discussion

Income has been considered one of the essential parameters in the socioeconomic variable which influences society. The income level and the consumption pattern have a direct relation.

Table 5 mentions that 36% of households have an income above 50,000 and 64% below 40,000. It shows that there is a clear disparity in income distribution.

Table 6 shows that both genders participated equally in the survey, between the age group of 18–65, where the mean age is 41.65 and the Standard deviation of the age group is 12.35.

Figure 3 shows that most households spend 16.80% of their income on food, 6.63% on Medical, 13.57% on education and 14.25% on income on Non-food items.

In Fig. 4, 34(68%) respondents prefer non-veg, 14(28%) respondents prefer veg, and 3(6%) respondents prefer both veg and non-veg in the Wayanad district (Fig. 5).

Table 5 The annual income of the study population

Income level	Number of households	Percentage (%)
< 10,000	7	14
10,000–20,000	21	42
30,000–40,000	1	2
40,000–50,000	3	6
50,000–60,000	1	2
60,000–100,000	11	22
> 100,000	6	12
Total	50	100

Source Primary data

Table 6 Description of Socio-demographic characteristics of subjects

Socio-demographic variable	Categories	f	%
Gender	Male	25	50
	Female	25	50
Family income	< 10,000	7	14
	10,000–20,000	21	42
	60,000–1,00,000	16	32
	> 1,00,000	6	12
Age in years	Range	Mean	SD
	18–65	41.16	12.35

Source Primary data
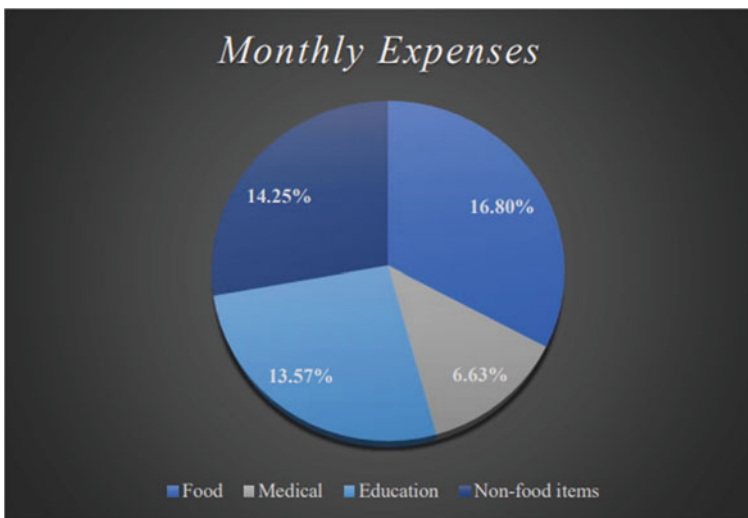
Fig. 3 Overall monthly expenditure. *Source* Primary data

Figure 6 shows how frequently individuals have non-veg, in which 58% of individuals have non-veg weekly, 28% have non-veg daily, 8% have non-veg daily and 6% have non-veg rarely.

Figure 6 shows how frequently the individuals have edible oil; 62% have oil daily, 24% have oil weekly, 4% have oil monthly and 10% have oil rarely.

Figure 7 shows how frequently the individuals have bakery items; 24% have bakery items daily, 30% have bakery items weekly, 16% have bakery items monthly and 30% have bakery items rarely.

Figure 8 shows how frequently the individuals have cereals and pulses, in which 50% of the individuals have cereal and pulses daily, 30% of the individuals have cereals and pulses weekly, 4% of the individuals have cereals and pulses monthly and 16% of the individuals have cereals and pulses rarely.
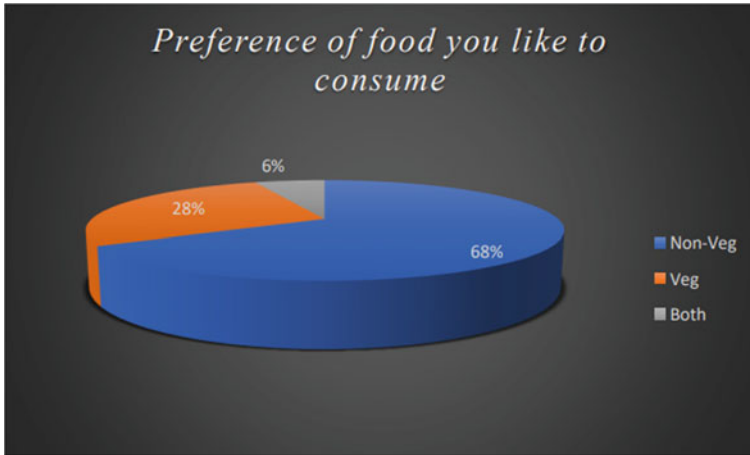
Fig. 4 Preference of food you like to consume. *Source* Primary data
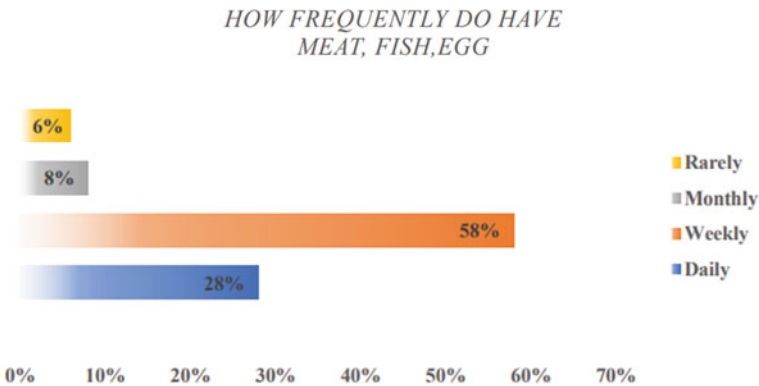
Fig. 5 Bar graph depicting the frequency of consumption of non-vegetarian food. *Source* Primary data

Figure 9 shows how frequently individuals have sugar and sweets, in which 62% of the individuals have sugar and sweets daily, 16% of the individuals have sugar and sweets weekly, 6% of the individuals have sugar and sweets monthly and 16% of the individuals have sugar and sweets rarely.

Figure 10 shows how frequently individuals have junk food; in which 58% of the individuals have junk food rarely, 22% have junk food monthly and 20% have junk food weekly.

Figure 11 shows the morbidity status of the sample households in the Wayanad district. The figure clearly shows that most people are affected by diseases like Hypertension (B.P.), Diabetes, Cardiovascular diseases and Cholesterol. This indicates that
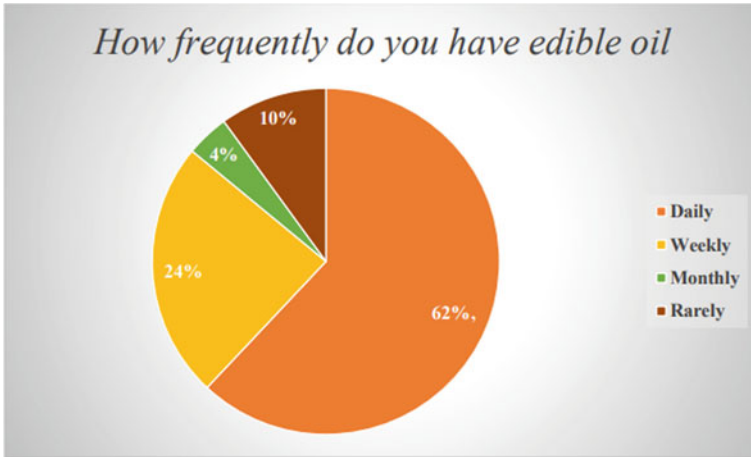
Fig. 6 Pie chart depicting the frequency of consumption of edible oil. *Source* Primary data
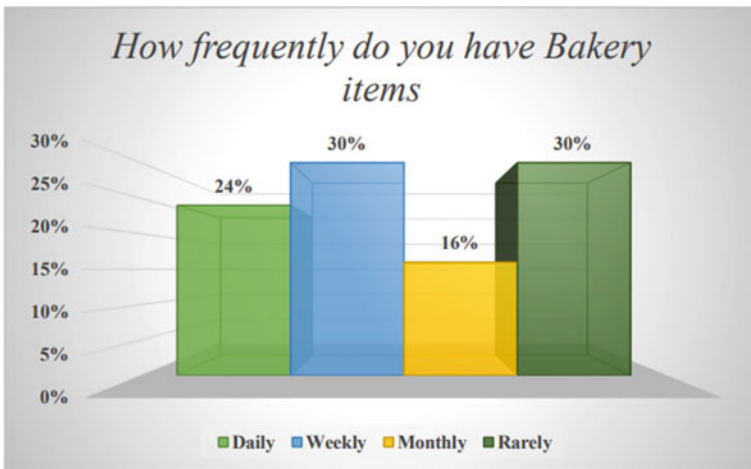
Fig. 7 Histogram depicting the frequency of consumption of bakery items. *Source* Primary data

70% of the subjects are suffering from lifestyle diseases and 30% of the subjects are not suffering from any diseases.

Figure 12 shows the opinion of individuals on their perception of whether the consumption of food leads to lifestyle diseases. Where 50% of the individuals said Yes, 18% of individuals said No and 32% of individuals said Maybe.
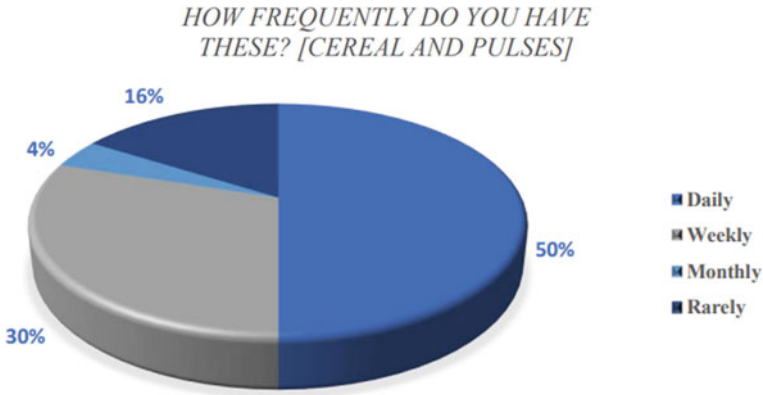
Fig. 8 Pie chart depicting the frequency of consumption of cereal and pulses. *Source* Primary data
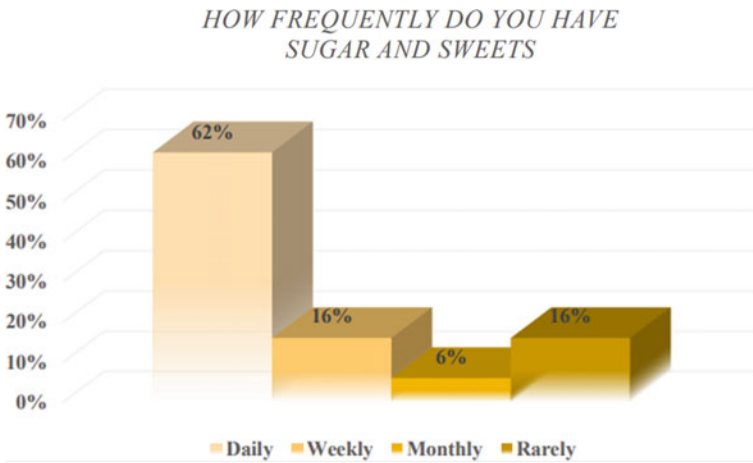
Fig. 9 Histogram depicting the frequency of consumption of sugar and sweets. *Source* Primary data

3.2 Findings, Suggestions and Conclusion

The study analyses the consumption expenditure and the comorbidity status in the Wayanad district. The following are the major findings of the study: Out of 50 sample households, 36% have an income above Rs. 50,000, while 64% have an income less than Rs. 40,000. Out of 50 sample households, the majority of the households spent 16.80% of income on food, 6.63% of income was spent on Medical, 13.57% of income was spent on education and 14.25% of income was spent on Non-food items.58% of the sample consume non-veg weekly, 28% consume non-veg daily, 8%
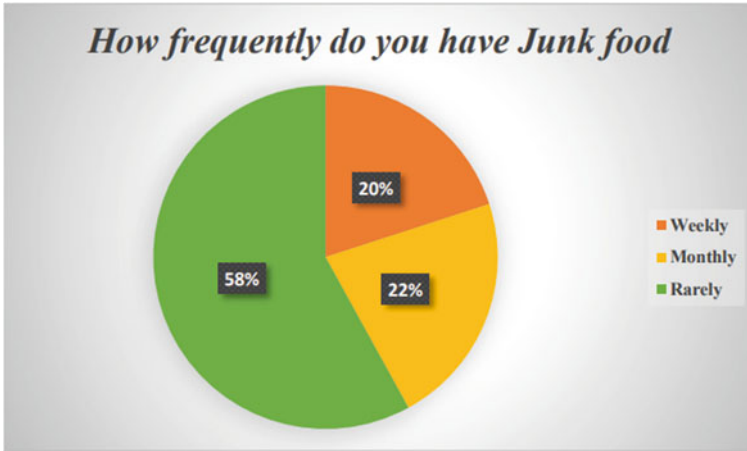
Fig. 10 Pie chart depicting the frequency of consumption of junk food. *Source* Primary data
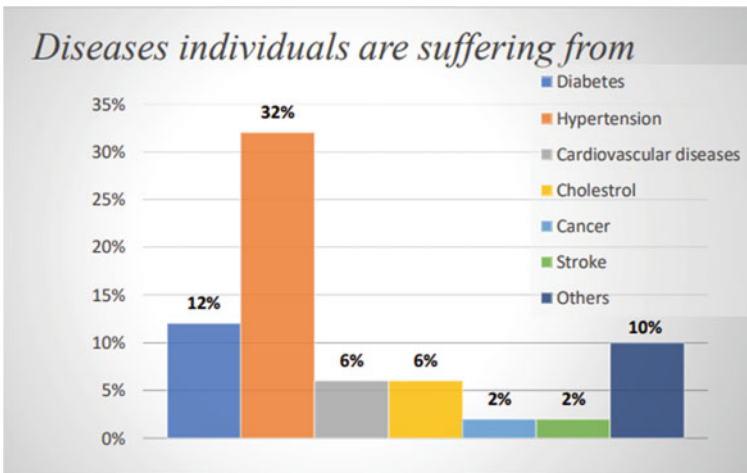
Fig. 11 Bar graph depicting the diseases in the population. *Source* Primary data

consume non-veg monthly and 6% consume non-veg rarely.62% of sample house-holds consume edible oil daily, 24% consume edible oil weekly, 4% consume edible oil monthly and 10% consume edible oil rarely. 30% of sample households consume bakery items weekly, 24% consume bakery items daily, 16% consume bakery items monthly and 30% consume bakery items rarely. 50% of sample households consume cereal and pulses daily, 30% consume cereal and pulses weekly, 4% consume cereal and pulses monthly and 16% consume cereal and pulses rarely.62% of sample house-holds consume sugar and sweets daily, 16% consume sugar and sweets weekly, 6% consume sugar and sweets monthly, and 16% consume sugar and sweets rarely. 20%

Fig. 12 Pie chart depicting the opinion of the study population. *Source* Primary data

DO YOU THINK CONSUMPTION OF
FOOD LEADS TO LIFESTYLE DISEASES

32%

50%

18%

■ Yes
■ No
■ Maybe
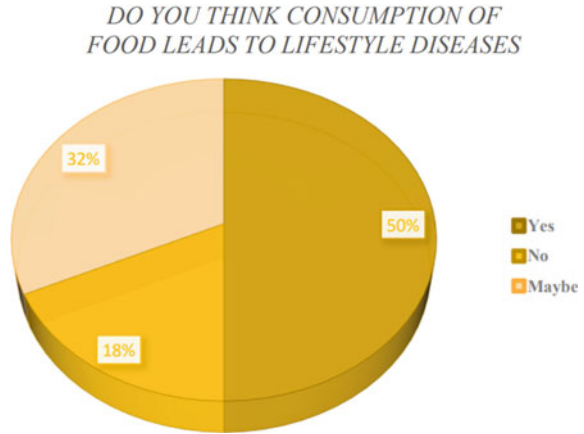
of sample households consume junk food weekly, 22% consume junk food monthly and 58% consume junk food rarely. 68% of households prefer non-veg food, 28% prefer veg and 6% prefer veg and non-veg. 70% of households suffer from one or more NCDs and 30% have a healthy lifestyle.50% of households thought that consumption of food leads to lifestyle diseases, 18% thought that food consumption does not lead to lifestyle diseases, whereas 32% of households had a neutral view. There is a strong positive relation between consumption expenditure and comorbidity which shows that as consumption expenditure increases, comorbidity also increases.

3.3 Suggestions

In Wayanad, egg, fish, meat and edible oil consumption is more; this is a matter of concern as NCDs increase. People should focus on more of a healthy diet which includes cereals, pulses, vegetables and fruits. Awareness should be given to the people regarding the impact of unhealthy food habits on health and educate them about the benefits of healthy eating habits and frequent physical exercise. Access and affordability to healthcare are necessary because people in rural regions may struggle to manage and treat lifestyle diseases due to a lack of access to healthcare. Access to healthcare and routine check-ups can aid in the early detection and treatment of diseases. States should introduce "fat tax" to reduce comorbidities to a certain extent. Ensuring implementation of National programmes such as the National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS).

3.4   Conclusion

Kerala is well known for its socio-demographic achievements. The current health status of Kerala, as indicated by its population's mortality rate and life expectancy, is more akin to those of countries with much higher per capita income levels. While Kerala made remarkable achievements concerning mortality and fertility, the level of morbidity was reported to increase. It started a debate on the "low mortality and high morbidity syndrome" in Kerala. Due to health awareness and the existence of a large number of medical facilities, more diseases were reported. More than that, the disease pattern of the State has undergone huge. It is a combination of both diseases of affluence and poverty. In Kerala, lifestyle diseases also show a tendency to increase.

There existed a disparity in the distribution of income and consumption expenditure in the study area, where 36% of the sample households have income above 50,000 and 64% of households below 40,000. The majority of the samples spent 16.80% of their income on food, 6.63% of their income was spent on Medical, 13.57% of their income was spent on education and 14.25% of their income was spent on Non-food items. The majority of the households are suffering from various comorbidities such as Hypertension, Diabetes Mellitus, Cardiovascular diseases and Hyperlipidemia, which consists of 70%. The study also shows a positive correlation between consumption expenditure and lifestyle diseases; where the consumption expenditure increases, comorbidity also increases. It maybe is due to consuming non-veg, junk food, and edible oil.

4   Scope for Future Research

One possible area of investigation is to explore the relationship between household consumption expenditure and the prevalence of co-morbidity in Wayanad district. This could involve collecting data on household income and expenditure patterns, as well as information on the prevalence of different health conditions in the population. Another potential avenue for research is to examine the role of lifestyle factors such as diet, exercise, and stress on the co-morbidity status of individuals in Wayanad district. This could involve conducting surveys or focus groups with residents to gain insights into their lifestyle habits, as well as analyzing data on health outcomes and lifestyle factors.

Overall, there is significant scope for future research into the relationship between consumption expenditure and co-morbidity in Wayanad district, and this research could have important implications for public health policy and interventions in the region.

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Individual's Attitude Concerning Memes: A Study Reference to Active Social Media Users

T. Somasundaram, P. Vijayasairam, and Sathish Pachiyappan

Abstract Today's digital world, memes are more popular among the youngsters to express one's emotion. Nowadays, almost everyone is largely relying on social media to send memes and emojis in order to share the information in a humorous way. Lots of research article are reviewed about the social media memes, internet memes and this paper summarizes the usage of social media and following the trending pattern in communicating or sharing information through the social media platform. This study is aimed to study about the individual's attitude towards memes and its effect among the social media users. Through survey, total of 193 samples were collected by using questionnaire and statistical tools like Reliability test, Chi square and Correlation analysis have been used to interpret the collected data.

Keywords Internet memes · Social media memes · Memes marketing · Individual attitude · Social media

1 Introduction

Today, memes are the most popular forms of online communication due to increase in usage of social media. In official Instagram website published by blog post in 2020, stated that more than 1 million memes are posted on various social media platform operated by Meta per day, which means that 365 million memes are shared and uploaded in the span of a year. It has been valued at $2.3 billion by the globe meme industry, which is expected to grow to $6.1 billion by 2025 [1]. The study explores

T. Somasundaram (✉)
Department of Management, Kristu Jayanti College (Autonomous), Bengaluru, India
e-mail: somasundaram@kristujayanti.com

P. Vijayasairam
Department of Management Studies, NMS S Vellaichamy Nadar College (Autonomous), Madurai, India

S. Pachiyappan
School of Business and Management, CHRIST (Deemed to be University), Bengaluru, India

the psychology behind internet memes and why they are so popular. Memes can be used to express humor, irony, and satire, and that they often reflect shared cultural experiences. This could suggest that users who frequently engage with memes on social media are drawn to them because they provide a means of expressing humor and connecting with others through shared experiences.

Internet memes are one form of digital media content which have effects on people who view it. Memes in the internet or social media platform can express the diverse feelings and also to pursue humorous attention from the users. Most the memes appear in the form a photo and gained more popularity over the years, because it is easy and quick to create and spread rapidly on the Internet. Memes are usually created anonymously by regular people, and circulated through various online platform and it influence the people to feel about important issues. Sometimes, it is easy for memes to get ignored, because they may not appear to be substantive content. In today's digital environment, people are allowed to interact with others through social media platform and providing multiple ways for them to engage at all time without any limitations. It is the collection of software based digital technologies and presented as websites and apps to provide users to send and receive any digital content or information through various online social network. Social media is considered as a technology centric to have diverse and complex set of behaviours, interactions and exchanges of various kinds of information occurs. According to Shifman [2], notes that memes often serve as a form of commentary on cultural and political events, and can be used to express a wide range of attitudes and emotions. This could suggest that users who frequently engage with memes on social media are using them as a means of expressing their own attitudes and opinions. Social media platforms have made the sharing and expressing of information as easier to reach people in short span of time. But, in some research it shows that the social media platform negatively impacts the well-being of customers, which leads to feelings of loneliness, depression, other psychological well-being and various behavioural aspects over time. In future, social media might literally feel different, where mobile phones and wearable technology strapped into one's skin and explore the opportunities to communicated to the users through touch.

2 Literature Review

According to Knobel and Lankshear [3], information is sent from one person's mind to another, shaping and transmitting the behaviour and mentalities of a social group. In order to spread and spread information, social media users now frequently employ memes. He clarified that memes are made up of phrases, methods of doing things, images, etc. and are used frequently on social media as a way to mock different events and incite laughter among the general population. By the use of memes in social media, Miltner and Highfield [4] outlined how digital media plays a part in creating a connection between messages and people in new forms of communication. According to Davison [5], memes become a replicable component that allow people to change

their behaviour through conveyed ideas. By their experiences, this encourages people to take part in social construction [6]. According to Victor Huang et al. [7], the looking glass self-theory is important in emojis and memes. The unique designs of emoji and memes are giving viewers hidden messages, and the generational gap between young people and older people causes them to misunderstand the characteristics of memes and emojis, which leads to miscommunication between two generations. The last proof comes from the fact that memes and emojis may efficiently and cheaply shift information from producers to the communities of their friends who have the same interests. The four stages of coping theory and the way memes depict society in the media were proposed by [8]. The study identifies the psychological meaning of memes towards the stress in the pandemic condition. It is the new format in the contemporary online world like photos, gif, and other things. Memes can help reduce tension and decisively strengthen the situation when a pandemic threatens civilization. According to [9] the value-attitude-behavioral model for memes acts as a factor that influences consumers' purchasing behaviour. Younger generations are drawn to memes by their satire, and they function as marketing strategies with the aid of satire journals. Bakhshi et al. [10] study found that Instagram users are more likely to engage with posts that contain photos of faces. This suggests that users are more interested in personal and relatable content, which could potentially include memes. Lim et al. [11] study investigated the relationship between social media use and political attitudes in South Korea. The authors found that social media users tend to have more liberal and open-minded attitudes compared to non-users. This could suggest that users who frequently engage with memes on social media may also have a more liberal outlook.

According to Milner [12], this literature review explores the impact of social media on knowledge production and dissemination. The author notes that social media platform have enable a more decentralized and participatory model of communication, where user actively engage with and share content. This could suggest that users who frequently engage with memes on social media are active participants in this decentralized communication model. Shifman [2] provides an in-depth exploration of memes in digital culture. The author notes that memes often serve as a form of commentary on cultural and political events, and can be used to express a wide range of attitudes and emotions. This could suggest that users who frequently engage with memes on social media are using them as a means of expressing their own attitudes and operations. Wang and Lim [13] investigates the relationship between social media use and political attitudes in China. The authors found that users who frequently engage with social media are more likely to express dissenting opinion and challenge the status quo. This could suggest that users who frequently engage with memes on social media may be using them as a means of expressing dissenting opinions or challenging dominant narratives. Knobel and Lankshear [3] explores the concept of online memes as a form of cultural production. The authors note that memes can be used to express identity and build social affinity, and that they often reflect cultural and social norms. This could suggest that users who frequently engage with memes on social media are using them as a way to express their own identity and to connect with others who share similar interests or attitudes. Lim et al.

[14] investigates the relationship between social media use and political participation. The authors found that social media users are more likely to engage in political discussions and to participate in political activities compared to non-users. This could suggest that users who frequently engage with memes on social media are also likely to participate in political discussions and activities.

Miller [1] explores the psychology behind internet memes and why they are so popular. The author notes that memes can be used to express humor, irony and satire and that they often reflect shared cultural experiences. This could suggest that users who frequently engage with memes on social media are drawn to the because they provide a means of expressing humor and connecting with others through shared experiences. Shifman [15] examines the development and spread of a YouTube meme known as "The Bed Intruder Song". The author notes that memes often have a viral quality, spreading rapidly through social media and becoming part of popular culture. This could suggest that users who frequently engage with memes on social media are drawn to them because they enjoy participating in the spread and development of popular culture. Zhou and Zhang [16] investigates the impact of memes on brand attitude on social media. The authors found that memes can have a positive impact on brand attitude, but that the source of the meme can affect its credibility and effectiveness. This could suggest that users who frequently engage with memes on social media are drawn to them because they can be effective at shaping attitudes and opinions. Milner [17] examines the use of internet memes in the Occupy Wall Street movement. The author notes that memes can be used to express political opinions and to mobilize public participation in social movements. This could suggest that users who frequently engage with memes on social media are doing so as a way to participate in political discourse and to express their own political views. Shifman [18] examines the concept of memes in the context of digital culture. The author notes that memes can be difficult to define and that they can take many different forms. This could suggest that users who frequently engage with memes on social media are drawn to their diversity and adaptability, and that they appreciate the creative potential of memes as a form of cultural expression.

2.1   Statement of Problem

Social media us used by more people all over the world and become one of the defining technologies of our time. It allows people to interact with other and able to promote their individuality and engag1e with the people or groups. Most of the literature review on social media has provided details about the prevalence of information, terminology use, case incidence, news, etc. With the support this literature, researcher explore the study on individual's attitude concerning memes published in the various social media platforms and its cause & effect among the public in the society.

2.2 Objective of Study

- To understand the individual's attitude towards memes on social media platform.
- To study the cause and effect of memes among the social media users in the public.
- To analyse the level of usage of social media platforms for memes.

2.3 Limitations of the Study

- This study is restricted to only social media users.
- Data and information collected by the researcher is pertaining only about the memes published in different situation.
- The duration of the study is limited to certain time period.

3 Research Methodology

Researcher used descriptive research, which involved survey and fact finding enquiries of different items. The target respondents for this survey are social media users and structured questionnaire is circulated to all the social media users and collected the data.

3.1 Sources of Data Collection

Primary data are collected through Google form from the targeted respondents through structured questionnaire by using Likert scale and few information and data are sourced from websites, journals and survey report.

3.2 Sampling Methodology

Sample size collected for this study was 191 and convenience sampling were used as a sampling technique to draw the sample from the targeted population.

3.3 Statistical Analysis

The following analysis has been planned to get the consistency of results from the research study: The data analysis methods used are as follows:

(a) **Reliability Analysis**—Using this analysis, we get Cronbach's alpha and it is a coefficient of consistency or reliability and, for the data to be reliable, the Cronbach's alpha should be greater than 0.7 usually.
(b) **Correlation Analysis**—This is used for testing the relation between two metric variables in a given population. The null and alternate hypothesis are accepted or rejected in this method.
(c) **Chi Square Analysis**—This test is used to determine whether there is an association between categorical variables. In this study, the age and reaction of respondents during menstruation are the variables used to test their association.

3.4 Hypothesis Testing

Null Hypothesis (H$_0$)

- There is no significant relationship between level of usage of social media and memes in social media entertained the people.
- There is no significant change in individual's attitude towards social media memes.

Alternate Hypothesis (H$_a$)

- There is a significant relationship between level of usage of social media and memes in social media entertained the people.
- There is a significant change in individual's attitude towards social media memes.

4 Data Analysis and Interpretation

Interpretation

From the Table 1, it indicates that 50.78% of the total respondents are female and 49.22% of the total respondents are male, 90.16% of the total respondents are single and 9.84% of the total respondents are married, 48.70% of the total respondents are below 20 years, 39.90% of the total respondents are between 21–25 years, 7.26% of the total respondents are above 30 years and only 4.14% of the total respondents are between 26–30 years, 66.84% of the total respondents are student, 19.17% of the total respondents are Employer or Professional, 8.81% of the total respondents are businessman and only 5.18% of the total respondents are homemaker.

Interpretation

Table 2 shows the reliability test for the actual study for a total 193 respondents, the Cronbach's alpha coefficient for 15 variables with 0.842, which means the data is consistent and is reliable. As it is stated that if Cronbach's alpha coefficient is more than 0.7, the questionnaire reliability is acceptable.

Table 1 Demographic profile of the respondents

Demographic	Category	No. of respondents	Percentage (%)
Gender	Male	95	49.22
	Female	98	50.78
Marital status	Single	174	90.16
	Married	19	9.84
Age	Below 20 years	94	48.70
	21–25 years	77	39.90
	26–30 years	08	4.14
	Above 30 years	14	7.26
Category	Student	129	66.84
	Employer/Professional	37	19.17
	Businessman	17	8.81
	Homemaker	10	5.18

Table 2 Reliability analysis

Reliability statistics	
Cronbach's alpha	N of items
0.842	15

Table 3 gives the data related to level of usage of social media and memes in social media entertained the people.

Interpretation

The Table 3 indicates that the correlation coefficient between level of usage of social media and memes in social media entertained the people is 0.875 which indicate 87% relationship level of usage of social media and memes in social media entertained the people at 1% level of confidence, since P value (0.000) is < 0.05 and it is concluded

Table 3 Correlation analysis

		Level of usage of social media	Memes in social media entertained the people
Level of usage of social media	Pearson correlation	1	**0.875**[**]
	Sig. (2-tailed)		0.000
	N	193	193
Memes in social media entertained the people	Pearson correlation	**0.875**[**]	1
	Sig. (2-tailed)	0.000	
	N	193	193

[**] Correlation is significant at the 0.01 level (2-tailed)

Table 4 Chi square analysis individual's attitude towards social media memes

Chi-square tests			
	Value	df	Asymp. sig. (2-sided)
Pearson chi-square	147.382[a]	6	0.000
Likelihood ratio	117.292	6	0.000
Linear-by-linear association	57.281	1	0.000
N of valid cases	193		

[a] 44 cells (78.6%) have expected count less than 5. The minimum expected count is 0.05

that there is a high degree positive relationship between level of usage of social media and memes in social media entertained the people.

Interpretation

The Table 4 shows that the significance value is less than 0.05, therefore the alternative hypothesis H_1 is accepted, which means that the there is significant change in individual's attitude towards social media memes.

5 Recommendations

So here after completing all the study and analysis, there are certain suggestions for the respondents to know one's individual attitude towards memes regarding pandemic situation on social media platform. Social is being used my all the people it depends on people how they use it. Not all social media users are wrong but there are few users who do miss use it for their benefit and popularity which is wrong. People spend 3–4 h in social media per day which is not a good habit, people must use less as much as they can. People have been addicted towards social media too much that they do not know how this will make them suffer later.

Social media played a very vital role in this pandemic situation by helping people when they were in need of oxygen, beds and food & medicine. If people want, they can use these platforms for some good thing as mentioned above. Social media is place where people can relax and get entertained themselves in terms of music, videos, entertainment, and kind of Art and many more. People can start their business through social media marketing. Social media is a place to encourage people to do good and not to comment on their sufferings which is wrong and shouldn't be done. Social media is a platform to make use of it not to misuse fake news.

6   Conclusion

Many people's lives have been impacted by social media's encroachment into the real world. Users are transported from the actual world into the virtual dimension as soon as they log on to their social media accounts. There is competition for the main method of communication as the actual world and the virtual world coexist. Nobody anticipated that Charles Kline's message would create a subculture that would eventually infiltrate the real world. Whilst few may think it has no bad impact on us as users, social media's regulatory impact can be seen in how it affects growth, self-image, interpersonal connections, and business, all of which highlight how important it is. Many people now utilize social media, which has almost entirely replaced face-to-face conversation. Early adoption of this style of communication by adolescents essentially robs them of their ability to interact socially in real life, since they are unable to have a coherent conversation unless the respondent is speaking through a monitor.

As kids develop, they are constantly exposed to pictures and preconceptions of the ideal person, which prevents them from fully appreciating their positive traits and traits that outweigh their negative ones. Now that all of their friends are contained within the tiny blue rectangle of their Facebook page, some people are even unable to maintain meaningful relationships with people in real life. Even companies utilize this type of media to market themselves, although they run the risk of being quickly degraded. Social media has become so ingrained in daily interaction that it plays a part in the actual world. Even if a person does not use social media, they are practically immersed in the virtual world because of the number of others around them who do. They will eventually have the same consequences as the people around them. Using satellite communications that block signals for face-to-face contact, the globe has developed a society. Whatever the circumstance, social media has a growing influence on practically everything we do. Face-to-face interaction will soon become obsolete because of what is currently popular. Social media needs to be controlled in order to eliminate the negative effects and only highlight the positive ones in order to return to a full society. Social media sites will develop new methods for introducing users, ideas between those who don't just have shared connections and like-minded hobbies, and strategies to foster real-life friendships. Presently, there are apps that let users look for friends who live nearby; perhaps social media will follow suit in order to combat the loneliness epidemic and stay relevant.

Future studies can look into whether usage patterns, platforms used, or how social media is used causally affect how lonely people feel. Understanding social media's role (or lack thereof) in the loneliness epidemic will require understanding whether the negative correlations between social media use and well-being are caused by the characteristics of people who use social media heavily, the functionality of social media, or the manner in which users choose to interact with the platform. Future studies might examine how any of the aforementioned new sensory forms could

change how material is produced and consumed. Researchers with a substantive emphasis may also look into how practitioners use these tools to improve their offers and client interactions.

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A Study on Performance of Indian IPOs During 2012–2022

J. Edward Aloysius and D. Joseph Charles Tamilmaran

Abstract The capital market investments are a great opportunity for the retail investors. Literature review reveals that the performance of IPO has been studied in depth across different markets and over a wider time period. The studies with respect to India on the IPO performance is have been done at various time period. The recent growing trend in IPO has necessitated an in-depth analysis of the IPO returns over a longer period of time. This study analyses the performance of IPOs listing gains and long-term gains across sectors and based on different IPO sizes. This study takes into consideration IPOs from 1st January 2012 to 31st October 2022. The study found that there is a signification relationship between short term gain and long-term gain and it is also found that the under/over pricing have significant association with the current gain/loss. The study suggests that investing in underpriced IPOs would result in long-term gains.

Keywords Initial public offering (IPO) · Listing gain · Short and long run returns

1 Introduction

Post the economic reforms in India in the 1990s the capital markets have developed a lot in the areas of price discovery, efficiency and transparency [1]. The capital markets in India plays a pivotal role in stimulating and accumulating savings and enhancing productivity. In the capital markets there are two entities. On the one side the unlisted companies that are in need of capital and are on a growth tract in terms of diversification and expansion. On the other side there are investors from both the corporate and the retail sector. The capital market reforms and the subsequent changes effected have resulted in a lot of developments offering a vide variety of choices for the investors who have become more demanding and discerning [2]. An investor gets benefitted in two ways either with the speculative opportunities in the

J. E. Aloysius (✉) · D. J. C. Tamilmaran
School of Management, Kristu Jayanti College (Autonomous), Bengaluru, India
e-mail: edward@kristujayanti.com

short term or with capital appreciations and payment of dividend in the long term [3].

The Initial Public Offering (IPO) is a very attractive investment option for the investors and is also a major source of capital for any organization that likes to raise funds for growth and expansion. Certain IPOs are overpriced and whereas the others are underpriced. The returns yielded have variations based on the IPO pricing as studied in the past. At this juncture it is essential to study the performance of IPOs in India. This study focuses on analyzing the performance of IPOs in India issued over a period of 10 years between 2012 and 2022.

2   Review of Literature

Based on the data collected from the 1243 IPOs issued in India during 1993–1995, Pandey and Kumar [4] found that the realized excess initial returns on IPOs were high in around 68 percent of the IPOs. Large sized IPOs were observed to yield lower initial returns in contrast to the smaller sized issues. The average underpricing (first day return) was noted at a substantial level of 40.9% by Ansari [5] while studying the IPO underpricing in India during the period of 2005.

Examining 156 IPOs that were issued in India with the book building process between the period years 1999 and 2006, Kumar [6] found upon listing the IPOs on an average offered positive returns (after adjusting for market movements) to the investors. In the long run the IPOs offered positive returns up to twenty-four months and then subsequently underperformed the market. GadeSurendar and KamaleshwarRao [7] was of the opinion that IPOs yield a lot of benefits to the investors.

Khan et.al. [3] analysed the IPOs issued in India in the year 2016 over a period of 3 years and found that the IPOs that were under priced yielded good returns while the over priced counterparts showed a declining performance. They also found that the underpriced IPOs yield higher returns and it helps to boost demand and maintain price stability in the secondary market.

3   Methodology

The main objectives of the study include.

- To analyse the performance of the IPOs on the listing day
- To evaluate the premium on IPOs
- To study the sector-wise analysis of IPOs
- To analyse the short run and long run performance of IPOs.

3.1 Hypothesis

The following were the hypothesis set for the study:

Ho1—There is no significant difference in listing gains among the IPOs from different sectors

Ho2—There is no significant difference in listing gains among the IPOs of different sizes

Ho3—There is no significant difference in current gains among the IPOs from different sectors

Ho4—There is no significant difference in current gains among the IPOs of different sizes

Ho5—There is no significant association between under/overpriced IPO and current gain/loss

Ho6—There is no significant difference in the short-term gains (listing gains) and long-term gains (current gains)

Ho7—There is no significant relationship between the short-term gains (listing gains) and long-term gains (current gains).

3.2 Research Problem

Literature review reveals that the performance of IPO has been studied in depth across different markets and over a wider time period. The studies with respect to India on the IPO performance is have been done at various time period. The recent growing trend in IPO has necessitated an in-depth analysis of the IPO returns over a longer period of time. This study analyses the performance of IPOs listing gains and long-term gains across sectors and based on different IPO sizes.

3.3 Data Collection

It was noted that 224 companies have issued IPO during the research period between 2012 and 2022. The primary data is collected from the websites of the stock exchanges in India, the Bombay Stock Exchange (BSE) and the National Stock Exchange (NSE). The collected data is organized in a spreadsheet and descriptive statistics were computed. The data is analyzed using SPSS to run other statistical tests.

3.4 Scope of the Proposed Study

The scope of the study is limited to only the IPOs issued between January 01, 2012 and October 31, 2022.

4 Results and Discussion

There was a total of 224 IPOs issued in India between 2012 and October 31, 2022. The number IPOs issued in the 2021 and 2022 is more than the number IPOs issued between 2017 and 2020. The year wise IPO issuance is presented in Fig. 1.

The value of IPOs issued in 2021 and 2022 are more than the values of all the IPOs issued between 2012 and 2020. The IPO issue size in crores of Indian rupees is presented in Fig. 2.
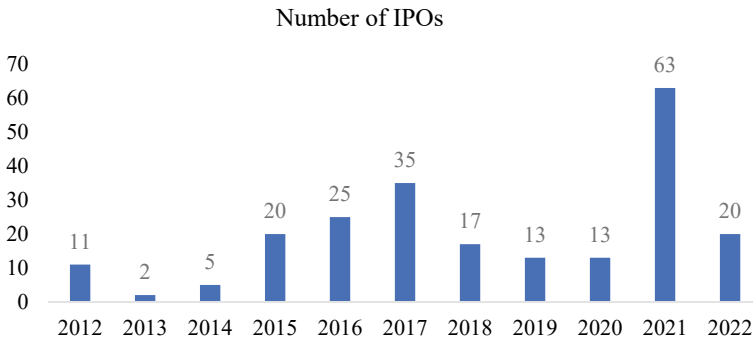
Fig. 1 Number of IPOs since 2012
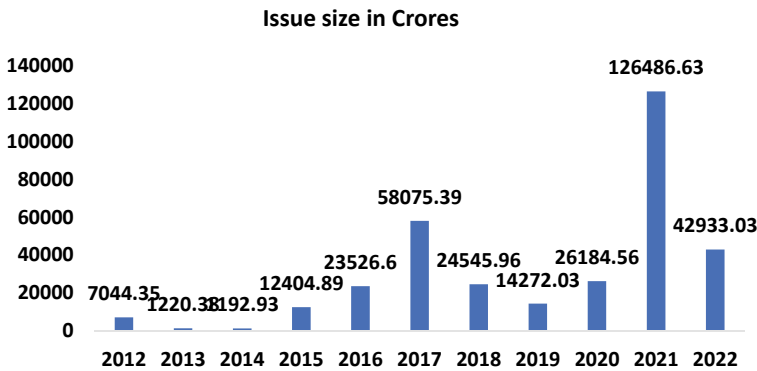
Fig. 2 Year wise IPO issuance value in crores

The IPOs of size between 100 to 500 crore rupees form the maximum share of 32% of the total IPOs issued between 2012 and 2022. The IPOs that are of size less than 100 crores were the least with 6% of the share. The IPO size wise distribution is presented in Fig. 3 in both count and percentage.

IPOs sized between 100 to 500 crores consisted 64.79% of the total number of IPOs as underpriced. IPOs sized less than 100 crores consisted 50% of the total number of IPOs as underpriced. The percentage of IPOs underpriced based on IPO size is presented below (Fig. 4).
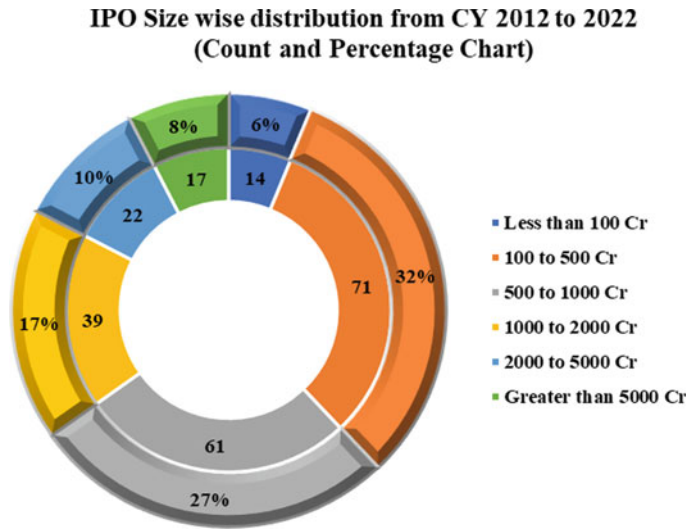
Fig. 3 IPO size wise distribution in both count and percentage
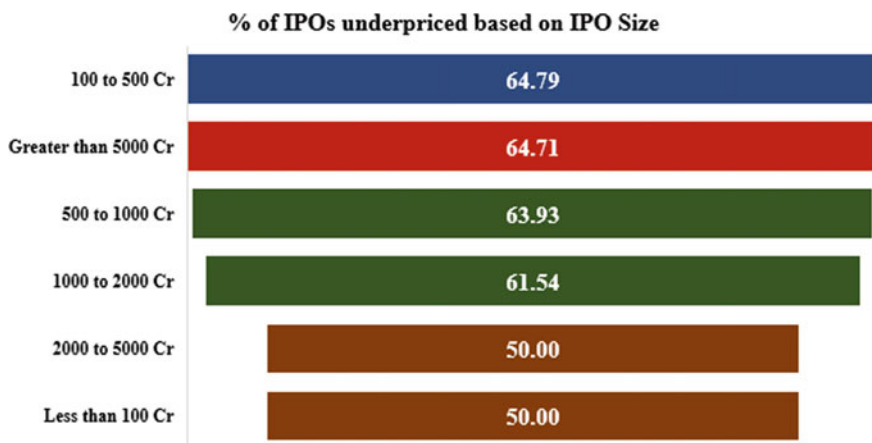
Fig. 4 Percentage of IPOs underpriced based on IPO size

The percentage of IPOs that are underpriced have been increasing steadily since 2012 from 36.36% to 70% in 2022 and the same is evidenced from Fig. 5.

Out of the 224 listed IPOs, 138 were underpriced and 86 IPOs were overpriced. It is observed that 95 out of 138 underpriced IPOs are showing a gain based on the current market price where 37 out of the 86 IPOs are showing a loss based on the current market price. The collected data was cleaned and coded into IBM SPSS application for analysis. Paired sample t test, Chi-Square, One-way Anova and correlation analysis were deployed to test the various hypothesis set in the study. The results of the analysis are exhibited in the Table 1.
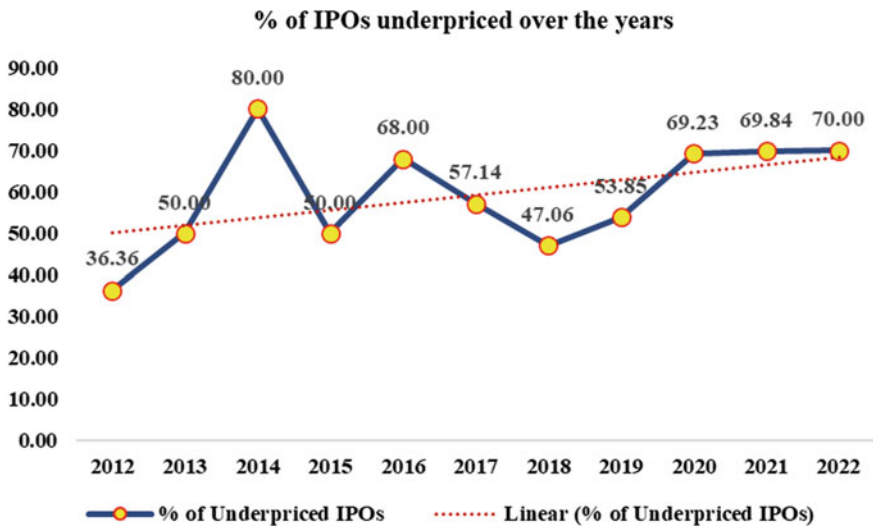
Fig. 5 Percentage of IPOs underpriced over the years

Table 1 Hypothesis result

Variable 1	Variable 2	Hypothesis	Test used	p value	Result
Listing gain	Sectors	Ho1	Anova	0.052	Ho accepted
Listing gain	IPO size	Ho2	Anova	0.641	Ho accepted
Current gain	Sectors	Ho3	Anova	0.000	Ho rejected
Current gain	IPO size	Ho4	Anova	0.221	Ho accepted
Under/over priced	Long-term gain/ loss	Ho5	Chi-Square	0.000	Ho rejected
Short-term gains	Long-term gains	Ho6	Paired sample t test	0.000	Ho rejected
Short-term gains	Long-term gains	Ho7	Correlation	0.000	Ho rejected

5   Findings

The number IPOs issued in the 2021 and 2022 is more than the number IPOs issued between 2017 and 2020. The value of IPOs issued in 2021 and 2022 are more than the values of all the IPOs issued between 2012 and 2020. The IPOs of size between 100 to 500 crore rupees form the maximum share of 32% of the total IPOs issued between 2012 and 2022. IPOs sized between 100 to 500 crores consisted 64.79% of the total number of IPOs as underpriced. IPOs sized less than 100 crores consisted 50% of the total number of IPOs as underpriced. The percentage of IPOs that are underpriced have been increasing steadily since 2012 from 36.36% to 70% in 2022.

Both the listing gain and current gain did not show any difference among the different IPO sizes based on the results of testing of hypothesis Ho2 and Ho4. The listing gain did not show any difference among the various industrial sectors whereas the current gain showed a significant difference among the various industrial sectors based on the results of hypothesis testing of Ho1 and Ho3. Hence, it is found that the underpricing while listing doesn't make any difference depending on the Industrial sector and also the size of the IPO. Based on the testing of hypothesis Ho5 using chi-square it is found that the under/over pricing have significant association with the current gain/loss. It is evident from the analysis that 69% of the 138 underpriced IPOs have resulted in current gain and whereas only 43% of the 86 overpriced IPOs have resulted in current gain. It is thus found that investing in underpriced IPOs would result in long-term gains.

The paired sample t test to test Ho6 found that the listing gain and current gain significantly differed. The correlation analysis to test Ho7 revealed that the listing gain and current gains are significantly positively correlated with a correlation coefficient of 0.311. Thus, it is found that the long-term returns of the Indian IPOs are significantly different from the short-term listing gains. The short-term listing gains of the Indian IPOs are positively correlated with the long-term gains of the IPOs.

6   Conclusion

IPOs are one of the methods to raise long term funds for the companies. The number of IPOs issued was on an increasing trend till 2017. In the years 2018, 2019 and 2022 there was a steep decline. The number of companies raised funds through IPOs are surging in post pandemic. In 2021, there were more than 60 IPOs that were issued and is the highest during the last 10 years. IPOs are either underpriced or overpriced.

The massive over-subscription of IPO leads to listing day gain as well as current market price gain. It is found that the under/over pricing have significant association with the current gain/loss. It is evident from the analysis that 69% of the 138 underpriced IPOs have resulted in current gain and whereas only 43% of the 86 overpriced IPOs have resulted in current gain. It is thus found that investing in underpriced IPOs would result in long-term gains. This study reveals that the long-term returns of the

Indian IPOs are significantly different from the short-term listing gains. The short-term listing gains of the Indian IPOs are positively correlated with the long-term gains of the IPOs.

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Supply-Chain Management: Automating Purchase Process for Business

Kais Ben-Ahmed and **Meriam Amamou**

Abstract This paper proposes a short guideline for businesses on automating their purchase orders via a SpendMap software tool. To do so, we prepared steps to follow when automating purchase orders. Then, we equipped these steps with graphics to make the software and instructions easy for readers and users' purchase order systems in the business. Furthermore, we provided a manual for businesses, allowing them to eliminate manual paperwork, save time, and implement their purchase orders. Noticeably, we have simplified the guideline to be promptly followed by readers and users aiming to implement purchase order systems in their businesses.

Keywords Supply chain management · Automation · Purchase · Business · SpendMap software

K. Ben-Ahmed (✉)
Department of Finance and Economics, College of Business, University of Jeddah, Jeddah, Saudi Arabia
e-mail: ksba.research@gmail.com

Department of Statistics and Economics, ISG Sousse, University of Sousse, Sousse, Tunisia

M. Amamou
Department of Human Resources Management, College of Business, University of Jeddah, Jeddah, Saudi Arabia

Department of Management, ISG Sousse, University of Sousse, Sousse, Tunisia

1   Introduction

Supply Chain Management activities include designing, farming, manufacturing, packaging, or transporting. Firms are adopting a supply chain management strategy to conduct their business. However, with a manual supply chain, firms lose 18% to 40% of their benefit over one year due to supply chain management problems [1]. As reported by Yee et al. [10], the main problems existing in supply chain management systems are related to the risks imposed by suppliers. These problems include a finished product shortage, underutilized plant capacity, poor or breakdown in communication during procurement process, costs such as transportation and warehousing, and inefficient transportation. Fortunately, with supply chain automation, it does not have to be these problems.

Bowersox and Cooper [2] and Langley [6] reviewed that there is a need for a supply chain management system to include functionalities for managing goods storage location and movement of goods. Therefore, the supply chain automation approach combines companies in electronic marketplaces to offer goods and services [5]. Figure 1 explains in more detail the supply chain management process workflow. As shown in Fig. 1, the customer places the order; the manufacturer fulfills the customer's order; the manufacturers purchase from suppliers of raw materials, and suppliers of raw materials deliver the supplies to the manufacturers.
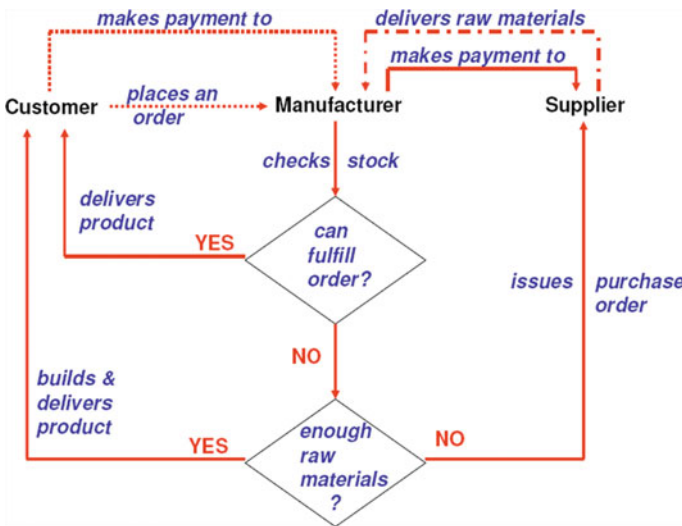

Fig. 1 Supply chain management process workflow

This paper focuses more on automating the purchasing process of raw materials and goods related to production through software packages developed by computer engineers in the form of different autonomous modules but compatible with each other. However, computer applications that can automate supply chains require several important properties beyond traditional software approaches [4]. Previous studies developed in autonomous agents apply to SCM [7, 9]. Huhns et al. [3] designed a prototype software system that could automate the construction of industrial supply chains and B2B processes. Their result provides a major benefit to industrial and commercial efficiency, as well as competitiveness in global markets.

The remainder of this paper was structured as follows. Section 2 describes the methodology. Section 3 mainly introduces how to automate the purchase order process. Section 4 was dedicated to providing a practice for automating purchase order process while Sect. 5 concludes.

2 Methodology

The method followed in this paper is simple. First, we provide steps to follow when automating the purchase order process. Then, we merged these steps with graphics and figures to make the software and instructions easy for readers and users' purchase order systems in the business. Second, at the end of this paper, we will provide an application as a short guideline allowing business activity to create POs, track payables, and manage materials using SpendMap software. We have chosen SpendMap software as a tool for automating PO since, other than that, it eliminates manual paperwork and saves time; it is also accessible in practice and can operate with businesses of all sizes.

3 Purchase Order Process

The purchase order (PO) process is part of the procurement process in every organization. The process starts with purchase order creation, approval, dispatch, delivery, invoicing, closure, budget checks, contract management, quality checks, and anything else required for an order to be fulfilled. Six workflow elements are common to most businesses, if not all, as illustrated in Fig. 2. It should be noted that the purchase order illustrated in Fig. 2 varies depending on each business's requirements.

Fig. 2 Purchase order process in 6 steps with ProcureDesk (ProcureDesk is the product designed to streamline the purchase order process for growing companies)

3.1 How to Automate the Purchase Order Process

Automating the PO process meant moving from the manual (Papers and Excel) process to implementing purchase order software. Figure 3 describes the steps involved in processing the purchase order. These steps include software, financial systems, approval workflow, and implementing automation. We will discuss each of these steps in further detail below.

3.1.1 Identify a Suitable Software

It has developed a good deal of commercial software for supply chain management; however, choose the most suitable one. For example, Planergy is a flexible and customizable software developed for automating PO processes. Therefore, selecting suitable software mainly depends on the organization's requirements.

3.1.2 Integrate with Financial Systems

The first step is integrating your ERP system into the purchase order software to ensure all the information is available. Then, the software provider must deliver a

Fig. 3 Automating order purchase

helpdesk that interacts with the organization responsible. Finally, the provider of pre-developed software should be able to show a good quality process, product control, and evidence of thorough verification and testing.

3.1.3 Define Policy and Approval Workflows

Besides integrating your ERP system into the purchase order software, defining a purchase order policy, and setting up the approval process are required. Approved purchase requisitions are then turned into POs and automatically sent to suppliers.

3.1.4 Implement Automation

Once the earlier steps have been applied correctly and nothing has gone wrong, comes the time to automate purchase orders. The purchase order software will enable users to set up an automated flow and create a requisition, route that requisition to the required approvers, turn that requisition into a PO, and then email that PO to the supplier.

3.2 Benefits of Purchase Order Automation

Moving from manual processes to purchase order automation comes with multiple benefits. However, the top benefit of digitalizing purchasing processes is cost-effectiveness. Creating PO requests, PO approval workflow, dispatching purchase orders, receiving purchase orders, receiving invoices, and processing payments all need software solutions. Therefore, the most significant benefits of utilizing purchase order software are that it speeds up PO processing, decreases the cost of manual labour, enhances supplier relationships, reduces errors in PO paperwork, cuts out PO remedial costs, boosts accountability in the PO process, and avoids errors that can lead to wrong or duplicate purchases.

4 Automating PO Process

Purchase order automation refers to the process of using electronic tools, systems, and PO software to digitalize and streamline the entire purchase order process. In the following, we provide a short guideline of automating purchase orders using SpendMap.

4.1 Installing SpendMap Software

Step 1: Download the Installation Package.

   After you click on the link below, the installer virtually runs itself, that is to say you can and should accept the default settings.

   https://nae.spendmap.net/Free/Freesupport/2/SpendMap-2022-SETUP.EXE?_ga=2.28127484.1978237634.1683134714-1056027881.1683134714.

Step 2: Install SpendMap on your PC.

   It is noticeable that you should select the menu to "Run as Administrator", then follow the prompts to install the software. When asked for a location/folder to install the software in, select a folder on your local PC. Please see Fig. 4, for more details.

Step 3: Run SpendMap "as admin" to complete the setup process.

   Now that the installation is complete, you will see a new folder on your desktop called SpendMap Free Version (see Fig. 5, for more details).

Step 4: Getting started documentation.

   Once SpendMap software has been installed, it has created a shortcut icon toward the Getting Started Documentation. For help, read the Getting Started Documentation before beginning (see Fig. 6, for more details).
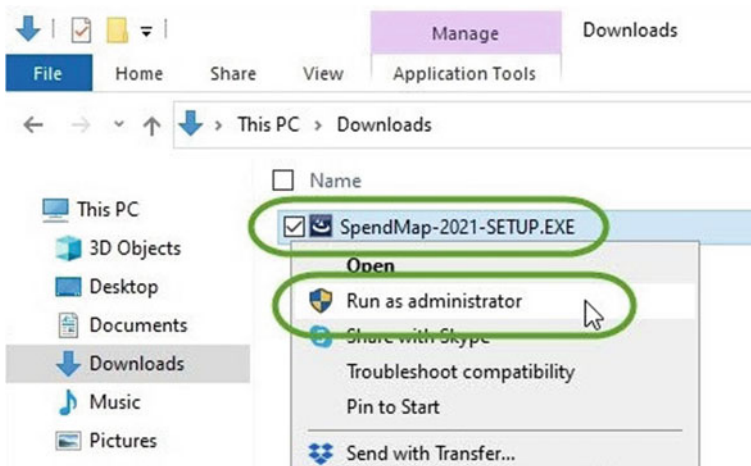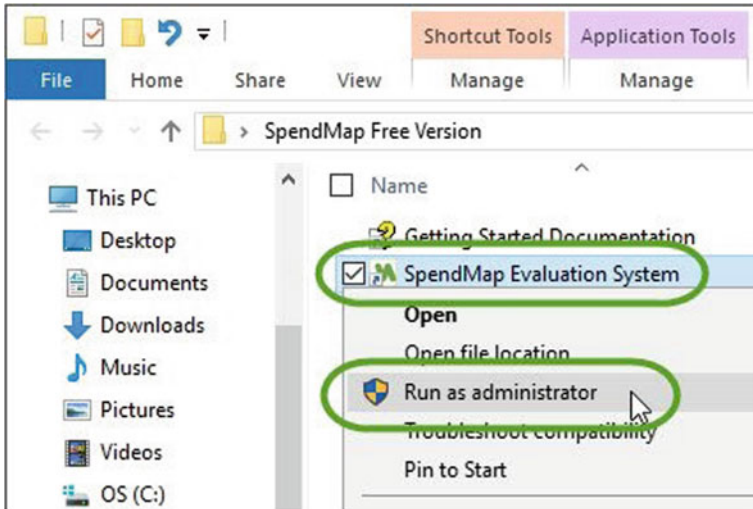

Fig. 4 Install SpendMap on your PC

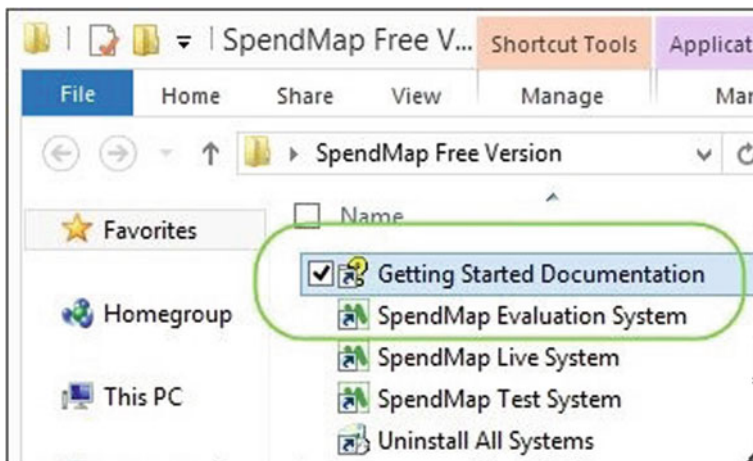**Fig. 5** Run SpendMap "as admin" to complete the setup process

Fig. 6 Getting started documentation

4.2 Purchasing, Payables, and Materials Management Software by SpendMap

In this subsection, we provide a short guideline in using SpendMap software that can eliminate manual paperwork and help automate purchase order process. This software tool has many advantages. For example, it includes free technical support and is not limited to a certain number of purchase orders (Figs. 7, 8, and 9).
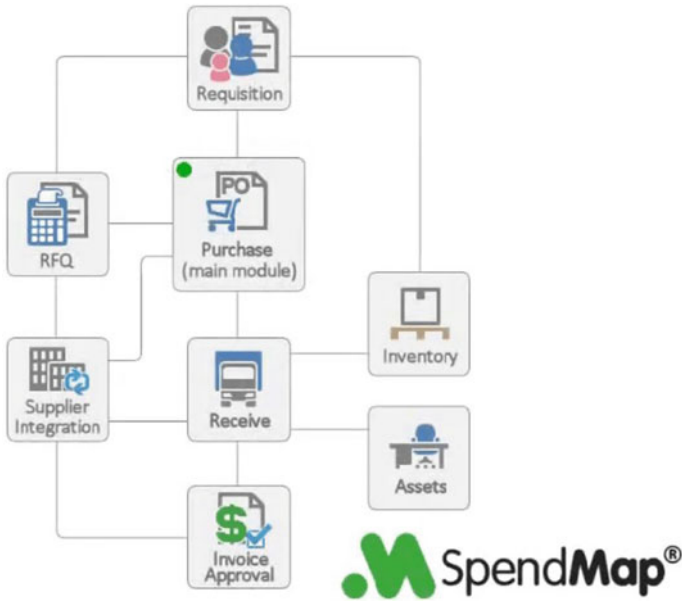
Fig. 7 SpendMap tutorial

Fig. 8 Header and line-item summary

ABC Company Inc.
1234 Main Street
Yourtown 12345

Attn: Jane Smith
Phone: 222-1234
Fax: 222-4321

PURCHASE ORDER

This number must appear on all packing slips, shipping documents, packages and invoices.

10026

Page Number	Purchase Order Date
1 of 1	

Supplier

Order Desk
ACME General Office Supplies
5544 Church Street
Yourtown 12345-6789

Phone: 554-3884
Fax: 554-3445

Ship-to

Steve Green
ABC Company - Receiving Dock
1234 Main Street, 1st Floor
Yourtown 12345

Phone: 222-1234
Fax: 222-4321

TERMS	F.O.B	DELIVERY NOTE	REQUEST-BY	REQ. NO.
2%10 NET 30	ORIGIN	Your truck	FULL	

LN	QUANTITY	DESCRIPTION	DELIVERY	PRICE/UNIT	EXTENSION
1	1 EA	72" x 36" double pedestal executive desk Light oak with center drawer. Right ped with 1 box and 1 file drawer. Left ped with 3 box drawers.	JUN/15/2018	895.00/EA	895.00
2	1 EA	Standard PC configuration #1 With monitor and mouse. Windows operating system pre-loaded. 1 year parts and labor warranty.	JUN/08/2018	810.00/EA	810.00
3	1 LOT	Complete installation and configuration of PC.	JUN/08/2018	95.00/LOT	95.00
4	5 BOX	(USB-3-DSD) Fast USB flash drive Next generation SuperSpeed USB flash drive. 1-year warranty. ABC company will not be responsible for any goods unless supplied in accordance with an official Purchase Order in this form. All conditions on this form and on the attached Terms and Conditions page are part of this Purchase Order. Show PO number on all packages, packing slips, bills of lading, invoices and correspondence.	JUN/15/2018	19.99/BOX	99.95

Sub-total:	1,899.95
Tax 1:	0.00
Tax 2:	95.00
Total:	$1,994.95

** DRAFT COPY - DO NOT PROCESS **

Sample PO form - can be customized to your needs.

(1) Invoice each P.O. separately in duplicate showing the above P.O. number and shipping information.
(2) All duty and/or taxes must be shown separately on invoice where applicable.
(3) This order is subject to the terms and conditions stated.

Get your FREE Purchasing Software at www.Free-Procurement.com

Your Signature
Sample user with full access

SpendMap

Supplier's Copy

Fig. 9 Example purchase order

5   Conclusion

In this paper, we have tried to provide a short guideline for businesses on automating their purchase orders via a SpendMap software tool. Considering the benefits of purchase order automation, we urge businesses to invest in digitalizing their supply

chain management. The proposed guideline contributes in two ways. First, it eliminates manual paperwork and saves time. Second, it helps businesses create purchase orders, manage items and suppliers, track budgets, and report on spending.

This study has a notable limitation. First, we have limited ourselves to presenting only a short guideline for automating the purchase order process. However, future research could extend the analysis to apply this guideline to industry cases [8]. Second, we set up only a purchase order process guideline. However, supply chain management covers many other functions, and it will be suitable if a complete software package is implemented for readers and businesses.

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Diversifying Sources of Sports Financing for Premier League Clubs and Ways for Developing Them

Othman O. Al-Amassi

Abstract The current study aimed to reveal the sources of funding for Premier League football clubs, and ways to develop these sources. The researcher used the descriptive approach with its qualitative approach. The interview was employed to collect data. From (12) participants, the study found several results: Sports facilities are a major source of funding for sports clubs, schools and sports academies are not considered a source of funding for sports clubs, the annual grant provided by official agencies is a major source of funding for sports clubs, annual sponsorship provided From Ooredoo, which contributes to alleviating the clubs' financial crisis. The study recommended a set of recommendations, most notably: rehabilitating club facilities to increase their revenues, encouraging capital to invest in the sports field, designing long-term sports projects and attracting financing for them from external parties, selecting some club board members who have experience in the field of economics.

Keywords Sports finance · Premier League clubs

1 Introduction

The relationship between sport and money has become a synergistic relationship, and sport has become money, economy and other aspects, and teams have large financial requirements and expenses. These requirements increase with the level of teams and their ability to achieve sporting achievements. This is what makes the success of sports club administrations dependent on their ability to save money, and their ability to provide the requirements and needs of sports teams financially, and that club management is more like managing a company or an economic project that needs to provide financial budgets for the continuation of activity [1].

O. O. Al-Amassi (✉)
University College of Applied Sciences, Gaza, Palestine
e-mail: oamassi@ucas.edu.ps

Countries have recently witnessed a change in the sports field and its connection with the economic and financial aspects, and financial resources have become one of the basics of sports construction, and no sports entity can achieve its achievements and reach its goals without providing the necessary sources of financial support for the teams.

The provision of financial resources is one of the most important problems facing sports clubs and their various teams, and clubs are still facing a real problem in how to provide sources of funding for the requirements of activity and sports teams, and many sports teams have overcome many of their problems, and have reached advanced levels and achieved their goals after they provided Various financial sources, through which she was able to provide the requirements of her sports teams [2].

Therefore, the necessary sources of support must be available to develop sports teams and raise their level. In many countries, clubs do not depend on providing financial support from government agencies only, but rather rely on themselves to provide funding sources [3].

Clubs should not remain hostage to traditional systems in obtaining the necessary financing for sports teams, but rather they must develop their financial policy and discuss how to increase their revenues in order to be able to provide the necessary needs for their activities and competitions [4].

Investing in the sports field is one of the successful investments and one of the distinctive businesses that are no less important than other investment fields that investors accept, as investment in this field is an indication of the economic recovery of clubs and federations [2].

On the other hand, sponsors play a prominent role in financing sports teams, as they contribute greatly to their financing, and they can thus form a distinguished team that has a broad fan base and fans and can achieve positive results among the teams [5].

In Poland, for example, the law stipulates that local authorities finance sports clubs that do not aim to make money, in many aspects, including, for example, providing sports equipment's, covering the costs of sports participation, providing sports facilities, providing training staff expenses and many other aspects.

This is not available to the Palestinian sports clubs in the southern governorates, which lack real funding sources that meet the aspirations and aspirations of their administrations, players and fans. Clubs to provide the basic needs for teams.

Based on the foregoing, and given the importance of the diversity of sources of financial support and the extent of their contribution to the success and development of sports teams, the current study came to reveal the sources of financing sports teams in the southern governorates of Palestine and to show the appropriate ways to develop them.

2   The Study Problem

Today, modern sports in different countries of the world depend on what the club administrations provide from various funding sources that enable them to fulfill their obligations towards the teams. These commitments include bringing in distinguished players and coaches, salaries, and providing stadiums and training camps, among others. Despite this, sports clubs in the southern governorates of Palestine suffer financial problems and scarcity in funding sources, which prevents them from reaching the ranks of distinguished Arab teams and hinders them from achieving their goals, and because of the inability of clubs to finance their sports teams in various games, many sports clubs in the southern governorates focused on only one team game as a main game and other games. Others are not focused on.

Because of the financial crisis that the sports clubs are going through, the clubs met and issued a statement explaining the financial crisis they are going through, and called on the official authorities to stand up to their responsibilities towards Palestinian sports. In the following main question:

What are the sources of financing the Palestinian sports teams and what is the proposed vision for their development?

The following sub-questions branch out from the main question:

- What is the role of sports facilities and club infrastructure in financing sports teams?
- How do schools and academies affiliated with clubs contribute to financing sports teams?
- What is the role of grants and donations in financing sports teams?
- How do sponsoring companies contribute to financing sports teams?
- What is the proposed scenario for developing sources of funding for sports teams?

3   Objectives of the Study

- Identify the role of sports facilities and club infrastructure in financing sports teams.
- Determining the contribution percentage of schools and club centers in financing sports teams.
- Disclosure of the role of gifts and donations in financing of sports teams.
- Disclosure of the role of sponsoring companies in financing for sports teams.
- Developing a proposal to develop sources of funding for sports teams.

4 Terminology of Study

Sports finance: It is the process of searching for financial resources to spend on activities related to the sports field, as it plays an important role in solving problems at the club level from a financial point of view [6], 26].

Premier League clubs: They are the clubs ranked at the highest competitive level in the various team games and are affiliated to the collective sports federations [7], 525].

5 The Limits of the Study

5.1 Objective Limitation

The study was limited to sources of financing sports teams and ways to develop them.

5.2 Spatial Limitation

This study was limited to the Premier League football clubs in the southern governorates of Palestine.

5.3 The Human Limit

The study was limited to the presidents of the Premier League football clubs in the southern governorates of Palestine.

5.4 Temporal Limitation

This study was conducted in the year (2023)

6 Study Procedures

6.1 Study Approach

The researcher used the descriptive approach with its qualitative approach, and this type of research gives the researcher a greater ability to embody reality. The researcher is closer to the respondents, documenting their experiences, difficulties and concerns they faced, and qualitative research goes beyond numbers and statistics and goes to experiences and ideas stemming from the field reality of the problem [8], 5].

6.2 Study Population

The study population was determined in the presidents of the Premier League football clubs in the southern governorates.

6.3 The Study Sample

An intentional sample was chosen that included (12) individuals, who are all heads of the Premier League football clubs in the governorates of Gaza.

The following table shows the names of the clubs that represent the study sample.

Club names	Governorate
Rafah Services Club	Rafah
Rafah Youth Club	Rafah
Al-Shujaia Union Club	Gaza
Jabalia youth Club	Northern Gaza
Khan Yunis Union Club	Khan Yunis
Al-sadaqa Sports Club	Gaza
Al-helal Sports Club	Gaza
Beit Hanoun Sports Club	Northern Gaza
Gaza Sports Club	Gaza
Khan Yunis Youth Club	Khan Yunis
Nuseirat Services Club	Central
Zawaida Youth Club	Central

6.4 Study Tool

To achieve the objectives of the current study and answer its questions, the researcher used the qualitative in-depth (semi-regulated) personal interview as a data collection tool. He asks questions that he wants answers to [9], 411].

The interview procedures went through several steps as defined by [10], 142] as follows:

- Determine the objective of the interview, and clarify this objective to the interviewees.
- Identifying the individuals who were interviewed, who are the heads of the clubs with experience in the subject of the study.
- Determine the type of interview. It was individual, semi-regulated, and was face-to-face. It was conducted by the researcher with one of the assistants who were trained for this purpose.
- Informing the interviewees of the researcher's purpose and the party to which he belongs, and securing prior cooperation.
- Determine the date and place for the interview.
- Formulating and arranging questions.
- Provide the appropriate atmosphere for the interview and consider the appropriate time for the interview.
- Avoid questions that irritate the respondents.
- Giving the respondent an opportunity to digress and avoid interruption, and not to show surprise or astonishment.
- Rephrase the respondent's answers to ensure that he understands what he is saying.
- Writing down everything the respondent says, observing impartiality.

7 Data Quality Assurance

It was mentioned in Al-Abd Al-Karim [10], 95] that (Lincoln & Guba) indicated that the reliability of the study in qualitative research is one of the most important elements that guarantee the validity of the data and the accuracy of the results. The data and its accuracy, and we can explain it here as follows:

a. **Credibility:** The term credibility in qualitative research corresponds to the term internal validity in quantitative research, and this means that the test measures what is set to measure it. To achieve credibility, the researcher performs the following procedures:

  - Taking the opinion of experts in qualitative research, consulting them with interview questions, and taking their opinions and suggestions on the questions.

- Writing what was answered and what the respondents talked about and transcribing what was written accurately, while reading it more than once and writing the answers as they were added or amended.
- Provide complete freedom for the respondents and provide the necessary time to express their opinions and express their points of view in complete impartiality while clarifying the purpose of the interview, and describing the reality accurately, including its negatives and positives.

b. **Dependability:** The term reliability is used in qualitative research and corresponds to reliability in quantitative research, and stability means that the test gives the same results when applied again in the same conditions and conditions, and in order to achieve reliability in this study, he clarified the design of the study and its procedures, and this was done by presenting a detailed explanation of the design of the study And the steps to implement it and how to apply it and fully describe the study community and how to select the respondents. The study tool and how to collect data were clarified. The preliminary results of the study were presented to some of the respondents for the purpose of reviewing them. The respondents indicated that the results are logical and that they correspond to their opinions and points of view.

c. **Transitional:** The term transitional is used in qualitative research, and it corresponds to external validity, the possibility of generalization in quantitative research. Transitional in qualitative research means benefiting from the results of the study and generalizing them to similar cases. In the current study, the researcher provided a full description of the study procedures, sample selection, identification of the study tool, and access to the information and results that have been reached, and everyone who wishes to benefit from the results of the current study must make sure that its results can be transferred, as well as the possibility of benefiting from them.

d. **Conformity:** Conformity is meant in qualitative research, the ability to confirm, and this term corresponds to objectivity in quantitative research. Through the current study, the researcher explained the steps and procedures of the study in collecting data, and presented paragraphs of the answers and opinions of the respondents during the presentation and interpretation of the results in order to confirm that the results of the study are based on the sayings and points of view of the respondents were presented by the researcher as they are without any interference or modification on his part.

8   Results of the Interview and Data Analysis

Qualitative research requires efficiency in analyzing the qualitative data obtained. After the information and data have been obtained through interviewing the participants from club presidents, the data analysis stage comes as a crucial stage in this type of research, and this is what distinguishes it from quantitative research that relies on in its analysis on statistical methods [11], 164].

In this context, the researcher analyzed the qualitative data obtained through the interview by following the steps of the qualitative analysis, where the researcher conducted the interviews, which were transcribed and written, and then read several times in order to understand them in depth, and then the data was classified, as the results of the analysis of the interview items came as follows:

9 Analyzing and Discussing the Results of the Study

The first question answer:

What is the role of sports facilities and club infrastructure in sports teams financing?

In the context of the respondents' question about the role of sports facilities and infrastructure in financing sports teams, the respondents unanimously agreed that these facilities play an important role in financing sports teams and are considered one of the most important financial sources for sports clubs. Respondents reported that most of the Premier League clubs' own shops and a football sports ground, and a covered gymnasium, some of which own a wedding hall and others own a swimming pool, and clubs rent these facilities and benefit from their financial returns in financing sports teams, and in the context of talking about the role of these facilities, the respondents stated that these facilities cover 20–30% or More than the sports teams' expenses.

The researcher believes that despite the low level of sports facilities and their limited financial returns, they are an important and major resource for Palestinian sports clubs, due to the low level of Palestinian sports compared to the distinguished Arab clubs and the limited budgets that are provided to Palestinian sports in light of the difficult economic and financial conditions that Palestinians face. The interest of the official and popular authorities is focused on other fields more than their interest in allocating large budgets for sports.

It agreed with the study of Metwally [4] regarding the dependence of Port Said sports clubs on the revenues of some of the club's facilities.

The results of the current study differed with the results of the Maksoud study [2], which confirmed that sports facilities and infrastructure are not a major source of funding for professional clubs in Algerian football.

The second question answer

How do schools and academies affiliated with clubs contribute to financing sports teams?

In the context of our question to the respondents about the contributions of sports schools affiliated with clubs, the respondents stated that football schools for juniors and young people have become widespread in the southern governorates in a large

way, and every club has a football school affiliated with it, given that these schools represent a factory for players and a basic sports incubator for nurturing sports talents, and no one can A club is to build a team and reach advanced levels without having an important and main tributary that provides it with distinguished players, but despite the spread of these schools in the southern governorates of Palestine and the consensus of all athletes on their necessity and importance, clubs do not consider these schools as a source of funding for their teams. But on the other hand, these schools can provide their own needs, as they depend on the subscriptions paid by the parents of the young players, and this is only enough to provide the players' needs of a bag, sports uniforms, and the costs of some competitions and matches. They also provide low salaries or modest financial rewards for the coaches working in them, and they do not exceed There are no grants or budgets provided by government and official agencies, sponsoring companies, or other financial sources for the benefit of these schools, which means that they are not considered a source of funding for sports teams and do not add any sums of money to the club's fund.

The researcher attributes the weak revenues of these schools and the clubs' lack of reliance on them as a source of funding to the spread of these schools and the presence of a large number of them in the southern governorates, which makes competition strong between these schools, forcing their administrations to reduce fees to attract and attract young people to enroll in them, in addition to what the citizen faces. The Palestinian financial hardship makes him look for other interests that do not cost him much financially.

The current study agreed with the study of Maksoud and Harizi, which confirmed that football schools for juniors do not represent a source of funding for sports teams.

The third question answer

What is the role of grants and donations in financing sports teams?

In the context of our question about grants and donations that are provided to sports clubs in the southern governorates, the respondents stated that they await the president's grant provided through the Supreme Council for Youth and Sports with great interest, because this grant represents financial support and an important and main source of funding provided to clubs. What distinguishes this grant is that it is a grant of value It is known that it comes all at once and is not dispersed like other financial sources, stadiums, shops, halls, etc., and it is provided to premium, first and second class clubs, in contrast to the sponsorship of Ooredoo, which is provided to premium class clubs only, but the official authorities' grant is sometimes delayed as it was in the two years (2021, 2022), and according to club presidents, Premier League football clubs in the southern governorates receive an amount of (25,000) dollars as a grant from the president, and this was published by Palestine newspaper (3/12/2022), and this amount covers (30–40%) of Football game expenses, and in terms of the cost of all games, including football, they cover approximately (20–30%).

The researcher believes that this grant is one of the important grants for sports clubs, and it is an important financial source, although it is a modest amount in light of the large budgets needed by sports clubs in Palestine and abroad, because at least it does not meet the aspirations of the clubs' administrations, and does not fulfill the purpose sought by those administrations. It does not meet their ambitions or achieve their goals by reaching the prestigious levels, or raise them to the ranks of advanced Arab teams in the field of football and other sports, which would qualify them to compete at the international level.

However, what makes sports clubs in the southern governorates depend on them greatly is the scarcity of financial resources for these clubs and the lack of real investments in the sports field in Palestine, as well as the lack of large financial resources on which Palestinian clubs depend.

Faced with this reality and in the face of the inability of the clubs' administrations to meet their hopes and aspirations by providing the necessary budgets, the clubs need to search for other funding sources in order to be able to cover all the expenses and needs of their sports teams.

The results of the current study agreed with the results of the study of Metwally [4] and Khedairia [12], which emphasized the weakness of funding provided by official and government agencies towards sports teams in Algeria.

And disagreed with the study of Aleksander Zawadzki [13], which confirmed that grants and sponsorships provided to some Polish clubs amount to (75%).

The fourth question answer

How do sponsoring companies contribute to financing sports teams?

In the context of our question about the contribution of the sponsoring companies, the respondents stated that the premium class clubs receive an amount of (10,000) dollars annually from Ooredoo (Wataniya Mobile) instead of sponsoring the Premier League football league. This was published by Palestine newspaper (4/12/2022). Ooredoo is considered It is the only company that provides sponsorship of this amount, and there are some companies that provide modest sums of money on a seasonal and not regular basis, as is the case with Ooredoo, which provides less than (20%) approximately of the expenses of sports teams.

The researcher believes that what Ooredoo offers is an appreciated contribution, despite the modest amount of money provided, but it is an appreciated contribution, and it contributes to alleviating the financial crisis that sports clubs in Palestine suffer from, especially since this company provides its amount in light of the lack of application of the professionalism system in sports Palestinian clubs in the southern governorates, and in light of a deteriorating economic reality in which clubs do not provide regular salaries to their players, and all they offer to players is in the form of modest and irregular rewards that do not meet the minimum social and life needs of players.

The results of the current study agreed with the results of the study of Metwally [4] and the study of Maksoud [2] in the absence of real sponsorship and investments in the field of sports by large investment and sports companies.

And I disagreed with the results of Aleksander Zawadzki's study [13] in those grants and sponsorships provided to some Polish clubs amounted to (75%), and I disagreed with the results of Isaac's study (2016), which confirmed that corporate sponsorship, branding and billboards are among the most prominent sources of funding for Algerian clubs. professional.

The fifth question answer:

What is the proposed scenario for developing sources of funding for sports teams?

The researcher posed this open question to the respondents to present their vision and perception stemming from the field experience in the clubs, and the researcher presented here their points of view as follows:

At the level of government and official authorities:

- Increasing the percentage of the grant provided by the Supreme Council for Youth and Sports.
- Allocating a large home stadium for clubs that do not own a stadium.
- Providing the necessary facilities for owners of money to invest in the sports field.

10   At the Level of Club Administrations

- Transforming football schools from a state of consumption to a state of production.
- Establishing shops for those who do not own and increasing their number for those who do not own.
- Providing projects for third parties that support sports projects in clubs.
- Searching for other sponsors and not being limited to Ooredoo.
- Twinning with foreign sports clubs and institutions.

11   Study Shortcomings

The deficiencies in our current study are represented in that it dealt with the sources of financing sports teams for the Premier Division clubs in the southern governorates of Palestine, and followed the qualitative approach by conducting interviews with the respondents. The results of the study and its recommendations are not suitable for application in other environments due to the different circumstances and conditions.

What confirms this is that this study was conducted on the southern governorates of Palestine, and this environment differs from other environments because of the complex reality and stifling economic conditions that cast a shadow on the sports reality and limited its potential and reduced funding and sponsorship opportunities for sports clubs.

12 Conclusions

- Sports facilities are a major source of sports clubs financing.
- Sports schools and academies are not considered a source of funding for sports clubs.
- The annual grant provided by the official authorities is a major source of funding for sports clubs.
- The annual sponsorship provided by Ooredoo contributes to alleviating the financial crisis of sports clubs.

13 Recommendations

- Rehabilitation of clubs' facilities to increase their revenues.
- Encouraging capital to invest in the sports field.
- Asking the local councils to take a greater role in the sports clubs.
- Designing long-term sports projects and obtaining financing for them from external parties.
- Selecting some members of the clubs' boards of directors who have experience in the field of economics.

14 Suggestions

In light of the results of the study and its recommendations, the researcher suggests conducting the following studies:

- Sources of financing sports clubs in the northern governorates and ways to develop them.
- A suggested vision for developing sources of funding for sports clubs.

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The Influence of Virtual Reality on Purchase Intention: A Study of the Fashion Industry

Mohammed Salem

Abstract This study examines how virtual reality (VR) technology affects consumers' intentions to buy in the fashion sector. Data was gathered from a simple random sample of the Palestinian customers (324 respondents) who used VR technology in the context of online fashion purchasing using a survey-based technique. The findings of this paper indicated that the three major characteristics of VR technology (perceptual presence, behavioral interactivity, and technological embodiment) have positive effects on consumers' purchase intentions. In the very competitive fashion business, these results provide marketers and retailers useful information they can use to improve customer shopping experiences and boost sales. This study's practical implications for fashion industry marketers and retailers make it significant. According to the results, integrating VR technology into the online buying process may encourage customers to make a purchase by raising their estimation of its value and fun.

Keywords Virtual reality · Perceptual presence · Behavioral interactivity · Technological embodiment · Purchase intention · Palestine

1 Introduction

The rapid growth of technology has completely changed the way we work, live, and interact with the world [1]. Virtual reality (VR) is one such innovation that has attracted the interest of academics, business leaders, and consumers alike. VR has become a potent tool for submerging people in computer-generated settings and simulating the real world with genuine sensory sensations. VR has significantly impacted the fashion business in addition to having the potential to transform a number of other industries, such as entertainment, education, and healthcare [2, 3].

M. Salem (✉)
University College of Applied Sciences, Gaza, Palestine
e-mail: mzsalem@ucas.edu.ps

Due to the use of VR technology, the fashion industry has seen a tremendous transition in recent years. VR and fashion's fusion has created a world of opportunities for customers to interact with fashion in fresh and engaging ways [4]. Fashion manufacturers have a unique opportunity to demonstrate their products via VR, which also improves the browsing experience and ultimately affects customer buy intentions. There is, however, a lack of empirical studies [5, 6] examining the effect of VR on purchase intention within the fashion sector, despite the increased interest in this burgeoning subject.

This study seeks to close this gap by investigating the impact of VR on consumers' intentions to make purchases in the fashion business. This study will offer insightful information for fashion brands, marketers, and researchers on how to take advantage of VR's potential as a tactical tool for enhancing consumer engagement and influencing purchase decisions. It does this by examining the various dimensions and mechanisms through which VR can affect consumer intention.

The main objective of this paper is to examine how VR affects customer purchase intentions in the context of fashion. Purchase intention is an important indicator of customers' willingness and propensity to buy a good or service [7, 8]. This study will offer insight on the degree to which VR experiences impact consumers' perceptions, attitudes, and behaviors connected to fashion consumption by exploring the link between VR and buy intention.

The outcomes of this study might support theoretical and practical elements of VR adoption in the fashion industry. Theoretically, this study will contribute to the body of knowledge by examining the psychological mechanisms and cognitive processes that underlie the impact of VR on customer intention in the fashion industry. From a practical standpoint, the knowledge gleaned from this research will provide fashion brands and marketers with evidence-based approaches to successfully integrate VR into their marketing and retail strategies, ultimately enhancing the overall shopping experience and influencing consumer purchase intention.

2   Theoretical Background

2.1   Purchase Intention

The term "purchase intention" describes a consumer's propensity or inclination to make a quick purchase of a good or service. It plays a significant role in customers' decision-making and is impacted by a variety of variables, including product quality, price, brand reputation, and marketing initiatives. Style, fit, and comfort are additional elements that affect purchase intention in the context of the fashion business. Fashion firms may create successful marketing plans to boost their sales and profits by being aware of the elements that affect consumers' intention to buy in the sector of fashion [3, 7].

By improving the shopping experience, the use of VR technology in the fashion business has the potential to boost customer buy intention. VR technology may improve customers' perceptions of the items and promote brand engagement by giving them a more immersive and engaging shopping experience. VR technology, for instance, enables customers to virtually try on clothing and see how a garment would appear on them, lowering the uncertainty and risk involved with online buying and boosting customers' confidence in their purchase choices. Therefore, for fashion firms to create successful VR-based marketing strategies and increase their competitiveness in the market, it is imperative that they understand the impact of VR technology on consumers' buy intentions in the fashion sector [4, 6].

2.2 Virtual Reality

A computer-generated environment simulation that may be experienced using a head-mounted display or other immersive technology is called VR. In a variety of industries, including the fashion industry, VR technology has gained appeal in recent years as a tool for improving consumers' purchasing experiences. Through the use of VR technology, consumers can shop for clothing online while virtually trying it on, visualizing how it will look on them and exploring various styles and colors. VR technology has the ability to boost consumers' engagement and buy intention in the fashion sector by giving them a more immersive and interactive shopping experience [1, 2].

The application of VR technology in the fashion business goes beyond increasing the online buying experience and includes visual merchandising, virtual fashion shows, and product design. VR technology can provide fashion firms the ability to hold virtual fashion shows that can reach a bigger audience as well as give designers a more effective and affordable approach to create and envision new designs. Furthermore, by enabling merchants to design immersive and interactive displays that may grab customers' attention and promote their connection with the brand, VR technology can improve the visual merchandising of fashion stores. In conclusion, VR technology has the ability to completely transform the fashion business by giving customers a more engaging and individualized purchasing experience and allowing fashion firms to innovate and stand out in a competitive market [5, 6].

According to EPI model [3], there are three major characteristics of VR technology as follow:

A. Perceptual Presence

A variety of experiences that range from feeling as though you are present where you are to feeling as though you are somewhere else [9]. The simple definition of VR as "a computer-generated world" may be both too simplistic and too absolute. Any VR system that is significant must, of course, have a cybernetic environment that surrounds the user perceptually and in which perception is at the very least a function of head tracking. However, claimed desktop VR may still be considered to be VR

[10]. But perceptual presence is not a matter of faith. No one ever believes what they are sensing to be genuine, not even when they are hanging precariously close to a virtual cliff, having a rapid heartbeat, and feeling intense worry [11]. The illusion of being present somewhere even while the individual is certain they are not is called perceptual presence. Despite not being a cognitive illusion, it is unquestionably a perceptual one [12]. The physical system, for example, reacts intuitively and quickly when intimidation is detected by the perceptual system, but the cognitive system often catches up later and concludes that the intimidation is not genuine. By that point, though, it's too late because the reactions are already too late [10]. Therefore, we set the following:

H1: Perceptual presence has a positive influence on purchase intention.

B.   Behavioral Interactivity

Controlling means having the ability to change the orientation, location, or other characteristics of previously chosen items that are being observed digitally [9]. The physical engagement of customers with products is the major focus of behavioral interaction researchers and business people, and they have looked at the efficacy of verbal assignments and tasks that do not involve physical contact [13]. According to studies, apparent online engagement demonstrates favorable behavioral interactions and plays a critical influence in the customer's decision-making process when they purchase online [14]. Due to the emotionally charged nature of the experience, VR has a substantial influence on heart rate as well [12]. Based on the above, we set the following hypothesis:

H2: Behavioral interactivity has a positive influence on purchase intention.

C.   Technological Embodiment

Technology appears to be an adjunct to the human body and a mediator of human experiences as a result, assisting in perception, interception, and interaction with one's immediate surroundings [9]. Lack of technical embodiment makes it possible to overlook the sensory assessment, which increases the risk of failure in the development of new products based on client preferences [15]. Exploring and explaining the function of embodiment, particularly embodied cognition and embodied interaction, has received more attention recently. A growth in research that bases pervasive technology for learning in concepts of embodiment has coincided with this interest [15]. According to Flavián et al. [9], new technologies offer the chance for interaction and learning to be more active, hands-on, and directly related to physical contexts. They also offer new opportunities for communication and collaboration that promote socially mediated learning. Finally, ready for widespread adoption, VR is being referred to as nothing less than "another mechanism of human experience" by some [3]. Thus, we hypothesize:

H3: Technological embodiment has a positive influence on purchase intention.

3 Methodology

3.1 Participants

The survey was completed and returned by 324 respondents, as shown in Fig. 1. The findings for the demographic factors were presented in the figure.

3.2 Procedures

A face-to-face questionnaire was the main tool used to collect data for this work. Because English is not a widely spoken language in the nation, the original questionnaire was accurately translated into Arabic. After that, two native Arabic speakers did a pilot test and accuracy testing. The statistical information was examined using IBM SPSS version 23.

3.3 Measures

The 5-point Likert scale for the survey was employed. The survey was divided into five parts. Three items that are based on Flavián et al. [9], Slater [10], and Pan and Hamilton [11] are used to evaluate the perceptual presence in the first part. In the second part, four items based on Chessa et al. [12], Roth et al. [13], and Jeon
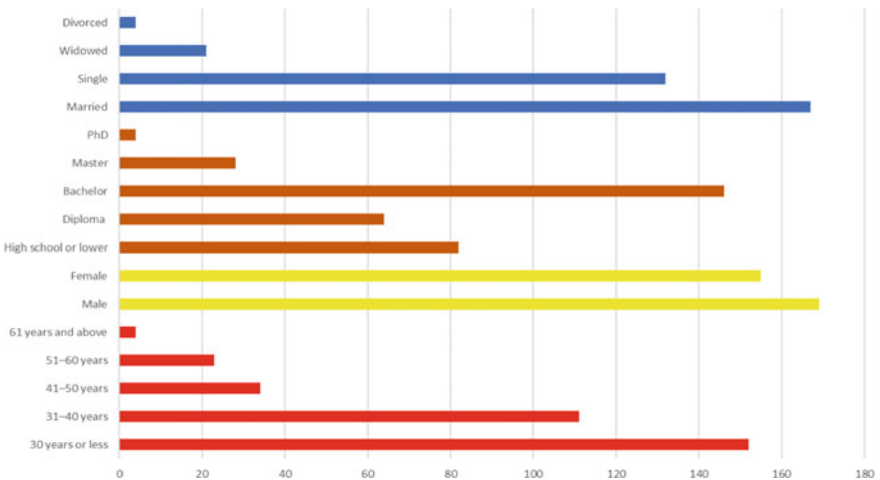

Fig. 1 Respondents' personal information ($n = 324$)

et al. [14] are used to examine the behavioral interactivity. The third part addresses technological embodiment using four items based on Fazal [3], and Torrico et al. [15]. Four questions are used in the fourth part to evaluate purchase intention based on Fazal [3], and Park and Kim [7]. The factors related to demography are discussed in the last section.

4 Results

4.1 Factor Analysis

We were able to assess whether the factor analysis was appropriate for our study by applying the KMO and Bartlett's tests. A score of at least 0.7 is required to pass the dependability test. The Bartlett's Sphericity test often yields a value of less than 0.05. The KMO result indicates that the data analysis is sufficient for the objectives of the research because it is more than the acceptable cutoff level of 0.000.

The principal component analysis factor score coefficient matrix from Table 1 has been rotated by one main factor using the varimax normalizing procedure [16–21]. There are 19 items that make up the factor. Factor loadings on a range of scales should fulfill a minimum loading criteria of 0.30, according to prior research [22–27]. The loadings in Table 1 are all more than 0.30, demonstrating that the scales' construct validity has been upheld.

Table 1 The constructions' reliability and factor loading

Construct	Item	MV	SD	FL	Cronbach's α
Perceptual presence	1	3.42	0.72	0.751	0.773
	2	3.48	0.75	0.746	
	3	3.39	0.84	0.765	
Behavioral interactivity	4	3.52	0.72	0.776	0.764
	5	3.47	0.76	0.749	
	6	3.54	0.86	0.737	
	7	3.46	0.71	0.746	
Technological embodiment	8	3.37	0.81	0.778	0.778
	9	3.41	0.75	0.748	
	10	3.53	0.77	0.762	
	11	3.54	0.79	0.763	
Purchase intention	12	3.58	0.85	0.752	0.781
	13	3.62	0.81	0.746	
	14	3.53	0.76	0.774	
	15	3.45	0.78	0.757	

Table 2 Multiple regression analysis outputs

Model	Unstandardized coefficients		Standardized coefficients	T	Sig.
	B	Std. error	Beta		
(Constant)	0.087	0.243		0.346	0.243
Perceptual presence	0.361	0.074	0.218	2.728	0.000
Behavioral interactivity	0.353	0.083	0.236	2.496	0.000
Technological embodiment	0.329	0.086	0.248	2.674	0.000

Notes: Dependent variable: Purchase intention; adjusted $R^2 = 0.546$, F = 127.186, and sig. = 0.000

4.2 Hypotheses Testing

In order to investigate the link between the independent elements (perceptual presence, behavioral interactivity, and technological embodiment) and the dependent variable (purchase intention), multiple regression analysis was performed. With an adjusted R^2 value of 0.546, Table 2 shows that independent factors are responsible for 54.6% of the variation in customer behavior. Table 2 shows a correlation between customers' purchase intention and the following variables: perceptual presence (t = 2.728, p 0.000), behavioral interactivity (t = 2.496, p 0.000), technological embodiment (t = 2.674, p 0.000) respectively. Therefore, it came to the conclusion that the evidence was strong in favor of H1, H2, and H3.

5 Discussion

According to the study's findings, the three major characteristics of VR technology (perceptual presence, behavioral interactivity, and technological embodiment) significantly influences consumers' purchase intentions in the fashion sector. VR technology enhances the brand's involvement with customers and their perception of the goods by giving them a more immersive and engaging purchasing experience. This result is in line with earlier studies that have demonstrated how immersive technologies like VR may improve customers' emotional involvement with and perception of products, which in turn increases purchase intention. Customers who believe VR technology may improve their shopping experience are more likely to have higher buy intentions than those who do not. This research emphasizes the need of comprehending customer perceptions and attitudes regarding VR technology in the fashion sector and creating marketing tactics that can persuade consumers of its advantages and use. Additionally, consumers with prior VR experience are more likely to find

the technology beneficial and be more inclined to make a purchase than consumers without prior VR experience. This research implies that by giving customers additional opportunity to check out and profit from VR technology, fashion firms may capitalize on consumers' prior familiarity with it.

Although the aim of this study on the impact of VR on purchase intent in the fashion industry is to advance knowledge in the area, it does have some restrictions. These consist of possible bias in sample selection, contextual considerations, reliance on self-reported measures, and exclusion of outside influences. Long-term impacts, comparative studies across sectors, an investigation of mediating and moderating elements, an examination of emotional and sensory components, and a focus on the use of VR in the fashion industry are all possible future directions for research. Our knowledge and practical uses of VR in influencing customer purchase intention in the fashion business will improve as we address these constraints and pursue these directions for more studies.

In conclusion, the study has shown how much VR technology has a favorable impact on customers' propensity to buy in the fashion sector. According to the research, fashion firms may use VR technology to improve their marketing plans and provide customers a more interesting and customized purchasing experience. To successfully explain the advantages and use of VR technology, fashion firms must create marketing strategies that take into account customer perceptions and attitudes. Fashion businesses may stand out from the competition in a crowded market and boost their earnings by doing this.

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Impact of XR-Enabled Collaboration in Businesses—An Economic, Ecological, and Social Perspective

Tim Krodel, Vera Schott, Anjela Mayer, and Jivka Ovtcharova

Abstract With increasing computing power and hardware diffusion, the number of possible use cases for Extended Reality (XR) in the business environment is increasing. Not least, due to globalization, the relevance of new forms of collaboration have furthermore gained relevance. This paper, therefore, investigates which different forms of collaboration are enabled with XR technologies and how they affect businesses. Various XR-enabled collaboration forms are demonstrated by distinguishing between synchronous, asynchronous, spatially co-located, and spatially separated XR collaboration. The impact of these new collaboration forms is then analyzed from a sustainability perspective, i.e., economic, ecological, and social. The analysis leads to five value dimensions illustrating the value-adding impact of XR-enabled collaboration on business activities. A subsequent discussion on concrete application scenarios from science demonstrates the value-adding potential in these dimensions and shows the limits of XR-enabled collaboration.

Keywords Extended reality · Collaboration · Sustainability · Value

1 Introduction

Collaborative work is essential to any value-creating organization where several individuals organize themselves into teams to work on joint activities [1]. As a result of globalization, the work in companies, institutes, and educational facilities increasingly involves stakeholders and interdisciplinary experts from around the world [2]. Therefore, the usage of remote collaboration technology has significantly increased in recent years [3]. At the same time, there has been a growing awareness of the need

T. Krodel (✉) · V. Schott · A. Mayer · J. Ovtcharova
Institute for Information Management in Engineering, Karlsruhe Institute of Technology,
Kriegsstrasse 77, 76133 Karlsruhe, Germany
e-mail: krodel@ili.digital

T. Krodel · V. Schott
ILI.DIGITAL AG, Ludwig-Erhard-Allee 20, 76131 Karlsruhe, Germany

for sustainable business practices to reduce environmental impact and contribute to social welfare due to emerging regulations like the Sustainable Development Goals (SDGs) and the environmental, social, and governance (ESG) framework [4, 5].

A key emerging technology that has the potential to address both trends are Extended Reality (XR) technologies, i.e., Virtual Reality (VR), Augmented Reality (AR), and Mixed Reality (MR) [6, 7]. XR technologies can be deployed to generate value by acquiring relevant data, providing assistance, enabling detailed visualization, optimizing processes, or facilitating collaboration [8]. E.g., AR as a key component of the fourth industrial revolution can be a major contribution to improve the sustainability and innovation capability of businesses [9, 10]. Therefore, the research questions to be investigated within this paper are, (1) how can XR-enabled collaboration be clustered and (2) what impact does XR-enabled collaboration have in terms of value from a sustainability perspective?

Section 2 illustrates the characteristics of XR technologies as well as the different forms of XR-enabled collaboration. In Sect. 3 the methodology to analyze the different forms of XR-enabled collaboration from a sustainability perspective is introduced in terms of economic, ecological, and social impact on businesses. This results in a total of five value dimensions, i.e., use value, transfer value, experience value, ecological value, and social value, as described in Sect. 4. Finally, Sect. 5 contains the subsequential discussion on scientific use cases to concretize these value dimensions and the value-adding potential and furthermore shows the limitations of XR-enabled collaboration.

2   Background and Foundations

2.1   XR Technologies

Extended Reality (XR) is a collective term for all combinations of real and virtual surroundings, i.e., Virtual Reality (VR), Augmented Reality (AR), and Mixed Reality (MR) [6, 7]. XR technologies can provide different degrees of immersion depending on the underlying use case, requirements, and system restrictions. XR systems are divided into non-immersive experiences (e.g., depiction of three-dimensional content on a regular two-dimensional display), semi-immersive experiences (e.g., three-dimensional content on a stereoscopic display), and fully immersive experiences (e.g., CAVE automated virtual environments) [11]. The interaction of XR technologies allows the user to communicate within the (partially) immersive experiences and the underlying data model [12]. Depending on the use cases and the subsequential interaction model, the XR technology setup requires different degrees of immersion to successfully deploy those technologies for collaboration [8]. A semantic capability to react to the user's interaction is also required. Therefore, next to immersion and interaction, a relevant performance dimension of XR technologies for collaboration is the intelligence of the system setup [13].

2.2 XR-Enabled Collaboration

Collaborative work can be classified along the time and space axis as depicted in Fig. 1 [14]. Considering the space dimension, collaborative work can be conducted either co-located when all participants work in the same location or distributed when the participants work from different locations. In the latter case, the collaborators can join a Collaborative Virtual Environment (CVE) using groupware to meet and work together virtually. Nevertheless, groupware can also be used in co-located meetings to support collaboration processes. Along the time dimension, synchronous collaboration occurs when all collaborators participate simultaneously, and asynchronously if they conduct their work at different times. As business processes increasingly involve data, XR technologies are well suited to visualize digital information and offer intuitive possibilities to interact with the data in real-time. In that regard, the categorization of collaborative work was extended by the XR dimension [15], adding the symmetric and asymmetric collaboration forms as depicted in Fig. 1.

In symmetric collaboration, all participants perceive the CVE similarly. At the same time, in asymmetric CVEs, a subgroup of collaborators experiences the same CVE differently. E.g., one subgroup uses VR, and another joins the CVE with desktop devices, which have a significantly lower degree of immersion and different possibilities to interact with the virtual environment.
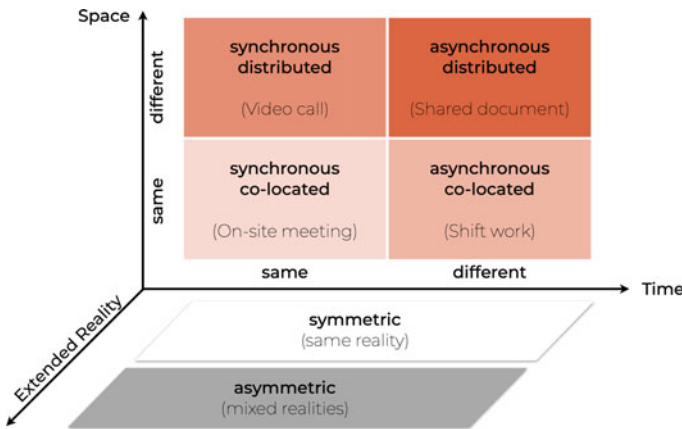

Fig. 1 CVE matrix based on space, time, and XR technologies dimensions [15]

3 Methodology

Various studies on XR-enabled collaboration demonstrate the application scenarios and guidance on executing XR-enabled collaboration [16]. Primary application fields of XR technologies for collaboration are design collaboration, remote collaboration, and training [17]. The identified impact on the business results from improved maintainability, reduced development times, and cost reductions through XR collaboration [18].

Figure 2 depicts a model to enable the locally distributed collaboration of multiple parties in immersive environments [19]. The model allows the depiction of various use cases of XR-enabled collaboration with real-time synchronization and consistent data flow, regardless of the selected XR technology setup [19]. To understand the impact of XR-enabled collaboration, this paper investigates the depicted decentralized XR-collaboration from a sustainability perspective to identify potential value categories. Sustainability can be defined as meeting the needs of the present without compromising the ability of future generations to meet their own needs [4]. Businesses generally follow the triple bottom line principle, including the three main dimensions: economic, ecological, and social [5]. Therefore, this paper examines the business impact, i.e., value of the XR-enabled collaboration from the economic, ecological, and social perspective.

Economic value of XR-enabled collaboration lies in the monetizing potential, the productivity gains, and the customer engagement through the technology performance [20]. The value can thus be generated through using XR technologies for collaboration, i.e., *use value*, and through the exchange of valuable output between organizations generated through the XR technologies in collaboration, i.e., *transfer value* [21, 22]. As XR technologies are highly experience-driven and provide value while being deployed, the third value category for assessing the economic impact of XR-enabled collaboration is *experience value. Ecological value* involves minimizing the impact of business activities on the environment. It includes the reduction of carbon emissions and the protection of nature. Businesses also adopt XR enabled collaboration for circular economy practices, which involve designing products and services to minimize waste and maximize resource efficiency. The *social*
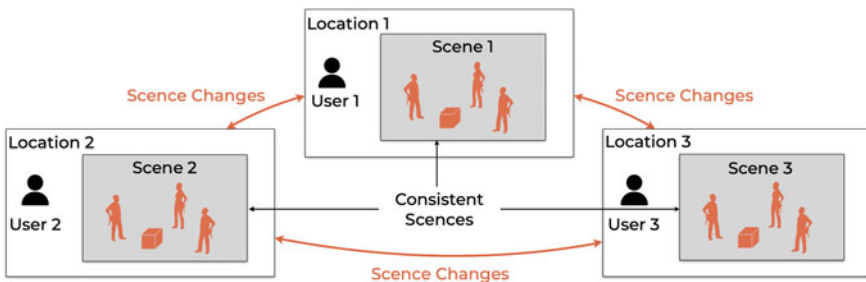

Fig. 2 Model for decentralized XR enabled collaboration across three locations [19]

value dimension of sustainability involves promoting equity and fairness in treating workers, customers, and communities, mainly focusing on ensuring safe and healthy working conditions, respecting diversity, and empowering equity [23].

4 Impact of XR-Enabled Collaboration on Business

4.1 Use Value of XR-Enabled Collaboration

XR-enabled collaboration creates use value by providing virtual access to physically inaccessible scenarios. It enables the performance of tasks that could not be performed without XR technologies [17]. The collaborative value of XR technologies lies in the increased efficiency of existing analog collaboration scenarios [17]. XR technologies can also improve the overall process efficiency of collaboration. The interaction between multiple users in the model from Fig. 2 can be simplified with a dedicated setup for the task performance of numerous participants. Furthermore, with XR-enabled collaboration, several process steps can be combined, and synergies can thus be leveraged. XR technologies can simplify or combine complex activities or reduce errors, increase flexibility, and thus save costs.

Furthermore, XR technology can optimize and accelerate a process in the execution itself to increase the output quantity or the quality of the collaboration. Collaborative analytics within a three-dimensional immersive environment also enables faster and pre-funded decision-making [15]. This results in lower usage of resources, reduced turn-around and waiting times, and less effort for reworking output from activities enhanced with XR-enabled collaboration.

4.2 Transfer Value of XR-Enabled Collaboration

The transfer value is concluded by a transaction between two entities [21]. This value-adding category requires the users within the collaboration scenario to be part of different organizational units. For this purpose, an existing core product can be provided with additional services with the help of the collaboration scenario shown above. The services within this spectrum can be new standalone or add-on services to existing value propositions toward a potential client. For example, a product can be provided from company A to company B. The subsequent service of ramp-up, commissioning, training on the product, maintenance and repair can be sold as part of a supplementary XR collaboration service portfolio. This transfer includes the transfer of relevant collaboration knowledge, which can be provided via the XR-enabled collaboration medium, and which could not be provided otherwise. Furthermore, the collaboration setup of company A could be seen as a developed

asset of process knowledge which can be provided as a technological solution to companies with similar requirements.

The added transfer value of XR technologies can be seen as an extension of the existing value creation spectrum of services. To quantify the value in transfer, the additional potential revenue streams of an asset sale, usage fee, subscription fee, renting fee, advertising fee, brokerage fee, and licensing fee are relevant to recognize, define, and transfer the possible added values [24].

4.3 Experience Value of XR-Enabled Collaboration

With the three-dimensionality and the subjectivity of the user's perception, the XR technology deployment is experience-driven. Consequently, the potential value in experience through XR technology is higher than comparable two-dimensional approaches (e.g., mobile applications). Even though the value in experience cannot be monetized directly, it is the foundation for added value in a business. The experience value of XR-enabled collaboration comes from the experience created for a target user who interacts with the ecosystem of the value creation in a way that the user would not do without the XR experience. The experience creates a lock-in for the user, making it increasingly difficult to switch to another ecosystem that is not part of the underlying value creation [22].

By providing XR-enabled collaboration, a company can demonstrate its technology leadership and progressiveness, making it appear attractive to talents in the job market. In addition, XR-enabled collaboration creates greater flexibility in terms of space and time when performing tasks, which can increase employee satisfaction. This has a positive impact on the core business. With XR-enabled collaboration as a new form of work, methodological competence can also be conveyed to existing and potential customers and thus positively affect the core business. In terms of customer interaction, i.e., the collaboration between sales and customer, the provision of virtual previews of physical products, and the opportunity to customize and experience products in an immersive space allow the user to get a better idea of how the product will look and behave [15]. This improves company awareness, a lock-in experience with the products, and potential customer loyalty.

4.4 Ecological Value of XR-Enabled Collaboration

XR-enabled collaboration makes processes less emission intense, reducing the need for physical travel and, therefore, the carbon emissions associated with transportation [25]. E.g., by using XR technologies, collaborators can meet in virtual environments simultaneously or at various times. By enabling remote teams to collaborate in real time, XR technologies can reduce the need for physical meetings and the associated travel time and costs. In addition, XR-enabled collaboration can also improve the

efficiency and effectiveness of collaboration, which can positively impact productivity and resource usage. This can also improve the speed and quality of decision-making and reduce the need for physical prototypes and testing, saving resources and reducing waste [26].

Regarding products, XR-enabled collaborations reduce waste, energy, and resource consumption by using XR for simulation and product tests, minimizing the need of physical prototypes and materials [26, 27]. This can have significant environmental benefits on the product development process [28]. Furthermore, XR-enabled collaborations promote more sustainable practices within organizations. By substituting in-person meetings with virtual ones, people's awareness of the ecological impact will increase and subsequently affect further decisions in a pro-economically way [29].

4.5 Social Value of XR-Enabled Collaboration

The social value of virtual collaboration forms focuses on factors like health, safety, equity, diversity, quality of life, and empowerment. The collaboration process in virtual environments can be repeated several times while there are barely any restrictions on collaboration, eliminating any potential hazards, especially in high-risk subject areas. XR-enabled collaboration facilitates more inclusive and equitable collaboration, which can have social sustainability benefits. By enabling remote teams to connect and collaborate in immersive and interactive environments, XR technologies reduce barriers to participation and facilitate more diverse and inclusive collaboration [30, 31]. This promotes diversity, improves marginalized groups' representation in decision-making processes, and encourages social equity. Subsequentially, XR technologies help to ensure that products are designed with a wide range of users in mind, promoting equitable access and use.

Regarding people, XR technologies support skills development and knowledge sharing by providing opportunities for immersive and interactive learning experiences. Additionally, XR-enabled collaboration empowers work-life balance. By reducing the need for physical travel, XR technologies can enable individuals to participate in collaborations without sacrificing their personal or family commitments. This can help promote work-life balance and contribute to a more empowered and engaged workforce [32]. Furthermore, this reduces the risk of accidents or injuries associated with travel for in-person meetings or frequently accessing dangerous facilities [33].

5 Discussion and Conclusion

5.1 Applying XR-Enabled Collaboration

Business processes and collaborative projects become increasingly complex. Specific disciplines create significant amounts of information, e.g., during meetings. To address these issues, multi-organizational CVEs are needed to support collaboration between project teams. Allowing asynchronous collaboration means increasing the flexibility of group work [34]. Team members do not have to make appointments to continue group tasks but can also continue the group work even when others are absent. This form of asynchronous XR collaboration reduces meetings and the administrative effort for collaborative work. Within the business analytics area, CVEs can be used for collaborative data analysis and decision-making, utilizing the third dimension and immersive interaction with the data, which allows a better overview of data sets. For marketing, CVEs enable to approach customers remotely and directly. Virtually customized previews of physical products provide a new experience of how the product will look and behave. For instance, customers can physically try on virtual clothes to find the correct size and get advice within a CVE before purchasing [35]. With AR, virtual products can even be placed inside our homes or on our own bodies [36].

In engineering and construction essential decisions can be made in CVEs, even before physical prototypes are built, including experts and stakeholders. This saves costs, time, and physical resources. Furthermore, XR technologies support rapid prototyping, which makes collaborative design and development processes more efficient [37]. CVEs can automatically record and document collaborative meetings and allow absent collaborators to relive them later. This not only enables an accumulation of corporate knowledge addressing the problem of employee attrition but also helps non-present employees to catch up with the processes at another time. This furthermore encounters effectiveness by reducing disturbances during focused work [38].

5.2 Limitations of XR-Enabled Collaboration

Although various advantages of utilizing XR-enabled collaboration were shown in this work, the limitations of applying this technology must also be considered. The application of XR technologies has higher requirements regarding budget, know-how, equipment, and IT infrastructure than traditional groupware used for digital collaboration. For instance, implementing CVEs, which can synchronize interactive 3D scenes while ensuring scene consistency, requires the know-how and internet bandwidth to reduce latency and provide real-time interaction [39]. Since XR equipment is costly, it is necessary to design cross-platform supported CVEs to increase their accessibility. Another limitation for the acceptance, and thus the use of XR

technology, is the cybersickness phenomenon which can occur to individuals during immersive experiences and is characterized by symptoms like dizziness, nausea, and disorientation [40]. Current approaches utilize artificial intelligence models to detect, minimize, or prevent cybersickness [41]. Furthermore, XR technologies and CVEs require a high degree of digitalization since they rely on digital information to be visualized. Processes to create virtual assets or to program interfaces for automatic visualization of physical assets or Digital Twins, i.e., a detailed virtual image of a product or a plant, are highly laborious [42]. A disadvantage of asynchronous collaboration forms is the loss of direct communication, which makes it inefficient for processes relying on immediate feedback. Additionally, security and privacy issues are seldom addressed in current XR CVEs [39]. Since XR technology captures sensory information of the user and their environments, different strategies to preserve privacy and ensure the security of personal and corporal data must be considered.

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A Geometric Brownian Motion of ASEAN-5 Stock Indexes

Norazman Nordin, Norizarina Ishak, Nurfadhlina Abdul Halim, Siti Raihana Hamzah, and Ahmad Fadly Nurullah Rasadee

Abstract The ASEAN-5 region has experienced significant economic growth and development in recent years, but this growth has been accompanied by increasing volatility in financial markets. To better understand the dynamics of these markets and identify potential risks and opportunities, it is important to analyze the historical data to evaluate the stock market performance. This research aims to determine the parameters of Geometric Brownian Motion (GBM) for stock indexes in ASEAN-5 countries from 2017 to 2022 and model GBM using this data. Subsequently, the data is split into two partitions, with 70% used as the in-sample in data management for the starting of the analysis, while the other 30% will be applied in future works. Note that GBM, drift, and volatility parameters are calculated based on the in-sample data. The findings of this research provide insights into the performance of GBM in modeling stock index data and contribute to understanding the behavior of stock indexes in the ASEAN-5 countries.

Keywords ASEAN-5 · Geometric Brownian motion · Mean · Drift · Volatility · Stock market indexes

1 Introduction

A stock market is a group of exchanges and other locations where publicly traded company shares can be purchased, sold, and issued [1]. These financial exchanges are formalized, institutionalized, and conducted through physical or electronic

N. Nordin (✉) · N. Ishak · N. A. Halim · S. R. Hamzah
Faculty of Science and Technology, Universiti Sains Islam Malaysia 71800, Bandar Baru Nilai, Nilai, Negeri Sembilan, Malaysia
e-mail: norazmannrdn@gmail.com

A. F. N. Rasadee
Faculty of Economy and Muamalat, Universiti Sains Islam Malaysia 71800, Bandar Baru Nilai, Nilai, Negeri Sembilan, Malaysia

exchanges. A healthy stock market is essential to economic progress because it enables enterprises to obtain cash from the general public quickly.

The stock market indexes are also crucial in determining a country's creditworthiness and influencing its borrowing cost [2]. For all kinds of investment decisions, it can be vital to comprehend the specifics of their construction and composition. In this regard, financial scholars, portfolio managers, and practitioners have traditionally debated and devised methods for efficiently allocating diverse assets. Other than that, stock market indexes have become a reference for investors to design plans and methods for maximizing profits while minimizing risk. Despite this, there is a lot of pressure on mutual fund investment companies and experienced investors to outperform and reduce the risk of their assets when investing. However, the ability to forecast future mutual fund returns has become more difficult due to the high volatility concerning investment firms and other variables that affect the gross domestic product (GDP) as a whole [3].

The GBM is a mathematical model for describing the random motion of tiny particles in a fluid or gas. These erratic swings may be seen in the stock markets, where values fluctuate randomly. As a result, Brownian Motion (BM) is utilized to simulate stock values mathematically. The GBM model, often known as the Wiener process, can predict stock prices. Note that GBM is an extended form of BM [4, 5]. The random variable in a GBM moves in a manner consistent with BM. BM was discovered for the first time by the botanist Robert Brown [6].

The economies of the ASEAN-5 countries are influenced by economic growth, investment, and trade in the region. Hence, accurate predictions of these trends are crucial for guiding economic policies and investments [7]. This research analyzes the performance of the stock markets in the ASEAN-5 countries, which include Indonesia, Malaysia, the Philippines, Singapore, and Thailand. Moreover, the study utilizes a dataset that spans 5 years, providing valuable information about the trends and patterns in the market indexes. To better understand the fundamental characteristics of the data, this analysis applied descriptive statistics, which allowed us to summarize and visualize the data in various ways.

The study's primary purpose was to model the prices of the market indexes by GBM. Here, 70% of the in-sample data was used to estimate the parameters of the GBM model before proceeding with the modeling [8]. By achieving these objectives, the study is expected to contribute to the body of knowledge on the stock market and provide insights for investors and policymakers in the ASEAN-5 region.

2 Methodology

This part of the document looks at various ideas commonly employed to create a model that can predict the price of the ASEAN-5 stock index. Some theories we study include the stochastic differential equation used as the main equation for the GBM model and in-sample and out-sample data. These methods help analysts better understand how the index has behaved in the past and what factors might affect it

in the future. Applying these theories can create an accurate model to help investors make better investment decisions.

2.1 Data

The data consist of 6154 daily observations of stock market indexes from the ASEAN-5 countries, which are from the Stock Exchange Thailand (SET), Singapore Exchange (SGX), Philippines Stock Exchange (PSE), Jakarta Stock Exchange (JSE) and Bursa Malaysia. The period of data is 5 years, from August 31, 2017, to August 31, 2022.

2.2 In-Sample

In-sample forecasting involves using the same data used to develop the forecasting model to generate predictions. The model is fitted to the available historical data to estimate the parameters that best describe the past behavior of the data. Note that out-of-sample forecasting involves using the forecasting model to generate predictions for data not used to develop the model.

In this analysis, we will utilize 70% of the overall data as our in-sample to calculate the parameters and model using GBM. Meanwhile, 30% will be used as an out-sample in further research. It aligns with what is advised by [2] that the data split for the in-sample is in the range of 70–80% and 20–30% for the out-sample.

2.3 Geometric Brownian Motion

Stock returns typically play a role in modeling stock price changes. Therefore, for modeling through GBM, several conditions must be satisfied. One is the information on stock price returns, which must be normally distributed [9].

$$S_t = S_0 e^{\sigma \beta_t + \left(\mu - \frac{\sigma^2}{2}\right)t}, \tag{1}$$

where $S(t)$ is the stock price at t, μ is the drift value, σ is the volatility value and β_t is a normal random variable with mean 0 and variance t.

The estimation of μ and σ are calculated from the data. As mentioned previously, GBM assumes the return on stock price is normally distributed [9]. The data can be altered to pass the normality test if the condition is not met [10]. Therefore, we will use the natural logarithmic change of stock price logarithm [11]. From Eq. (1), the daily return can be calculated as follows:

$$\ln\left(\frac{S_t}{S_0}\right) = \sigma\beta_t + \left(\mu - \frac{\sigma^2}{2}\right)t, \tag{2}$$

with mean: $\left(\mu - \frac{\sigma^2}{2}\right)t$ and variance: $\sigma^2 t$

A time series of stock prices (S_i) is considered for the time interval $[0, T]$. This time interval is divided into n equal-sized sub-intervals, denoted by Δt. Consequently, there are $n + 1$ sub-intervals in total. Following [11], the daily logarithmic returns, U_i for $i = 1, \ldots, k$ over time interval t is defined as follows:

$$U_i = \ln(S_{i+1}) - \ln(S_i) \, i = 1, 2, \ldots, n, \tag{3}$$

where S_i is the closing price at the end of ith trading day. As per Eqs. (2) and (3), we can write this in the form:

$$U_i = \sigma\beta_{t_i+1} - \sigma\beta_{t_i} + \left(\mu - \frac{\sigma^2}{2}\right)\Delta t, \tag{4}$$

where $\beta_{t_i+1} - \beta_{t_i}$ is the mass of the Brownian random movement with mean $= 0$ and variance $= \Delta t$.

Two factors comprise the GBM model, the expected value of historical returns and the expected value of price volatility [12, 13]. To determine the mean and variance of a data series $U_1, U_2, \cdots U_n$, we have

$$\overline{U} = n^{-1}\sum_{i=1}^{n} U_i, \tag{5}$$

$$S^2 = (n-1)^{-1}\sum_{i=1}^{n}(U_i - \overline{U})^2. \tag{6}$$

Equation (4) indicates that mean and variance can be expressed as:

$$\overline{U} = \left(\mu - \frac{\sigma^2}{2}\right)\Delta t,$$

$$\text{Mean}, \mu = \frac{\overline{U} + \frac{s^2}{2}}{\Delta t}, \tag{7}$$

$$S^2 = \sigma^2\Delta t,$$

$$\text{Var}, \sigma = \frac{S}{\sqrt{\Delta t}} \tag{8}$$

3 Results and Discussion

The large sample size of observations indicates that there is likely to be enough data for the analysis to be statistically significant, providing a more accurate and reliable representation of the ASEAN-5 stock indexes' behavior.

In Table 1, we can see that the total sample data used varies for different trading periods. Here, [14] recommended dividing the data into in-sample and out-sample for an accurate test model analysis. For each country, 70% of the observations were used as our in-sample to estimate drift and volatility parameters.

The stock price index valuation process started with a descriptive analysis to understand the overall data characteristics. The descriptive analysis results of the data can be found in Table 2.

Table 2 presents information about the stock indexes of the ASEAN-5 nations. The mean value is the average of the stock prices in each country, and it is the highest for the Philippines at 7228.83 and the lowest for Thailand at 1588.02. The standard deviation measures how much the values deviate from the mean, and it is the highest for the Philippines at 799.28 and the lowest for Malaysia at 119.68. The Philippines stock indexes fluctuated the most compared to others, while Malaysia stock indexes tended to be more stable around the average value. The variance is the standard deviation squared, and it is the highest for the Philippines at 638,843.54 and the lowest for Malaysia at 14,322.57. The minimum value is the lowest recorded stock

Table 1 General description of ASEAN-5 stock price Indexes

Country	Resource	Observation	In-sample (%)
Indonesia	Jakarta composite index	1214	850 (70)
Singapore	Strait time index	1255	879 (70)
Malaysia	Kuala Lumpur stock Exchange	1245	872 (70)
Philippines	Philippines stock Exchange index	1226	858 (70)
Thailand	Stock exchange Thailand	1214	850 (70)

Table 2 Descriptive statistics of ASEAN-5 stock indexes

	Indonesia	Singapore	Malaysia	Philippines	Thailand
Mean	6093.69	3128.48	1621.17	7228.83	1588.02
St. dev	585.61	271.60	119.68	799.28	150.33
Var	342,938.43	73,764.59	14,322.57	638,843.54	22,599.98
Min	3937.63	2233.48	1219.72	4623.42	1024.46
Max	7276.19	3615.28	1895.18	9058.62	1838.96
Kurtosis	0.9006	0.5238	$-$ 0.0972	$-$ 0.3791	1.2918
Skewness	$-$ 0.8090	$-$ 1.0193	0.1491	$-$ 0.3083	$-$ 1.2251

price for each country, and it is the highest for Thailand at 1024.46 and the lowest for Malaysia at 1219.72.

On the other hand, the maximum value is the highest recorded stock price for each country, the highest for the Philippines at 9058.62, and the lowest for Singapore at 3615.28. Finally, the kurtosis and skewness values describe the shape of the distribution, with kurtosis indicating how much the data differ from a normal distribution and skewness measuring the degree of asymmetry. The values indicate that the stock indexes' distribution varies, with most of the stock indexes having a negative skewness value. It presents that the stock indexes tend to have a value greater than the average.

We obtain the entire stock price model of the ASEAN-5 nations using GBM based on Eq. (1) and the parameter estimate result in Table 3. Given that the drift and volatility values generated from each model are not too different. All stock price movement models for the ASEAN-5 nations are presented below.

Indonesia,

$$S_t = S_0 e^{[0.183841]\beta_t + ([0.0435173] - \frac{[0.033797]}{2})t}. \tag{9}$$

Singapore,

$$S_t = S_0 e^{[0.1597384]\beta_t + ([-0.012577] - \frac{[0.025516]}{2})t}. \tag{10}$$

Malaysia,

$$S_t = S_0 e^{[0.12878603]\beta_t + ([-0.026829] - \frac{[0.016586]}{2})t}. \tag{11}$$

Philippines,

$$S_t = S_0 e^{[0.22565671]\beta_t + ([-0.024317] - \frac{[0.050921]}{2})t}. \tag{12}$$

Thailand,

$$S_t = S_0 e^{[0.18608841]\beta_t + ([-0.004704] - \frac{[0.034629]}{2})t}. \tag{13}$$

Based on the GBM models that have been obtained, the predicted stock price can be determined.

Table 3 GBM model parameter

Parameters	Indonesia	Singapore	Malaysia	Philippines	Thailand
μ	0.0435173	− 0.012577	− 0.026829	− 0.024317	− 0.004704
σ	0.183841	0.1597384	0.12878603	0.22565671	0.18608841

4 Conclusion

Analysis of stock indexes plays an essential role in the share market. In this study, we model stock indexes for ASEAN-5 countries with the GBM process. The results indicate decision-makers in Malaysia can have more confidence in their model predictions because the standard deviation of Malaysia is not too much different, meaning they are more stable compared to other countries [15]. Note that GBM generates more precise and effective stock price forecasts than the artificial neural network. On that account, investors and traders may utilize this model to develop accurate investment portfolios.

This study has several limitations that can be addressed in future research. One limitation is that the study focuses solely on the ASEAN-5 stock market indexes and does not consider other important factors that may influence stock prices, such as macroeconomic variables and political events. Therefore, future studies can investigate the impact of these additional factors on the performance of the stock markets in the ASEAN-5 countries.

One avenue for future research is the study of how technological progress and innovation affect stock market performance in ASEAN-5 countries. Given the rapid advancements in technology, further analysis is needed to ensure the suitability and precision of the technology employed in the research methodology. This exploration could shed light on the interplay between technology and financial markets, providing valuable insights for investors and policymakers.

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Perception and Acceptance of Terrace and Balcony Gardening for Sustainable Future of Bengaluru

Priya Josson Akkara and **Reenu Mohan**

Abstract The incorporation of vegetative systems into the town fabric has the capability to reduce negative environmental impacts and proliferate the economic and social wellbeing. Terraced gardens, also known as green roofs, have many advantages such as productive use of space, conversion of carbon dioxide emissions and production of oxygen. The purpose of the study was to determine terrace and balcony gardener's attitude and perceptions, challenges and benefits obtained from it. This paper sought to measure home gardening motivation, cultivated plants, challenges faced, attitude and perceptions towards terrace gardening among 150 respondents. Descriptive statistics was applied and the data was analyzed through SPSS. This article will help the architects of apartments and independent houses in designing better structures that reduces the building energy costs and increases the roof life span.

Keywords Sustainability · Terrace gardens · Vertical gardens · Perception · Bengaluru

1 Introduction

Plants have been an integral part of humanity for the past two million years, and their collective role in our survival, development and cognitive development is unparalleled. Cities and civilizations first appeared as a result of early plant cultivation in the Upper Paleolithic and the domestication of plants and agriculture in the Neolithic age. So, taking care of plants, gardens, and horticulture has always been a human activity. Horticulture is defined as gardening, growing and caring for plants and keeping the garden attractive [7]. Home cultivation as well as ornamental plant cultivation for aesthetic reasons are both included in horticulture. What inspires people to plant in residential situations has been the subject of previous studies. These include the

P. Josson Akkara · R. Mohan (✉)
Kristu Jayanti College, Bengaluru, India
e-mail: reenu@kristujayanti.com

desire for an intellectual challenge, a chance for self-expression, aesthetics, escape from unfavourable stimuli, a place to unwind, a chance to be creative, a chance to advance skill development, and a chance to foster social connections [2, 4, 9].

Urban green spaces are very important for cities, especially those that are expanding rapidly. Space limitations near urban centers and the desire to spend less time on maintenance have made today's gardens even smaller. However, promoting more ecologically friendly landscaping methods calls for an understanding of the motivations behind domestic gardening activities.

People may establish sustainable food sources, healthier dwellings, and a productive ecology using the permaculture design method. In order to ensure a sustainable future, permaculture aims to establish a connection between people and these natural systems. When creating a design project, there are a variety of considerations to keep in mind, including environmental and social justice as "tools for sustainability," as well as methods like organic gardening, recycling, and renewable energy. When we use those tools, permaculture serves as the "toolbox" that facilitates organization in its decision-making.

The advantages of home gardening include removal of pollutants, dust, and germs from the air through the leaves, as well as the production of what are known as "negative ions" by the leaves.

Green roof or urban green terrace substitutes as a live, vegetative area for conventional roofing materials like tiles, shingles, or gravel. Green roof is made up of waterproofing layer, soil, and plants. Green roofs can act as an insulating layer to keep buildings warmer in the winter and have major cooling benefits in the summer [12].

2   Terrace Gardening

The advantages of the green walls are comparable [11]. The absence of direct sunshine exposure in buildings and the fact that plant leaves evaporate water during photosynthesis are both the reasons behind these results. Green spaces in urban areas contribute to the provision of ecosystem services. They reduce temperature, reduce pollution, filter the air, and attenuate noise. Implementing rooftop farming is a strategy to ensure environmental sustainability because it produces very little food packaging, improves the air quality of the environment, and reduces noise levels. By composting organic waste to recycle it, it reduces the cost and energy of transportation, diminishes the impact of the urban heat island, improves the quality of storm water, and increases biodiversity.

Rooftop gardens, also known as living roofs or green roofs, have several advantages, including effectively utilising space, converting CO_2 emissions into oxygen and increasing the air quality index, reducing the heat of buildings and energy expenses, and enhancing the aesthetic of urban landscapes. Terrace gardening is a relatively new idea in India, but it is quickly gaining popularity, particularly in the

larger cities. One such city that struggles with significant development and lack of room for nature is Bangalore.

This is the most effective method for ensuring a lifetime supply of fresh, nutritious food. Since it is conveniently located on your roof, a terrace garden is the ideal option to significantly reduce the cost of fresh fruit. A terrace garden can be advantageous in a variety of other ways in addition to producing a high-quality harvest.

3　Need for Terrace Gardening

Water quality is filtered by green roofs, and temperature in cities is transpired by them. By providing habitat, green roofs provide support services for pollinators. Additionally, green roofs offer cultural benefits by expanding the amount of open space in a city.

Numerous ecosystem services, such as improved air quality, lower energy needs, habitat availability, longer roof lifetime, reduced storm water runoff, and improved water quality, are provided to urban environments by green roofs. Terrace gardens increase insulation and thermal mass, encourage evapotranspiration, physically shade the roof, and lessen heat transmission through the roof. Green roofs lessen the amount of heat that is transported through the roof during warm weather, which lowers the energy requirements of the building's cooling system [10].

4　Pre Requisites to Begin Terrace Gardening in Bangalore

Planning is crucial when thinking about how to develop a garden that will give you a reasonable harvest of produce that will last you the entire year.

1. Checking should be done if the terrace or roof has enough light and some hidden spaces.
2. Easy access to water is necessary to maintain the area's cleanliness and irrigate the plants.
3. In tropical and subtropical regions like Bangalore, having a shade net would be quite useful.
4. To support creepers and climbers that need support to grow, lattice or poles are needed.
5. Collect every piece of gardening equipment required, such as gloves, spades, wedges, scoops, support shears, and anything else you'll need to mix soil, prune, remove leaves and branches, or harvest the crop.
6. Knowing which plant belongs in which container is also essential.
7. Pre-fabricated wood, fiberglass, and metal planters are usually pretty lightweight to begin with. Custom planters are bulkier and can be designed with false bottoms in them to help reduce the total amount of soil needed to fill them.

5 Literature Review

Cities around the world are getting more crowded and filthy [16]. Given that cities already house the majority of the population, this is alarming. As a result, low-albedo materials are replacing vegetated surfaces in the urban environment, which is changing. These materials are used to create high-density buildings, which are primarily responsible for the urban heat island effect, which raises temperatures in urban areas [12], alongside the number of residents and the lack of plants and trees. Increasing the amount of vegetation in urban areas is one way to reduce the consequences of climate change.

According to the research done by Triguero-Mas et al. [6], urban rooftop gardening may have advantages for people with intellectual disability and mental health issues in general. Through his research, Tuladhar (2019) determined the interest and desire of city inhabitants to gather fresh, pesticide-free foods on their own rooftops. These projects for urban greenery are developed with much effort in order for them to contribute to urban ecosystem services. As a result, it would aid in reducing the urban heat island effect and also enhance the health of locals [16].

Terrace gardens provide advantages that increase the built environment's sustainability performance [8, 17], especially in cities that are undergoing rapid urban growth where recovering green space is of crucial importance [5]. Where Green Roofs are built on a big scale, environmental advantages include the reduction of heat islands, energy efficiency, sound insulation, and air pollution/air purification [3]. However, improving stormwater management is frequently thought to be the main advantage provided by Green Roofs (Babovic et al. 2018) [14], therefore their capacity to retain stormwater can be responsible for up to two-thirds of the money they receive [15]. A membrane bioreactor, for example, can be used to filter and reuse the residual water [13]. Notably, the environmental advantages of GRs can have economic and societal effects in addition to helping the eco-system.

According to Ambrose et al. [1], cultivating vegetables had greater well-being scores than growing ornamentals. They explained this by saying that growing one's own food gives people a strong feeling of purpose. Diversity may be significant in addition to increasing the vegetation's surface area. Stronger restorative benefits have been associated to greater plant taxonomic diversity [18].

6 Statement of Problem

High-rise structures and communal living took the place of individual habitations in practically all of the city's major neighborhoods throughout this urbanization process. The majority of the flats in the buildings have balconies or terraces, and these little areas make the ideal places for people to grow their own plants. Growing plants on terraces and balconies can provide small green oasis for residents to rest and enjoy

after a day's work. Hence, there are some valuable questions to be investigated with respect to green terracing or balconies, such as

How can we increase the awareness of the value of urban terrace gardens and its environmental, social and economic benefits for the urban city of Bangalore?

What are the design elements of urban terrace garden and guidelines to make it more efficient and productive?

H1: Residents of Bangalore Urban area are aware about types of plants to be used for urban terrace gardening.

H2: Residents of Bangalore Urban area face lot of obstacles in urban terrace gardening.

7 Data and Methodology

7.1 Type of Study

This research will be conducted using descriptive analytical methodology, qualitative data collecting and analysis approaches. The research work is divided into two phases.

7.1.1 The First Phase

The first phase is involved with sustainability of balcony and roof top gardens among selected respondents from Bengaluru City (randomly picked from stake-holders of Kristu Jayanti College). The questionnaire was created to gather data regarding respondent's demographics, their benefits, motivations, attitudes and opinions regarding the nutrition garden initiative. 150 respondents were gathered for the study from Bengaluru City, Karnataka. Table 1 shows the information gathered from this survey.

Interpretation

The home gardeners mostly resorted to gardening to get organic food for self-consumption. 20% respondents stated improvement in aesthetics of home another reason for starting gardening at home. Another 20% respondents were of the opinion that gardening offers them sense of joy, satisfaction and mental peace while gardening. Among the respondents 34% grew fruits and vegetables while 20% respondents loved growing herbs at home. A few respondents concentrated on decoration of home so they grew indoor and ornamental plants. From the survey it was observed that in Bangalore city the birds, pest and insects are causing the greatest challenge for the plant lovers. The other issues faced were limited space (23%), insufficient sunlight (21%) and lack of quality seeds (9%) available from the

Table 1 Gardening practices and challenges

	Statements	%
A	*Reasons for starting gardening at home*	
	Motivated by family members or friends	17
	Home décor	20
	To pursue it as hobby	18
	To get fresh and organic food	25
	For sense of joy and satisfaction	20
B	*Type of plants grown at home*	
	Herbs	27
	Fruits and vegetables	34
	Decorative plants	17
	Indoor plants	22
C	*Challenges in home gardening*	
	Pests, birds and diseases	47
	Improper sunlight	9
	Less area available	23
	Lack of quality seeds/materials	21
D	*Type of fertilizers used in home garden*	
	Organic	74
	Chemical fertilizer	8
	None	18

Source Primary data

stores. The respondents displayed their awareness about organic fertilizers in market as 74% bought organic fertilizers for the growth and protection of their plants while 8% only bought chemical fertilizers while 18% were not purchasing any fertilizers.

Interpretation

The analysis of data showed the relationship between dependent and independent variables. The data revealed that the type of accommodation is positive and highly significant correlated with the knowledge about gardening. Gender showed positive significant correlation with the knowledge about gardening. Age and marital status found negatively significant relation with knowledge. In case of the relationship between profile characteristics with adoption was also shown in Table 2. The data indicated that gender and type of accommodation where the respondents were residing currently were positive and highly significant correlated.

Table 2 Relationship between variable and independent variables

S. No.	Variable	Knowledge correlation (r value)	Adoption correlation (r value)
X1	Age	− 0.170	− 0.155
X2	Gender	0.199*	0.283**
X3	Marital status	− 0.080	− 0.096
X4	Type of accommodation	0.574**	0.624**

* Correlation is significant at the 0.05 level (2 tailed)
** Correlation is significant at the 0.01 level (2 tailed)

A repeated-measures ANOVA showed that there was a significant difference among the means for the five reasons. Post-hoc comparisons were calculated to see which means differed significantly from each other. Broadly, motivation by friends and family members, for sense of joy and satisfaction and home décor were rated as significantly more important than all other reasons for resorting to home gardening. To get fresh organic food and to pursue gardening as hobby were rated as significantly less important than other reasons.

The challenges faced in home gardening were ranked from most to least important: Pests and insects; lack of required area; lack of availability of quality seeds and improper sunlight. To find the significant difference between groups, an ANOVA analysis test was also run between each group's effect of change (control group and treatment group) in each question.

During the study a second questionnaire was created and circulated to find out the issues faced by the plants grown in the Nutrition garden. The sampling method was purposive. In purposive sampling, the researcher handpicks the cases to be included in the sample on the basis of their judgment of their typicality or possession of particular characteristics being sought. The responses can be explained as shown in Table 3.

Table 3 Challenges faced in nutrition garden

Statements	%
Type of seeds sowed	
Fruits	19
Vegetables	48
Ornamental plants	33
Did you observe any pest or insects	
Yes	23
No	77
Have you added pesticides to plant	
Yes	42
No	58

Interpretation

Among the respondents who initiated terrace and balcony garden in their own houses or apartments, 48% chose vegetables while 33% opted for ornamental plants and only 19% took up fruits. Most of them did not face the issues of pests and insects while 23% respondents having balcony gardens came across this issue. Since the respondents were not aware how to protect their plants against the pests they did not use any pesticides for protection. But 42% of these balcony gardeners admitted to purchasing pesticides for their gardens. As these respondents were very much attached to their plants they took extra efforts to save their plants.

8 Suggestions

Therefore, for a successful green roof implementation, the governments and organizations should focus on providing support and instruction for the use of organic fertilizers and pesticides. Dissemination of the harvesting dates and sets of practices to be followed should be done among more people in the society. Training and support for people who want to start terrace gardening must be provided. Participatory policy should be made for increasing commitments and offering compensation for adopters. There must be formulation of policies for the supply of subsidies for the installation of roof gardens. Awareness events should be planned to encourage vertical gardening in residential and commercial spaces.

9 Conclusion

This study explored the reasons why people in Bangalore opt for adopting a garden and the challenges they faced during terrace and balcony gardening. This study examined the population of Bengaluru residents through targeted sampling. In order to improve green space, changing the physical landscape, enhancing the architectural character, and fostering a passion for the environment is advised. It is better to build vertical gardens in congested metropolitan areas with little access to the outdoors.

10 Limitations and Avenues for Further Studies

This research was restricted to the stakeholders of Kristu Jayanti College and their families. Only north Bengaluru was involved under the survey, the entire Bengaluru city could be covered in the future research projects. We also look at the social acceptance of the use of vertical gardens in this area. Further study is therefore necessary in those regions and societies where domestic food production is the main

practice. A comparative investigation can be carried out on the duration of time and cost involved in terrace and vertical gardening. Further research can be done on the possibilities of empowering less privileged sections of society through terrace and vertical gardening.

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Performance of the Agricultural Sector in India Through Farm Credit Accessibility: A Statistical Analysis

R. Kasthuri [ID]**, S. Rajeswari** [ID]**, P. Kumarasamy** [ID]**, R. Thamilmani** [ID]**, and K. Sivasubramanian** [ID]

Abstract Agriculture and its allied economic activities are rural India's largest employment-generating instrument. It is contributing a sizeable amount to the Gross Domestic Product (GDP) as well. The nation's agricultural sector and other related activities witnessed revolutionary growth. The major aim of this paper is to find out the role of agricultural credit in agricultural output, analyse the credit disbursement by tanking institutions to small and medium farmers and evaluate the farm credit accessibility and performance of agriculture in terms of production in India. The biggest concern in the agricultural sector is the non-availability and inadequacy of formal credit facilities for farming activities. The growth of the farm sector is purely based on the increased production of agricultural commodities. It can be possible through financial support through formal credit systems. The farm credit encourages the agrarians to shift to a superior production level by using additional inputs and achieving a higher output level. It will also help to promote employment in rural areas. This work basically followed the descriptive and analytical structure of the research method to emphasise the role of agricultural credit in enhancing the performance of the sector. This piece of research study used secondary data sourced from various published government reports such as the Press Information Bureau of India, NABRD, and RBI reports published in various years. The information is collected from the recent past years from 2017–2018 to 2020–2021 period. The soured data was tabulated and inferred to emphasise the significance of farm credit in enhancing the performance of the agricultural sector in India. Based on this background, this

R. Kasthuri · S. Rajeswari
Department of Economics, ADM College for Women, Nagapattinam, Tamil Nadu, India

P. Kumarasamy
Department of Commerce (UG), Kristu Jayanti College, Bangalore, India

R. Thamilmani
Faculty of Economics, Government Law College, Vellore, Tamil Nadu, India

K. Sivasubramanian (✉)
Department of Economics, Kristu Jayanti College, Bangalore, India
e-mail: sivasubramanian@kristujayanti.com

paper aims to emphasise the role of credit accessibility of farmers in improving agricultural performance in terms of output. It is found from the analysis that agricultural credit accessibility and disbursement were supported to promote the production of small and medium farmers in India.

Keywords Agriculture · Farm credit · Accessibility · Output · Economic development

1 Introduction

India is one of the largest producers of food grains in the world including rice, wheat, and pulses. Along with essential food grains production, India has also become the largest producer of various dry fruits, and agricultural wage-good for industrial purposes. Commercial crops such as coconut, sugarcane and jute also became vital in terms of revenue generation. Agriculture and its allied economic activities are rural India's largest employment-generating instrument. It is also contributing a sizeable amount to the Gross Domestic Product (GDP). The nation's agricultural sector and other related activities witnessed revolutionary growth. Even though, the contribution is increasing by an average of 7.1% annually, still, the farm sector is suffering due to various drawbacks [12]. There are many initiatives have been taken by the government of India to promote easy access to formal credit. The major issues identified by the farmers in accessing formal loans such as interest rates, lack of mortgage, lack of bank vicinity in rural areas, and collateral issues. The evidence based on the data published from various secondary sources reveals that agricultural credit continued as a tool to enhance the output and performance of the farm sector [13]. Based on this background, this paper aims to emphasise the role of credit accessibility of farmers in improving agricultural performance in terms of output.

1.1 Objectives

To find out the role of agricultural credit in agricultural output.
To analyse the credit disbursement by the banking institutions to small and medium farmers.
To evaluate the farm credit accessibility and performance of agriculture in terms of production in India.

2 Literature Review

2.1 *Agricultural Credit*

The biggest concern in the agricultural sector is the non-availability and inadequacy of formal credit facilities for farming activities [11]. The availability of agricultural credit is based on various factors such as age, educational qualification, gender, land holding, and collaterals [2]. The accessibility of the rural household to agricultural credit has been influenced by productive and diversified households stand a greater chance [1]. There are many socioeconomic factors are determining credit access such as education, awareness, bank distance, service quality, bank employee behaviour, documents and repayment time [3]. If agricultural credit facilities are easily accessible to farmers through the institutional credit system, there are chances of an increase in employment and income generation [9]. Short-period and medium-period loans for farming uses are considered for marginal land in India. The indebted farming households to the total farm household enhances as the land size of cultivation increases [10]. The growth of the farm sector is purely based on the increased production of agricultural commodities. It can be possible through financial support through formal credit systems [14]. The banking sector and other financial intermediaries from formal credit institutions are playing a pivotal role in providing agricultural loans. It helps the farmers to enhance the land use for farming activities to enhance the output [8]. Currently, there are numerous sources for the farm credit structure and system in India and several institutions are engaged in expanding loans to rural economic activities. The challenge in this segment is whether the credit source is a formal or informal agency. The formal credit institutions will offer a lesser rate of interest without any collaterals. On the other side, unorganised farm loans are charging a higher rate of interest than securities. In this scene, the organised credit institution is supporting a lot in proving farm loans to small and medium farmers [6].

2.2 *Performance of the Agricultural Sector*

The contribution of agricultural gross value added to gross GDP consistently decreased in all the states in 2019–2020 due to the COVID-19 pandemic and reduced farm credit in this period [7]. The farm credit enhances the agrarians to shift to a superior level of production by using additional inputs and achieving a higher level of output. It will also help to promote employment in rural areas [5].

3   Research Methodology

This work basically followed the descriptive and analytical structure of the research method to emphasise the role of agricultural credit in enhancing the performance of the sector. This piece of research study used secondary data sourced from various published government reports such as the Press Information Bureau of India, NABRD, and RBI reports published in various years. The information is collected from the recent past years from 2017–2018 to 2020–2021 period. The soured data was tabulated and inferred to emphasise the significance of farm credit in enhancing the performance of the agricultural sector in India.

4   Data Analysis and Results

Our economy's largest sector is agriculture, and credit is crucial to raising agricultural production. For marginal and small-scale farmers in particular, availability of and access to sufficient, timely, and affordable loans from financial institutions are crucial. Credit is crucial for developing successful and sustainable farming systems, along with other inputs. The majority of farmers are modest producers working in agricultural fields with a wide range of potential. Experience has demonstrated that the productivity, asset development, income, and nutrition of the rural poor are positively impacted by simple access to affordable banking services. Therefore, the government's top priority is to encourage full financial integration by bringing all farmer households into the banking system (Fig. 1).

According to the data from Press Information Bureau, the credit disbursement target in India was 900,000 crores and it has reached above the set target of 1,065,755.67 crores in the 2016–2017 period. Further, the target increased for the year
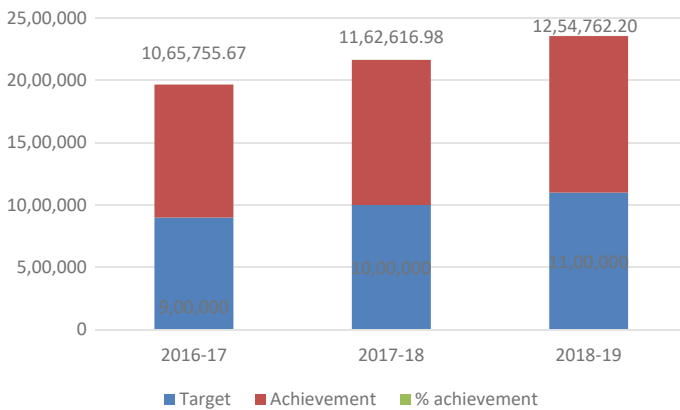

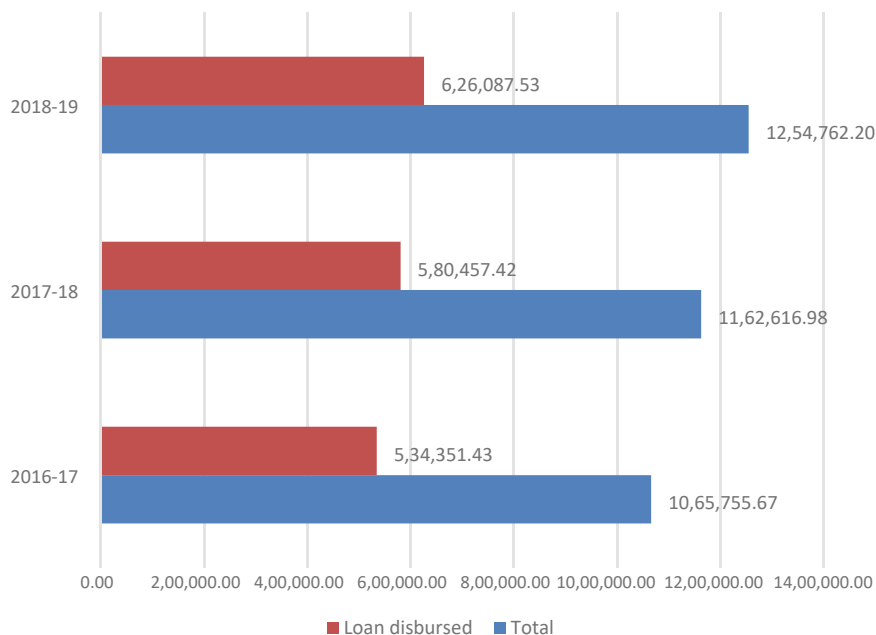**Fig. 1** Credit disbursement target and achievement. *Source* Press Information Bureau, GoI

Fig. 2 Loan to small and marginal farmers. *Source* Press Information Bureau, GoI

2017–2018 with 1,000,000 crores and it achieved an amount worth Rs. 1,162,616.98 crores. The data show a consistent growth in sanctioning of farm credit to Indian farmers. Again, in 2018–2019, the goal has fixed at 1,100,000 based on the achievement in the previous financial year. The credit disbursement has reached over and above the targeted value of 1,254,762.20 crores (Fig. 2).

Small and medium farmers are playing a significant place in agricultural production in India. The total disbursement of credit made rupees 534,351.43 crores to the small and marginal farmers in 2016–2017. It reveals that more than 50% of the fund was disbursed to small and medium farmers. Further, in the year 2017–2018 also more than 50% of the total money allocated for farm loans has been given to small farmers with 580,457.42 crores. Similarly, in 2018–2019 also continued with 626,087.53 crores from a total amount of 1,254,762.20 crores for small farmers (Fig. 3).

According to NABARD data, the agricultural loan has been disbursed on the basis of the requirement and needy people in rural areas. The money was gradually given to all segments of the farmers.

Table 1 examines the region-wise agricultural credit by the commercial banks as on 31 March 2022 from 2016. The total amount of farm credit was considerably increased from 951,000 crores in 2016 to 1,703,315 crores in 2022. There was a 79.10% of growth in the farm credit in India by the scheduled commercial banks in seven years. On an average of 10% increase every year from 2016 to 2022. South,
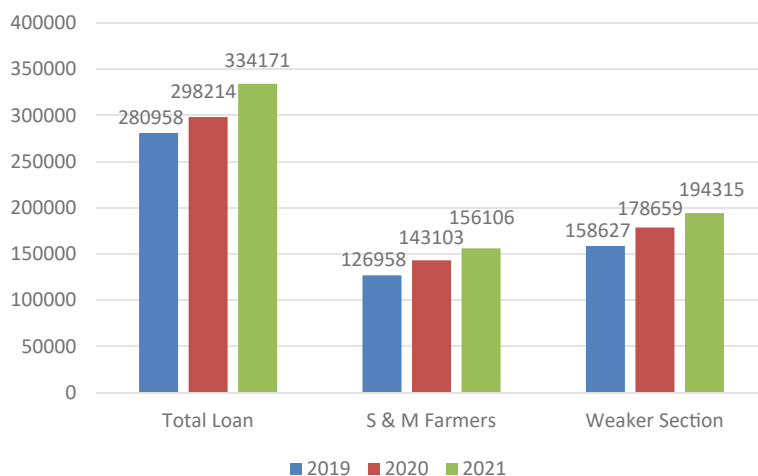
Fig. 3 Disbursement of farm loan to small, medium and weaker sections. *Source* NABARD, various years

North and Central region is contributing on the higher side of disbursement with 766,911, 295,110 and 289,277 crores in 2022 respectively (Table 2).

It is clearly visible from the above data that the total production of food grains has been consistently enhanced from 2016–17 to 2021–22. The total output performance of the farm sector was 2751.12 in 2016–17 was increased to 3156.16 in the year 2022. There was a tremendous increase in the total out of all food grains in all the seasons.

Table 1 State-wise credit to agriculture by scheduled commercial banks up to the end of March 2022

Region/state/ union territory	2016	2017	2018	2019	2020	2021	2022
Northern region	206,000	219,700	251,200	265,771	262,818	264,819	295,110
North-eastern region	13,000	14,400	15,900	17,631	17,730	17,510	18,620
Eastern region	83,800	86,800	94,900	106,021	115,215	130,659	146,312
Central region	176,300	198,800	208,600	233,033	243,547	262,449	289,277
Western region	132,500	149,400	150,600	190,209	160,536	174,870	187,084
Southern region	339,400	409,100	478,300	536,961	568,124	667,805	766,911
All India	951,000	1,078,300	1,199,500	1,349,626	1,367,970	1,518,112	1,703,315

Source RBI report, various issues

Table 2 Crop-wise production in India from 2016–17 to 2021–22

Crop	Season	2016–17	2017–18	2018–19	2019–20	2020–21	2021–22
Other kharif pulses	Secondary harvest	8.92	8.31	6.29	8.73	7.99	6.69
Other rabi pulses	Spring season	17.68	17.78	14.5	14.89	16.28	16.58
Total pulses	Secondary harvest	95.85	93.06	80.91	79.21	86.18	82.35
	Spring season	135.47	161.1	139.85	151.04	168.45	190.67
	Total	231.31	254.16	220.76	230.25	254.63	273.02
Total food grains	Secondary harvest	1383.28	1404.66	1415.16	1438.12	1505.76	1553.64
	Spring season	1367.84	1445.47	1436.99	1536.92	1601.65	1602.52
	Total	2751.12	2850.14	2852.15	2975.04	3107.42	3156.16

Source Press Information Bureau, GoI

In this, the secondary harvest contributes more in terms of output for the overall performance of the farm sector.

4.1 Government Initiatives and Schemes

Agricultural credit policy: The Indian government has started a number of policy initiatives to increase farmers' access to institutional avenues for financing. The focus of these initiatives has been on gradually establishing prompt and sufficient financial support for all farmers, with an emphasis on marginalised and those from the less fortunate of society to allow them to implement cutting-edge technology and enhanced farming practices in order to increase farm production and productivity. Through credit planning, the adoption of region-specific initiatives, and the streamlining of loan Policies and Procedures, the Policy places focus on enhancing credit flow at the local level.

Farm credit package: The government announced this scheme in the year 2004 to double the farm credit to agrarians within three years that is before 2006–2007.

Interest subventions: The government initiated this scheme in the year 2006–2007 to enable the banks to arrange a short-term credit facility for agricultural production with an amount of three lakh rupees at a 7% of interest rate.

Interest subventions in post-harvest: The benefit of the interest subsidy scheme has been expanded to marginal and small-scale producers who have Kisan Credit Cards

for an additional time of up to six months post-harvest harvest on the exact same rate as accessible to crop loans against flexible warehouse receipt for maintaining their products in stores in order to discourage farmers from making distressed sales and to motivate them to store their output in warehousing towards warehouse receipts.

No collateral loans: This initiative provides a farm loan worth up to one lakh rupees without any collateral or security.

Kisan credit card: This credit card provides support to farmers in buying seeds, fertilizers and pesticides with a normal rate of interest.

5 Conclusion

It is found from the analysis that agricultural credit accessibility and disbursement were supported to promote the production of small and medium farmers in India. The majority of farmers are modest producers working in agricultural fields with a wide range of potential. Experience has demonstrated that the productivity, asset development, income, and nutrition of the rural poor are positively impacted by simple access to affordable banking services. Therefore, the government's top priority is to encourage full financial integration by bringing all farmer households into the banking system. According to the data from Press Information Bureau, the credit disbursement target in India was 900,000 crores and it has reached above the set target of 1,065,755.67 crores in the 2016–2017 period. Further, the target increased for the year 2017–2018 with 1,000,000 crores and it achieved an amount worth Rs. 1,162,616.98 crores. The data show consistent growth in sanctioning of farm credit to Indian farmers. It is clearly visible from the above data that the total production of food grains has been consistently enhanced from 2016–17 to 2021–22. The total output performance of the farm sector was 2751.12 in 2016–17 was increased to 3156.16 in the year 2022. There was a tremendous increase in the total out of all food grains in all the seasons. A multi-agency network made up of cooperatives, regional rural banks, and commercial banks distributes agricultural financing. The country's 371 Districts of Central Cooperative Banks with 13,327 offices and 31 Government Cooperative Banks with 1028 branches largely offer short- and medium-term agricultural financing to the nation's about 121,225 million village-level Basic Agricultural Financing Societies. In order to meet the need for investment financing, the long-term cooperative structure is made up of 19 Government Cooperation Agriculture and Rural Development Banks and 755 Basic Cooperative Agricultural and Rural Development Banks, each of which has 1219 branches and 689 branches. In addition, there are 14,462 RRB branches, 45,957 Commercial Bank branches in rural and semi-urban areas, as well as more than 7 million microfinance organisations [4]. There are many government policy initiatives that also supported boosting agricultural performance in terms of production through formal or institutional agricultural credit facilities. The major schemes in the focus of these initiatives have been on gradually establishing prompt and sufficient financial support for all farmers, with

an emphasis on the marginalised and those from the less fortunate of society to allow them to implement cutting-edge technology and enhanced farming practices in order to increase farm production and productivity. Through credit planning, the adoption of region-specific initiatives, and the streamlining of loan Policies and Procedures, the Policy places focus on enhancing credit flow at the local level.

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The Use of M-Government Apps and the Levels of Public Satisfaction with M-Services Quality

Mohammed Mostafa Refaat Moharam and Taniya Mukherjee

Abstract The digitalization of various services has grown rapidly in recent years, which was a boon during the pandemic. Services such as financial transactions, medical assistance, government services, and bill payments became more convenient through various mobile apps. Several studies have previously been conducted. However, this study presents a conceptual model to determine the extent of public use of mobile government (M-government) apps within the Kingdom of Bahrain and the level of public satisfaction with the M-services provided. Furthermore, this study investigates a model that can measure the level of satisfaction with the quality of the M-service in its various aspects. Data was collected through the survey research method, and statistical software was used to analyze and present the data. The results demonstrated that the specific model successfully established a significant relationship between the various parameters of actual usage and public satisfaction levels.

M. M. R. Moharam (✉)
Public Relations and Advertising Department, Mass Communication Faculty, Cairo University, Giza 12613, Egypt
e-mail: refaat.mc@gmail.com

Mass Communication and Public Relations, College of Communication and Media Technologies, Gulf University, Sanad 26489, Kingdom of Bahrain

T. Mukherjee
Administrative Science Department, College of Administrative and Financial Science, Gulf University, Sanad 26489, Kingdom of Bahrain
e-mail: taniya.mukherjee@gulfuniversity.edu.bh

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1 Introduction

The administrative sector of present-day governments has witnessed continuous changes that required adapting to rapid technological developments, and providing good quality services has become a basic requirement to increase the government's administrative efficiency.

With the advent of the information and communication revolution, people began considering using e-government services to simplify administrative procedures and make them more accessible and convenient [1].

As a result, governments in various countries have resorted to using mobile technologies, applications, and wireless networks to facilitate the government services provided to citizens and create a service sphere that is transparent and subject to continuous evaluation and development [2].

Mobile government (M-government) is an extension of E-government, which began to emerge in the mid-1990s because of the development of information and communication technologies [3].

M-government is one of the digital tools for continuous communication between the government and the citizens. Therefore, it is important for building and supporting trust between the two parties. Citizens have confidence in a government that provides all their needs and creates effective communication channels to express their opinions about various services [4].

Hence, this study aims to determine the extent of public use of M-government apps within the Kingdom of Bahrain and public satisfaction levels with the M-services provided. In addition, this study also aims to find a model that can measure the level of satisfaction with the quality of M-services in their various dimensions.

2 Literature Review

2.1 The Nature of M-Government

M-government provides services for citizens using smart applications that are easy to use and available 24/7 while ensuring swift coordination and completion of service delivery between all government agencies and institutions [5].

The main advantages of M-government are that it saves the citizen's time and effort. In addition, it achieves a sustainable administrative pattern by finding radical solutions to bureaucracy and reducing the complexity of administrative procedures while preserving the environment by reducing the amount of paperwork for transactions [6].

Moreover, M-government has contributed to flexibly providing services to citizens while breaking the geographical and routine barriers between citizens and the government. As a result, it has reduced queues, overcrowding in government agencies, and the execution of transactions has become faster and more organized [7].

Citizen-oriented mobile apps are considered an economical solution, but accessing applications requires internet availability on cell devices. The infrastructure is inexpensive compared to conventional government tools, which require enormous funds to provide the necessary service facilities [8].

Despite its advantages, M-government has several disadvantages, such as vulnerability to cyber-attacks and lack of data security, as mobile devices are often used in insecure environments. Additionally, M-government requires reliable and secure communication channels, which can be costly. Lastly, user interface design and navigation can be challenging on mobile devices because of their small screen size [9].

2.2 Mobile Government Apps in Bahrain

In 2008, the Kingdom of Bahrain's Economic Vision 2030 was introduced, with an aim to achieve sustainable national economic development. The government action program for 2010–2014 also developed a road map for all government sectors. Therefore, the e-government strategy was launched in 2016 to contribute to achieving the vision and government action program.[1]

E-transformation processes are not limited to ministries and government agencies. For example, the Information and e-Government Authority in Bahrain also requires cooperation from the private sector and civil society institutions to implement electronic initiatives that provide integrated government services that meet the needs of beneficiaries from all sectors [10].

The demand for M-government has increased due to the widespread use of mobile devices and the number of application users. For example, in the Kingdom of Bahrain, statistics presented by Data Portal revealed that the population reached 1.77 million, and there are 1.78 million cellular mobile connections.[2]

M-government in Bahrain includes several citizen-oriented apps, such as information and news service, client services, health and safety information, and educational and religious apps.

The government programmed 15 applications, which are under its direct supervision. In addition, other agents programmed three applications, which are also under government supervision (Benefit pay, Skiplino, and B4bhcom). The 15 applications are as follows: BeAware–Government directory–Altajir–E-traffic–E-shabab–Sehati–Government Employee–Tawasul–Islamiyat–Wejhaty–BH TV and Radio–Postal Services–Legislation of Bahrain–Electricity and Water Services–Student Exam Results–Benefit pay–Skiplino–B4bh.com.

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[1] E-government strategy 2016 available at: https://www.bahrain.bh/wps/wcm/connect/48e93236-40b0-4de2-b284-87f176e72415/eGov%2BStrategy_Brochure_Ara.pdf?MOD=AJPERES.

[2] The statistics are available at: https://datareportal.com/reports/digital-2022-bahrain.

2.3   Levels of Public Satisfaction with Government Services

Public satisfaction refers to the level of contentment or approval that members of the public feel towards a particular aspect of society, such as government services, public infrastructure, healthcare, education, or the overall state of the economy [11]. In addition, it measures how well the public's needs are being met by the institutions and services designed to serve them [12].

Measuring the levels of public satisfaction assists governments in identifying areas where they are succeeding and areas where there is a need for improvement. It can also help build trust between citizens and their government, leading to increased participation in the democratic process and a more engaged citizenry [13].

Furthermore, studies conducted about public satisfaction with government services confirm a relationship between public satisfaction and managing good relationships between the government and the citizen in what is known as Citizen Relationship Management (CRM).

CRM aims to improve citizen satisfaction and trust in their government by providing better access to information, more efficient services, and more responsive communication. This is achieved through various tools such as call centers, email, social media, mobile apps, and web portals that allow citizens to access information and interact with government agencies [14].

2.4   Government M-Services Quality Dimensions

With the spread of E-services and the emergence of human–computer interactions, some researchers have developed a scale for evaluating the quality of E-services, including parameters that govern the interactions between humans and devices, such as accessibility, security, design quality, and ease of use [15–17].

Many studies have relied on the dimensions of the technology acceptance model (TAM) and the unified theory of acceptance and use of technology (UTAUT) to measure the level of public acceptance of the e-service and evaluate its quality [18–21].

The quality dimensions are the various aspects customers consider when evaluating M-services' quality. Some studies have identified several dimensions for measuring M-services' quality, such as perceived usefulness, risk, compatibility, responsiveness, reliability, cost, and ease of use [22]. Some standard dimensions for measuring M-service quality are: Coverage, Reliability, Speed, Security, Customer support and Data quality [23]. Some key quality dimensions that can be applied to M-government applications include: Functionality, Usability, Reliability, Security, Accessibility and Performance [24].

By ensuring that M-government applications meet the high standards of these quality dimensions, agencies can provide a better user experience and improve their effectiveness in serving citizens.

3   Research Gap

According to a previously conducted survey, a gap in studies that measure public satisfaction with M-government services, specifically M-government applications, was discovered. While many studies are available on adapting to technology and accepting technology (TAM) for dealing with M-government applications, there is a shortage of studies that monitor the extent of public satisfaction with M-government applications, especially in Bahrain.

4   Research Problem

This research seeks to determine the actual usage level of M-government applications among users in the Kingdom of Bahrain (whether citizens, residents, or visitors), identify the preferred M-government applications, and measure the level of public satisfaction with the dimensions of M-service quality (availability, accessibility, ease of use, perceived usefulness, security, privacy, design, aesthetics, responsiveness, and empathy).

5   Research Contribution

The main contribution of this study is to build a scientific model that describes the most important factors affecting public satisfaction with the quality of M-government services. This model is developed by combining the measurement of the quality of mobile and traditional services, elements of TAM, and indicators of public satisfaction and trust in M-government performance. In addition, this study is one of the first to examine the level of public satisfaction (of citizens, residents, and visitors inside the Kingdom of Bahrain) with the quality of M-services and M-government apps.

6   Proposed Conceptual Model

This study is based on a proposed model derived from several previous studies that analyzed the dimensions of government services in their traditional form. In addition, the researchers based the structure of this model on several other dimensions related to the nature of the M-government service. These dimensions differ radically from the quality dimensions of government services in their traditional form. Furthermore, this model is also based on some dimensions obtained from the TAM. Table 1 is a list of definitions of the dimensions included in the proposed conceptual model.

Table 1 List of the dimension definitions of the conceptual model

Dimensions	Definitions	References
Availability and accessibility	The application is available for free download, runs across various operating systems, and makes it easy to browse the internet	[25, 26]
Ease of use	The application is easy to use, with a simple interface and easily controlled settings	[27]
Perceived usefulness	The application's benefits are kept in line with the user's needs	[28]
Security and privacy	Protecting personal data and providing secure protection settings	[29]
Design and aesthetics	Aesthetic creativity in design, taking into account the quality of graphic elements	[30]
Responsiveness and empathy	Service providers respond decently, kindly, and rapidly to complaints and follow up on requests	[31]
Actual usage	The usage level of the application by the user	[32]
Public satisfaction	The level of satisfaction with the experience of application use and the intention to re-use	[33, 34]

The model defines six dimensions of M-service quality that positively correlate to the level of public satisfaction with the M-government service and the actual use of M-government apps. In addition, the model assumes a positive correlation between the level of public satisfaction and the actual use of M-government applications. This can be explained in Fig. 1.

7 Methodology and Sampling

This quantitative study used the survey research method, and an online questionnaire via Google Forms was completed in January and February 2023 from a simple random sample. The study population comprises citizens, visitors, and residents of Bahrain. The research focused entirely on Bahrain, where the researchers are currently stationed due to their academic work at one of the country's most prestigious universities. No previous research on M-government apps concentrated on Bahrain. A total of 250 people were surveyed. In addition, experts from the media, academia, and practitioners validated the survey to ensure that it accurately measures what it intends to measure. The demographic status of the study sample is shown in Table 2.
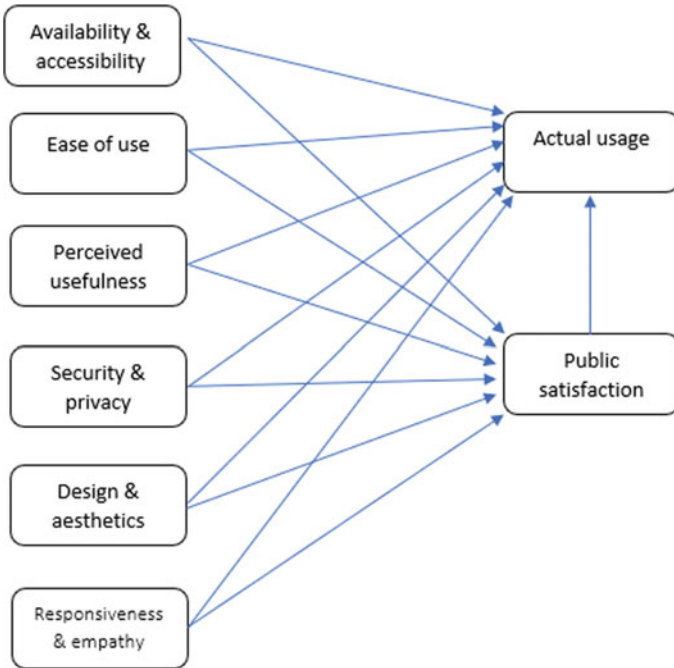
Fig. 1 The proposed conceptual model

8 Data Analysis and Measures

The Statistical Package for the Social Sciences (SPSS) was used to analyze the data obtained. Frequencies, percentages, means, and standard deviation are a few of the descriptive statistics employed in evaluating the data. Some statistical tests were used, such as the Independent Samples t-test and Chi-Square test, to verify the findings of this investigation. In addition, the Pearson correlation coefficient was used to understand the relationship between the independent and dependent variables.

Two fundamental components in evaluating a measurement instrument are validity and reliability. Validity is the degree to which an instrument measures what it was designed to measure, and reliability is the consistency of a measurement made by an instrument. Moreover, an instrument's validity and reliability are strongly related. In this study, we have used Cronbach's alpha to demonstrate the internal consistency of a test or scale. The various aspects of this study have been categorized into the following scales:

Usage of M-government apps: The dependency of people on the various M-government apps and their usage level was analyzed using a 4-point Likert scale. Eighteen M-government apps were surveyed, and the Cronbach's alpha for M-government apps was 0.940.

Table 2 The demographic characteristics of the study sample

Demographic elements		Frequency	Percent
Gender	Male	116	46.4
	Female	134	53.6
	Total	250	100
Belonging status	Citizen	213	85.2
	Resident	24	9.6
	Visitor	13	5.2
	Total	250	100
Education level	Middle preparatory school	3	1.2
	Higher secondary school	47	8.8
	University education	175	70
	Post-graduation education (master's and Ph.D.)	25	10
	Total	250	100
Age	14–24 yrs	109	43.6
	25–40 yrs	111	44.4
	41–60 yrs	24	9.6
	More than 60	6	2.4
	Total	250	100
Average household income per month	1000 Bd to < 2000 Bd	69	27.6
	2000 Bd to < 3000 Bd	22	8.8
	3000 Bd and above	22	8.8
	Less than 1000 Bd	137	54.8
	Total	250	100

Characteristics of M-government apps: The characteristics of the M-government apps based on parameters were explored based on design and aesthetics, cyber-security and privacy, responsiveness and empathy, ease of use, availability and accessibility, and perceived usefulness. A 5-point Likert scale was considered, and 36 items were tested. The Cronbach's alpha was 0.980.

The measured level of public satisfaction: The level of public satisfaction based on M-government apps quality was measured. Ten items in a 5-point Likert scale were tested, and the Cronbach's alpha was 0.953. In the mentioned scale, Cronbach's alpha exceeded the permissible limit of 0.700 for accepting reliability [35]. Thus, a higher value of Cronbach's alpha suggests a higher level of consistency between the items.

9   Research Hypothesis

The research has been guided by the following hypotheses:

H1: Availability and accessibility positively correlate with actual usage and public satisfaction.

H2: Ease of use positively correlates with actual usage and public satisfaction.

H3: Perceived usefulness positively correlates with actual usage and public satisfaction.

H4: Security and privacy positively correlate with actual usage and public satisfaction.

H5: Design and aesthetics positively correlate with actual usage and public satisfaction.

H6: Responsiveness and empathy positively correlate with actual usage and public satisfaction.

H7: Public satisfaction has a positive correlation with actual usage.

10   Results and Discussion

This study's findings are presented as testing its hypotheses:

H1: Availability and accessibility positively correlate with actual usage and public satisfaction.

Figure 2 shows the statistical relationship between the availability and accessibility of the apps and their actual usage and public satisfaction. Based on the correlation coefficient values, the dimensions of accessibility and availability have influenced the usage level of the apps. The sigma values for all the apps are below 0.005, which indicates that the correlation between the apps' usage and the accessibility and availability parameters is statistically significant. However, it is interesting to note that all these parameters are not statistically significant for Benefit pay. Since it is more related to financial transactions, availability and accessibility do not influence its usage much.

H2: Ease of use positively correlates with actual usage and public satisfaction.

The results in Fig. 3 confirm a positive relationship between the parameters of ease of use and actual usage of the apps. In all the cases, Pearson's correlation coefficient, represented as P in the graph, is positive, and the sig. *p*-value is less than 0.005. It shows that the relationship between the variables is statistically significant except for Benefit pay.

H3: Perceived usefulness positively correlates to actual usage and public satisfaction.

Figure 4 reveals that for most of the apps, all the dimensions of perceived usefulness positively correlate with actual usage and public satisfaction levels. The Pearson's
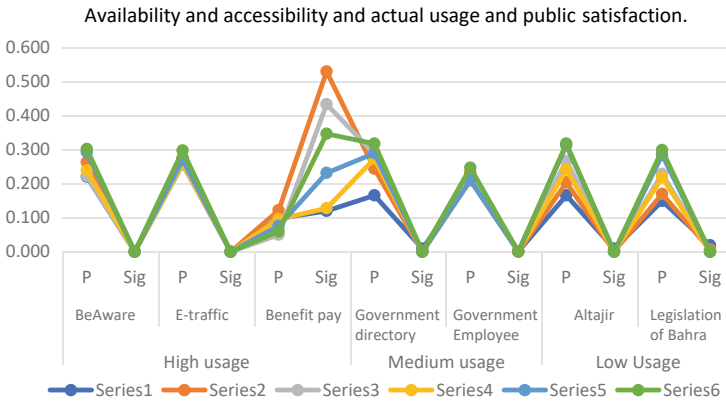
Fig. 2 The relationship between availability and accessibility and actual usage and public satisfaction. *P = Pearson's correlation coefficient
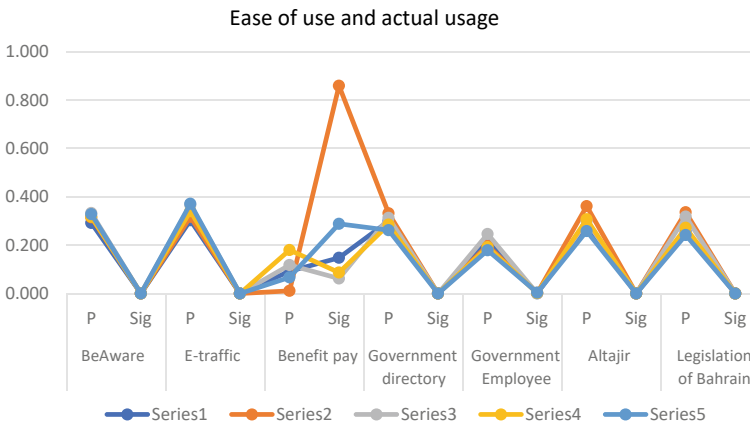

Fig. 3 The relationship between ease of use and actual usage and public satisfaction. Where series 1, series 2, series 3, series 4, and series 5 are the dimensions for ease of use

correlation coefficient is positive, and sig. *p*-value is less than 0.05 for all apps, highlighting the significant positive relationship between them. However, it was noted that all the dimensions of perceived usefulness did not have a significant relationship with their actual usage for Benefit pay. The respondents found that Benefit pay is useful for saving time and completing monetary transactions without physically visiting government institutions.

H4: Security and privacy positively correlate with actual usage and public satisfaction.

According to the results shown in Fig. 5, there is a positive relationship between all the dimensions of security and privacy and actual usage and public satisfaction.
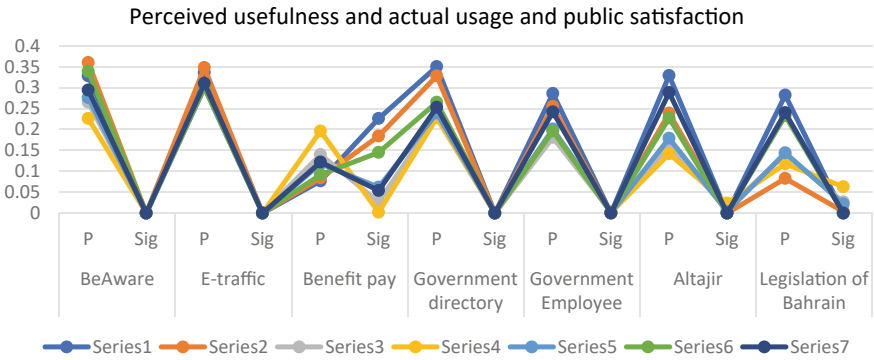
Fig. 4 Relationship between perceived usefulness and actual usage and public satisfaction. The series shown in the graph represents all the dimensions of perceived usefulness

The Pearson's coefficient and sig. p-value for all the apps are positive and below the normal alpha level of 0.005. This confirms that the result is statistically significant, and that all these dimensions of security and privacy influence actual usage and public satisfaction levels.

H5: Design and aesthetics positively correlate with actual usage and public satisfaction.

According to Fig. 6, all the dimensions of design and aesthetics have a positive relationship with the users' actual usage and satisfaction levels. The positive value of Pearson's coefficient for all the apps and the p-value being less than 0.05 validates the hypothesis.
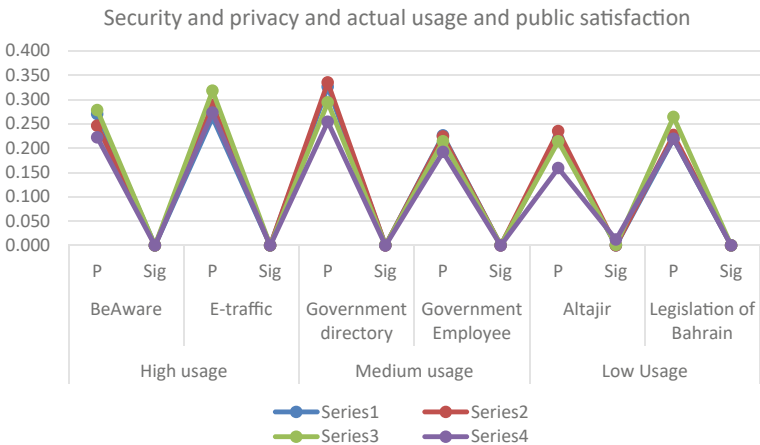

Fig. 5 Relationship between security to actual usage and public satisfaction
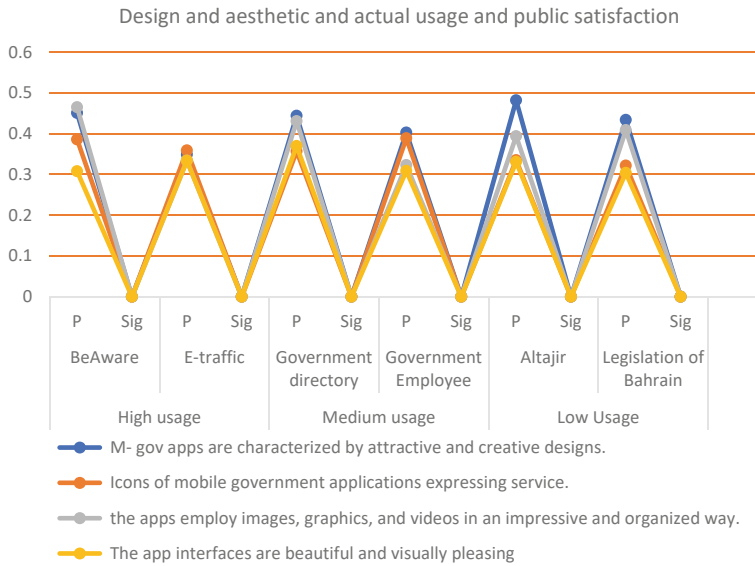
Fig. 6 Relationship between design and aesthetic to actual usage and public satisfaction

H6: Responsiveness and empathy have a positive correlation with actual usage and public satisfaction.

As shown in Fig. 7, there is a positive relationship between all the dimensions of responsiveness and empathy and the usage level of the apps. Furthermore, the correlation coefficient for all the variables is positive, and the *p*-value is also less than the limit of 0.05, proving that the relationships are statistically significant.
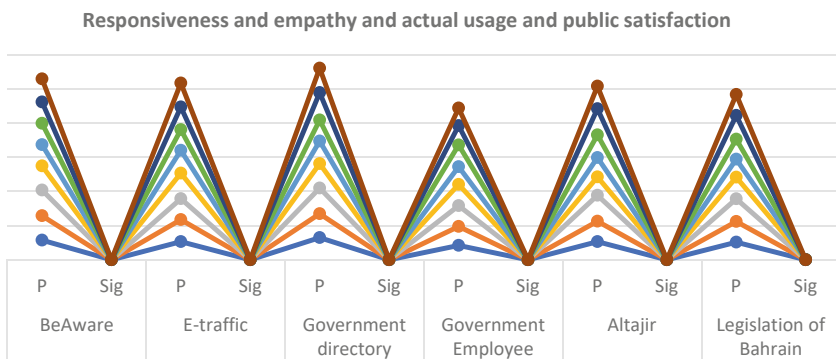

Fig. 7 The relationship between responsiveness and empathy with actual usage

H7: Public satisfaction positively correlates with actual usage.

Public satisfaction is an essential parameter for the actual usage level of an app. The results displayed in Table 3 indicate that most of the dimensions of public satisfaction show a positive relationship with the usage level of the apps, with their p-values lying within the permissible limit of 0.05, showing that the relationship is statistically significant. However, there were exceptions for some of the dimensions of public satisfaction with some of the apps. For example, Bahrain's government employee app and legislation have no significant relationship between the government's ability to provide secure mobile services and its usage level. In addition, it was observed that customers' feedback and evaluation do not have a significant relationship with the apps' usage level. The p-value in both cases is more than 0.05.

11   Conclusion

This study aimed to determine the extent of M-government applications usage in the Kingdom of Bahrain, measure the quality of these applications, and test the relationship between the quality of the M-government applications and the level of actual usage and public satisfaction with mobile government services.

This study proposed a conceptual model with several hypotheses. The study was performed on a random sample of users of these applications, and the sample size was 250. The study concluded with several results, namely:

- The most widely used M-government apps were Benefit pay (82.8%), B4BH.com (40%), E-traffic (33.6%), Sehati (60%), and BeAware (30.80%).
- There was a positive attitude towards the six dimensions of the M-government services provided.
- The level of public satisfaction with M-government apps and services has increased significantly. For example, the respondents' average percentage for the public satisfaction measure in the "strongly agree" category was 41.9%, followed by "agree" at 41.7%. This reflects a high level of general satisfaction among the respondents.
- This study validated the scientific hypotheses of the proposed conceptual model. Furthermore, it was demonstrated that all the dimensions of the conceptual model influence the actual usage level and public satisfaction, as the p-values were within the permissible limit.

12   Recommendations and Future Research

As the sample size impacts the p-value, a future research prospect may include investigating the acceptance or rejection of the hypothesis for a large sample. For future research, the model can be extended to non-government apps.

Table 3 Relationship between public satisfaction and actual usage

Public satisfaction	BeAware		E-traffic		Government directory		Government employee		Altajir		Legislation of Bahrain	
	P	Sig.	P	Sig.	P	Sig.	P	Sig.	P	Sig.	P	Sig.
I am happy with my experience of government M-services through my mobile device	0.265	0.000	0.238	0.000	0.199	0.002	0.212	0.001	0.218	0.001	0.222	0.000
I am generally satisfied with the quality of M-gov apps	0.305	0.000	0.252	0.000	0.277	0.000	0.221	0.000	0.205	0.001	0.265	0.000
M-gov services meet all my needs perfectly	0.350	0.000	0.250	0.000	0.277	0.000	0.168	0.008	0.229	0.000	0.200	0.001
I recommend others to download and try the M-government applications	0.315	0.000	0.269	0.000	0.249	0.000	0.241	0.000	0.213	0.001	0.159	0.012
I will repeat in the future dealing with these applications	0.288	0.000	0.270	0.000	0.244	0.000	0.186	0.003	0.216	0.001	0.190	0.003
I trust the government's ability to provide mobile services in a secure way that guarantees privacy	0.242	0.000	0.223	0.000	0.176	0.005	0.138	0.131	0.132	0.038	0.102	0.106
The applications provide me the ability to give feedback and evaluation about the service quality	0.303	0.000	0.229	0.000	0.270	0.000	0.108	0.087	0.212	0.001	0.146	0.021
The government always strives to provide the best M-services in line with my expectations	0.363	0.000	0.299	0.000	0.254	0.000	0.208	0.001	0.224	0.000	0.157	0.013
The government offers a wide variety of mobile services to facilitate government transactions to the public	0.364	0.000	0.239	0.000	0.244	0.000	0.208	0.002	0.256	0.000	0.194	0.002
The government works efficiently and effectively to achieve the continuous development of mobile services provided to the public	0.332	0.000	0.239	0.000	0.222	0.000	0.166	0.008	0.168	0.008	0.145	0.022

Further research may include studying the establishment of smart cities relating to smart government with the internet of things, smartphone applications, and artificial intelligence in the Arab region.

This study recommends that the Bahrain government considers launching more applications to facilitate transactions for citizens, residents, and visitors in Bahrain. In addition, the study suggests launching educational applications for school and university students in various disciplines under the supervision of the Ministry of Education and the Higher Education Council (HEC).

The importance of employing artificial intelligence techniques and tools in government applications is also highlighted, as well as initiating the use of augmented reality, virtual reality, and extended reality technologies within government institutions to facilitate government services and achieve an interactive user experience.

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Shariah Governance and Audit in the Islamic Banks: A Literature Review

Abdulmajid Obaid Hasan Saleh, Seed Mari M. Alsirhani, and Deden Misbahudin Muayyad

Abstract The implementation of Shariah governance by the Shariah Supervisory Board (SSB) is critical to overseeing and directing the IB's activities and ensuring their integrity, credibility, and transparency. Islamic banks will not be able to operate in accordance with Shariah if they do not follow proper Shariah governance processes. The purpose of this study is to investigate the Sharia governance practices of Islamic banks. Moreover, over 30 years ago, as the Islamic financial industry developed, Shariah testing became an issue. However, it is difficult to obtain reports describing the current state of Shariah research. Therefore, it is important to evaluate studies on Shariah testing. Therefore, the aim of this study was to assess and present the current state of Sharia auditing using an inductive approach. In addition, we analyze relevant previous literature to evaluate and evaluate Shariah governance and auditing in Islamic banking. The findings of this study show that Islamic law auditing and governance have a significant impact on the performance of Islamic banks.

Keywords Shariah governance framework · Shariah supervisory board (SSB) · Shariah audit · Shariah committee · Islamic banks

A. O. H. Saleh (✉)
IIUM, Institute of Islamic Banking and Finance Malaysia, Selangor, Malaysia
e-mail: alamri@iium.edu.my

S. M. M. Alsirhani
King Khalid University, Abha, Saudi Arabia

D. M. Muayyad
Fakultas Ekonomi dan Bisnis, Universitas Trisakti, Jakarta, Indonesia

1 Introduction

Shariah monitoring measures the extent to which the operations of Islamic financial institutions comply with the rules of Islamic law set out in issued fatwas and regulations supported by fatwa authorities, as well as the exercise of openness, accountability, and justice. It focuses on determining whether it has characteristics such as Honesty and independence. The Shariah Supervisory Board and the Shariah Supervisory Bureau are the two main parts of the Shariah Supervisor. Shariah boards are primarily responsible for issuing fatwas and handling theoretical issues. At the same time, the Shariah Monitoring Division is responsible for the practical aspects of Shariah monitoring by overseeing the organization's application of fatwas. Pre-execution, accompaniment, and post-execution are three different Sharia supervision forms.

With the development of Shariah rules encouraging commercial and financial transactions, Shariah supervision in Islamic banking is important to give it a Shariah character. There are many areas of Sharia supervision, including the expression of opinions on investment activities, the incorporation of Islamic law into financial transactions with banks, the application of Sharia law to banking conduct, and the education of people working in the banking industry by organizing conferences and seminars and raising awareness. Scientific research seminars, publication of Sharia surveillance works.

Many previous studies have explored Shariah management from different angles, particularly with regard to the impact of Shariah supervisory boards, audit committees, and Shariah internal audits. This paper focuses on the latest and previous research on Shariah supervision in Islamic banks in general and focuses on the problems of investigating Shariah internal audits in Islamic banks, and the main findings obtained so far and analyze and discuss opinions. What makes this study different from other studies?

The overall objective of this study is to address the challenges of Shariah internal audit practices, in order to assess the efficiency of Islamic banks' operational performance in accordance with Shariah standards, and knowledge of Shariah internal audit practices, to provide better understanding and insight. It will be investigated by Islamic banks. In addition, this study explores existing frameworks for internal Sharia revision practiced in Islamic banking and helps raise public awareness of this issue. This study will also enrich the literature in this area, as limited research has been conducted on this subject, especially in Jordan. It can also provide Sharia supervisors at the bank or national level with new insights into what they should do to address and address challenges in conducting Sharia internal testing.

2 Definition

Shariah supervision is a major pillar that characterizes the work of Islamic institutions and determines the extent to which these institutions adhere to Islamic Shariah provisions and the decisions and fatwas of the Shariah Supervisory Board and these need to be considered by the bank's senior management. Based on a set of Islamic standards issued by the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI).

3 Research Methodology

To achieve the purpose of this study, a qualitative approach is used in this study whereas an inductive approach is used in this study. By estimating the reality of Shariah inspections in Islamic financial institutions, it reaches an accurate assessment of the reality of the Shariah inspection process and provides comprehensive data that can be used to assess the effectiveness of Shariah audits in Islamic financial institutions. To explore the determinants of Shariah audits in Islamic financial institutions and to develop comprehensive data that can be used to assess the effectiveness of Shariah audits in Islamic financial institutions in general, Specifically, it investigates internal Shariah audits.

4 Results

Several publications on the subject have been discovered, based on analysis related to Sharia governance and auditing in Islamic banking. A study by Aram et al. Why a Sharia governance framework is important for Islamic banks. This research seeks to answer the question "Why is the Shariah Governance Framework (SGF) relevant to Islamic banking?" Conducted semi-structured face-to-face interviews with Shariah Governance (SG) officers. Bangladeshi authorities, including the Central Bank and Islamic Bank. Further study by Ayaz et al. [1] Characteristics of Sharia Governance and Cases of Philanthropy: A Case Study of Pakistan. The main purpose of this study is to determine whether Pakistan's Islamic banking Sharia government is active or passive. The study is deductive in nature and uses a quantitative approach using data from financial reports. This is the first study of its kind to investigate the nature of Islamic governance using empirical patterns and the FGLS panel model. Furthermore, Masruki et al. conducted research on Islamic banking governance practices from the perspective of Shariah compliance in Islamic Banking in Malaysia. The main purpose of his research is to study the Sharia governance practices of Islamic banks in Malaysia. The study uses content analysis to determine the extent to which Islamic

banks implement Islamic law governance. The study reviewed the Islamic Financial Institutions Financial Reporting Guidelines 2005 (GP8-i), the Islamic Financial Services Act 2013 (IFSA), the Islamic Law Governance Framework (SGF) 2010, and the SGF Exposure Draft 2017. It also reviews previous studies and regulations.

The same study was performed by Alam et al. [2] on "Sharia Governance Frameworks and Different Groups: An Empirical Survey of Islamic Banks in Bangladesh". The purpose of this study is to explore the shortcomings of the current Sharia Governance Framework (SGF) and the institutions responsible for it in Bangladesh. Based on the responses of 17 respondents, the study found that Bangladesh has knowledgeable, experienced, and skilled It concluded that there was a shortage of Shariah officials. As a result, there is no clear Islamic Banking Law, Shariah Auditing Company, Shariah Indexing Agency, and full SGF in Bangladesh. Furthermore, Yasoa et al. conducted a study on the role of Shariah auditors in Islamic banking: the impact of the 2011 Shariah Governance Framework (SGF). This study explores the duties and responsibilities of Sharia auditors in Islamic banks in Malaysia. Taking this one step further, researchers noted changes in these responsibilities, especially since the introduction of the Shariah Governance Framework (SGF) in 2011. The study adopted a qualitative approach and conducted in-depth interviews with nine leading figures in Islam. Malaysian bank. Hanefah et al. [3] conducted a study on the internal controls, risks, and non-Sharia earnings of Islamic financial institutions. The purpose of this investigation is to clarify his concerns about his SNCI governance and internal controls at his IFI in Malaysia. This study uses a case study methodology to collect data on governance and risk management mechanisms related to the internal controls of his SNCI in IIFS. Employees from the Shariah and Internal Audit departments were interviewed regarding their internal control processes regarding SNCI.

Another study was performed by Zirman et al. Shariah Governance and Its Impact on Islamic Banking Performance. The purpose of this study is to determine the impact of the implementation of the Shariah Governance Agreement on the performance of Riau's Shariah banks. The dependent variables for this study are the financial and non-financial performance of Islamic banks based on the Balanced Scorecard. Shariah governance, including openness, independence, accountability, responsibility, impartiality, and Shariah compliance, are independent variables in this study. Hilmy and Hassan [4] also conducted a study on the Sharia governance structure of Islamic financial institutions in Sri Lanka. The purpose of this study is to investigate Sharia governance practices in Sri Lanka, which has a dual financial system, a conventional financial system, and an Islamic financial system. For 20 years, we have focused specifically on process and structure. The study used a qualitative approach with primary data obtained through interviews and secondary data obtained from research publications, annual reports, official websites, magazines, and newspapers. Rifqi conducted another study on the Sharia governance of Islamic banks. What can we learn from Malaysia? This article focuses on the implementation of Sharia governance procedures by Islamic banks in Malaysia. Malaysia is one of the countries working on developing an Islamic banking governance framework and Sharia governance system. Several issues are discussed in this study. First is the nature of Sharia rule and the function of her DPS members. Second, Malaysia's Sharia governance

framework. Third, Malaysia's Sharia law governance and audit methods. And finally, this study aims to analyze Sharia governance practices of Islamic banks in Malaysia and illustrate some of the characteristics that can be learned from Malaysia.

Another study was conducted by Farag et al. [5] concerning corporate governance in Islamic banks: new insights for dual board structures and agency relationships. The purpose of the research was to explore the impact of the dual board structure on the financial performance of Islamic banks. This research also analyzes unique agency ties between 90 Islamic banks from 13 countries between 2006 and 2014. Ulussever conducted a comparative analysis of corporate governance and bank performance: Islamic banks with conventional banks. This study examines the relationship between the multi-layered corporate governance architecture of Islamic banking and bank performance. For the regression analysis, the random-effect GLS technique was used, and the findings were rigorously examined using the two-step general moment method. Mollah and Zaman also conducted an analysis of Sharia Supervision, Corporate Governance and Performance: Conventional Banks vs Islamic Banks This study focuses on the differences between conventional banks and Islamic banks to investigate the impact of Islamic supervisory boards, board structure, and CEO power on the performance of Islamic banks from 2005 to 2011. According to the study, Islamic supervisory boards have a beneficial influence on the performance of Islamic banks when they have a supervisory function but have little impact when they only have an advisory role. The impact of board structure (both size and independence of the board) and CEO authority (duality between CEO and internally elected CEO) on the performance of Islamic banks is generally unfavorable. The key findings from this study point to the positive impact of Sharia boards and highlight the need for law enforcement and regulatory mechanisms to make Sharia boards more effective. Second, a study by Bourqiah et al. [6] on the impact of the application of corporate governance rules on the performance of Islamic banks: The case of the Gulf countries. The purpose of this study is to clarify the relationship between the characteristics of corporate governance and the financial performance of Islamic banks. Using a sample of Islamic banks in the Arabian Gulf region, this study examines the importance of corporate governance in the banking sector in general and Islamic banks from 2005 to 2012.

Some studies specifically deal with Shariah testing, such as that by Anwarul Islam et al. [7] On the Impact of the Shariah Oversight Board and the Shariah Audit Board on Corporate Social Responsibility in Islamic Banking, in Bangladesh. The purpose of this study was to identify and analyze the impact of the Shariah Supervisory Board (DPS) and the Shariah Audit Commission (SAC) on CSR implementation in Islamic banks in Bangladesh. Handoko and Mardian [8] conducted another study on mapping Islamic accounting knowledge in Sharia exams: a bibliographic analysis. This study attempts to analyze and explain the current state of Islamic auditing using bibliographic methodology. VOS Viewer software was used for bibliographic analysis. To achieve this goal, the Scopus database is searched for terms such as "Sharia Audit", "Sharia Audit", and variants thereof. Next, a study by Alqaraleh [9] on the factors affecting his compliance with AAOIFI Islamic Accounting Standards in Jordan. The purpose of this document is to learn more about the challenges faced

by Islamic Banks of Jordan in complying with his AAOIFI Accounting Standards and to target bank employees of the Fourth Bank of Jordan (employees of the Ministry of Finance) for detailed market It is to address the issue by conducting a survey analyze.

Then, Algabry et al. [10] Conceptual Framework for Effectiveness Factors of Internal Islamic Review in Islamic Banking. The main objective of this study is to identify the most effective variables that play a key role in improving Islamic internal audit performance in Islamic banks. This study surveys the current literature to gain a comprehensive understanding of the key factors that influence the effectiveness of Islamic auditing in Islamic banking. This study builds on previously published research to provide a conceptual framework for the factors that influence the effectiveness of Shariah testing in Islamic banking. A study by Ab Ghani et al. [11] Measuring the Effectiveness of Shariah Internal Audit Functions in Islamic Financial Institutions. This article examines the role of effective internal Shariah revision in the IFIs. His research exhaustively evaluates the growing literature on the importance of his eight factors in determining the effectiveness of the internal Islamic audit function. Islamic Auditing Objectives, Islamic Auditing Scope, Other Audits Performed by Islamic Auditing, Islamic Governance, Islamic Auditing Charter., Internal Audit Islamic Auditor Competence, Islamic Audit Methodology, Requirements Reporting and Independence are its components. Another study was done by Al Samara et al. [12] Impact of External Shariah Audits on the Performance Efficiency of Islamic Banks in Jordan. The purpose of this study was to determine the impact of external Islamic audits on the performance of Islamic banks in Jordan. In this study, SEM was used to analyze data obtained from auditors and employees of an Islamic bank in Jordan. Arwani [13] conducted a study on the issues and challenges of Shariah inspection and compliance with corporate governance in Islamic financial institutions. This research explores the perspectives of practitioners directly or indirectly involved in the compliance/shariah audit process of Islamic Financial Institutions (IFIs) on shariah auditing standards, auditor qualifications, and independence.

Another study was conducted by Al-Rawashdeh [14] on the role of the internal control component in the lending activities of the Islamic Bank of Jordan (Northern Region). The purpose of this study was to determine the functioning of the internal control component in the Treasury activities of the Islamic Bank of Jordan. The study sample consisted of all staff members of the Funding Committee of the Islamic Bank of Jordan (Northern Region) (48) Staff in (2017). The study population was included in the study sample, but due to the absence of certain staff, the study sample was reduced to staff (40 individuals). Descriptive analysis techniques were used in addition to t-tests and basic linear regression analysis to achieve the study objectives. Khalid et al. [15] conducted a study on the role of the Sharia Audit Board on the effectiveness of Sharia internal audit: Evidence from Bahrain. This article examines the role of the Shariah Supervisory Board (SSB) in the effectiveness of internal Shariah review in Islamic Financial Institutions (IFIs) in Bahrain. In this study, he utilized two rounds of data collection and analysis to examine his SSB's functioning on the effectiveness of Islamic internal audits. Literature review and structured interviews with heads of Islamic internal audit departments that are considered relevant within the SSB and Islamic internal audit departments. IIFS. The article concludes

that Islamic institution theory can be used to develop a theoretical basis for the effectiveness of Sharia internal audits. Hypothetically, the effectiveness of internal Shariah revision can be enhanced by SSB, independence, and experience. Due to the DPS's status as the ultimate supervisory authority in the IFIs, the DPS may affect the effectiveness of internal Shariah reviews in the IFIs. From an academic perspective, this is the first study to use the theory of Islamic institutions to investigate the role of the SSB in the effectiveness of domestic Sharia revision in the Bahraini IFI.

Arwani [13] examines the issues and challenges of complying with Shariah scrutiny and corporate governance in Islamic financial institutions. This study examines the perspectives of practitioners directly or indirectly involved in the compliance/shariah audit process of Islamic Financial Institutions (IFIs) on issues such as Shariah auditing standards, auditor qualifications, and independence. An Islamic Financial Institution (LKS) audit is more extensive than an audit of statutory financial statements. The IFI External Auditor not only conducts financial audits but also audits fatwas (religious beliefs) and Shariah compliance as prescribed by the Shariah Supervisory Board (DPS). Alaswad and Stanisic [16] conducted a study on the role of internal audits in the performance of Libyan financial institutions. The purpose of this study is to explore the impact of internal audits on the performance of financial institutions in Libya. Data are collected from 26 financial companies listed on the Libyan Stock Exchange. We treat the four characteristics of internal audit: the size of the audit committee, independence of the audit committee, auditor qualifications, and auditor experience as independent variables, and return on assets (ROA) as the dependent variable. Evaluate the performance of variables in Javer and Nazar Investigate the relationship between Sharia audit committees and external auditors: Evidence from Jordan. The purpose of this study is to explore the transparency of Islamic banking by demonstrating the interaction between Shariah Supervisory Boards (DPS) and External Auditors (EA) in Islamic banking. Researchers used his findings to discover three types of relationships: isolation, step, and overlap. Another study was done by Channar et al. [17] Relationship between Internal Control Effectiveness and Financial Performance. This study is an attempt to investigate the functioning of each of his five elements of internal control, the effectiveness of control systems, and their relationship to financial performance. The sample size for this survey was 210 respondents, comprising employees of his six banks in Hyderabad. In the public sector he is NBP Bank and Bank of Sindh, in the private sector he is MCB and he is HBL, and Islamic banks Mizan Bank and Alfarah Bank.

5   Conclusion

The findings of the study show that Islamic law oversight and governance have a significant impact on the performance of Islamic banks. Furthermore, the results of this study will help external and internal auditors to improve the performance of Islamic banks by enhancing Sharia auditing techniques in the Islamic banking sector. It is worth mentioning that this study explores whether the presence of

SSB and SAC has a significant and positive impact on CSR implementation in Islamic banking branches. Islamic banking branch operations must receive timely and adequate support from the Islamic SSB, and the Islamic Banking Board must ensure the presence of a strong and effective SAC, which plays an important role in CSR efforts can conclude. This facilitates the formulation and development of his CSR plans to ensure improved social and economic well-being.

Recommendation

1. Future researchers may expand the scope of their research to obtain more responses to research questionnaires. In addition, the risk of respondent errors that cannot be included in data analysis must be predicted and eliminated.
2. Future research may compare the best Shari'a governance practices, focusing on Sharia's administrative functions and openness. In addition, such Islamic law governance disclosures should be included in the full annual report.
3. Customers were not included in the data collection process for this study but may be added in future studies. Future studies may also investigate how the results of this study improve the performance and image of IFIs.

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From 'Knowledge is Power' to 'Voluntary Knowledge Sharing is Power': Its Relation with Personality Traits and Motivation for Sustainability (Literature Review)

Alya Alyusuf

Abstract In the global economic environment, Knowledge Sharing Behavior (KSB) is prosperous in Higher Educational Institutions (HEIs). Universities play a role in disseminating knowledge and knowledgeable graduates for society. They face knowledge-based competition, thus, the dissemination of produced and renewed knowledge among academicians is essential. Yet, insufficient efforts were noted among academics in the context of HEIs. Knowledge management (KM) thrives to establish effective and efficient strategies to enhance KSB, however, employees hesitate to share their knowledge. To face this challenge, studies tackled a variety of motivations—intrinsic and extrinsic, that foster KSB in different organizational contexts. The literature showed that when informally volunteering (in the workplace), employees prioritize their time and tasks to share knowledge for the common good. High-valued (for others' interests) motivation as opposed to low-valued (for self-interests) motivation, is essential for academics as knowledge workers. As such, KSB is considered a social or voluntary activity. An argument in the literature questions why individuals respond differently to KSB and its motivational forces. Noteworthy, there is a consensus among most studies that individual factors are the most influencing contributors to KSB, compared with managerial and technological factors. Personality Traits are considered prerequisites for predicting KSB, and voluntary behaviour as well. In this sense, the literature showed inconclusive and questionable results in examining the effect of personality traits on KSB under the influence of different motivational factors. This could be because personality traits interact differently with motivational forces in disparate contexts. This complex interaction developed the need for more empirical evidence. Another reason could be, the complexity of the interaction of individuals' personality traits with KSB as a construct with two forms, voluntary (up to their will), and solicited (up to others' request), where each has different characteristics. There is a need for HEIs in Bahrain to embrace VKSB among academicians. Therefore, there is a need to study academicians' personality traits'

A. Alyusuf (✉)
Ahlia University, Manama, Bahrain
e-mail: Aliaa9999@yahoo.com

effect on VKSB. That is, to maintain the Knowledge of Key Performance Indicators (KPIs) and Standards of Bahrain's HEIs, through personality-based strategies. This is aligned with Bahrain's ten-year plan objectives-Vision 2030, to position Bahrain as the regional hub for HE. Simultaneously, the vision addresses the Sustainable Development Goals 2030 (SDGs).

Keywords Voluntary knowledge sharing behavior · Personality traits · Motivation

1 Introduction

Since the early 2000s, the field of knowledge management has sustained the attention of scholars interested in the realm of Human Resource Development. One of the human resource practices is knowledge management (KM). The main asset and valuable resource of organizations, particularly knowledge-intensive organizations, such as higher educational institutions (HEIs). In the Knowledge Management (KM) field, the aim is to keep Knowledge Sharing (KS) central to the process due to its effectiveness as stressed by Tangaraja et al. [1], making KS an organizational norm [2]. In a turbulent environment, knowledge management needs to manage knowledge properly to gain and sustain a competitive advantage. For organizations to sustain competitive advantage in an environment of complexity and increased turbulence, they need to realize that managing knowledge for sustainability will not be achieved by what they own, but through what they know [3]. One of the main challenges in a knowledge-based institution is managing knowledge sharing among employees. Where employees consider knowledge as their power and thus, hesitate to share their gained knowledge, skills, and experience. KM has to create a shift in the employees' paradigm from considering KS as an exception, viewing it as the norm among colleagues [4]. A shift should also take place from knowledge being the power, to gaining power through the act of KS [4]. KS has a unique case where its use causes its increment [5], as the success of KS occurs when knowledge is recreated [6]. However, according to Akhavan et al. [7], individuals hesitate to share their knowledge or tend to hoard knowledge [4, 6] and prevent it from being shared and sometimes only share parts of what they know as a general practice [4].

Employees' knowledge, and practical experience are embodied in their minds, skills, and collaborative interaction, known as tacit knowledge [3, 8]. Knowledge-intensive firms, put great effort into maintaining knowledge as an asset through knowledge sharing to transfer it from the minds of individuals to the organization's memory, assets and resources, as their ultimate goal [1, 4, 9]. It is difficult to articulate or imitate, where learning by watching and doing is the way to share the tacit knowledge [3]. From this critical process, organizations can establish their foundation for competitive advantage [3]. For organizations to transfer knowledge from employees' minds to the organization's memory to renew and sustain knowledge, many strategies were adopted to encourage KSB. As such, organizations realized the importance of KSB and invested in KM systems. Considering that KS has the

potential to build on others' experience for improving job performance [4, 10, 11], and increases sales growth and revenue, helps in projects development in less time and cost, and enhances innovation [11]. However, many KM strategies have failed to achieve the desired goal. Therefore, the topic of KSB has attracted scholars who have studied the enablers, barriers and motivational factors as antecedents and predictors for KSB. Practitioners and managers still doubt whether adopted initiatives are enough to understand KSB [1, 9] for the poor understanding of antecedents. Based on the previous argument, and the need to understand VKSB in terms of its antecedents, represented in the individuals' PTs, this study will shed light on the importance of the five personality traits in the behavior of sharing knowledge among academicians in HEIs. Referring to the Big-five Personality Traits, Theory of Five Factors. According to the Personality Theory of Norman's (1963), the five PTs are Openness to Experience, Conscientiousness, Extroversion, Agreeableness, and Neuroticism (opposite to Emotional Stability). This study will participate in more understanding managing knowledge for sustainability. Higher Education Institutions need to consider academicians' personality traits for sustaining KSB.

2 Knowledge Sharing Behavior

Human Resource Management (HRM) did not consider the importance of KS until the year 2000 when they realized that knowledge is the building block of the organization. Since then, KS and KM have grasped the attention of scholars and have become the focal field area [12]. The fundamental process of KM is KS, without its function, employees will not be able to access and use knowledge [12, 13]. The literature review of Akosile and Olatokun [13] asserted that the definition of KS differs according to the perspective of the scholars and academic interpretation. Defined by Cabrera et al. [14], "Knowledge sharing is a complex behavior that is affected by a variety of psychological and organizational factors, and it is only by appropriately managing those factors that knowledge will actually flow through the organization" (p. 261).

KS is defined as "the knowledge that a firm or several firms can acquire, transfer, and incorporate via inter-firm cooperation and networks" [15], p. 5. Expressed by Muñoz-Pascual et al. [15], as the exchange of knowledge and part of intellectual capital that supports firms to be competitive in the globalized economies. Moreover, KS helps firms to single out non-ethical behaviors, considering kno Nonaka and Krogh who declared that KS is the "exchange of experiences, facts, knowledge and skills all through the organization" (p. 3). In order to generate new knowledge, knowledge, data and information need to be efficiently shared by the process of discussion, which expresses the definition of knowledge sharing [16]. Without sharing, knowledge will corrode [12].

KS takes place on two levels, the individual's level and the organization's level such as groups, teams or divisions [17]. Organizations need to constantly contribute to KS with all partners to sustain knowledge-based resources and to gain sustainable

competitiveness and growth [15]. Organizations expect that the transfer of knowledge is implemented to its maximum to create value that will reflect on the organization's performance. However, the challenge facing KM is facilitating the flow of knowledge to gain maximum value [18]. Therefore, for KS to be in process, individuals need intrinsic motivation, as KS is a labor-intensive transaction. When people support others in building their capacities or new skills in the workplace with interest, it is said that they are practicing knowledge sharing. Consequently, the integrity of both parties and well-being takes place [19]. Facilitating different ways of communication will result in achieving best practices [18]. Recently, scholars highlighted some issues regarding KS. For example, consistency of KS is one of the major issues for HR managers [13, 20], as KM initiatives adopted by most of the universities in developing countries are inconsistent [21]. Revealing that, for the existence of universities as academicians, and the demand of intellectual competencies, continuous KS should exist [21]. Moreover, Shahid and Naveed found that for the sustainability of universities' competitive advantage and upgrading their ranking, voluntary and active KS are the most important.

Knowledge Sharing Behavior (KSB) as a core process for Knowledge Management (KM) is an individual's decision, and academics need to be motivated to share their knowledge and transfer it to the organization's memory [9]. Yet not all individuals are motivated similarly and for the same purpose [11]. Knowledge Sharing (KS) is a voluntary action between individuals, as defined by Davenport and Prusak. It is known by Law and Ngai, cited in Feiz et al. [9], "as voluntary spreading of obtained skills and experiences to others, that enhances competencies and innovation, for competitive advantage stability, and reduces unreliability risks" (p. 4). The main motivational force is possessed by individuals' own decisions and willingness [4, 22–25], whereas any other motivational forces are considered as complementary [4].

It is a challenge to encourage individuals to share their knowledge voluntarily, without being imposed upon or forced [4, 26, 27]. Practitioners and managers still doubt whether adopted initiatives are enough in understanding KSB [1, 9] for the poor understanding of antecedents. Therefore, it is noteworthy to state that, an important factor that can potentially cause Knowledge Management Systems (KMSs) to fail, is the lack of understanding of individual characteristics [11].

HEIs in the Arabian Gulf have boomed in terms of KS [28]. However, according to the literature, KS is still limited in some developing countries [22, 29, 30], such as the Middle East. In specific, the determinant factors of KSB [24, 31]. In developing countries, motivation is still needed to encourage KSB among academics in HEIs [24].

3 Behavioral Types of Knowledge Sharing

An individual's behavior plays a vital role in KS through means of social interaction, both internal and external. As KS occurs depending on the behavior, the desire and the aim to benefit the organization [15]. Feiz et al. [9] made clear that knowledge donating (KD) and knowledge collecting (KC) are active main components of KSB, elaborating that KD is an individual's inclination to share and own intellectual capital with others, i.e., share what they know. On the other hand, KC is when individuals refer to their colleagues to learn from their knowledge and hence build their intellectual capital. Other behavioral types of KS expressed by Teng and Song [27] are 'voluntary' and 'solicited'. They expressed that VKSB is acted upon without being solicited (being requested by others) while the solicited type of KSB occurs in response to others' requests. Teng and Song [27] referred to Davenport and Prusak who argued that KS is a voluntary act in its nature, meaning that once individuals share their knowledge with others consciously without any pressure, it reflects sharing voluntarily [26, 27]. Despite the importance of KS in KM processes, researchers in their studies still consider KS in its simplistic form, as one concept, without considering its two facets—voluntary and solicited [27]. Samadi [32] considered KSB with the view of quality and quantity. Quantity measures are based on getting a sufficient amount of information whereas quality is based on whether it is secured on time, useful and relevant, enough and complete for the need of others. In the same vein, [33] showed that it is highly important to consider the quality of knowledge being shared for its reliability. Sun et al. [34] used the words voluntary and discretionary towards information sharing, i.e., "information provided on a voluntary basis" [35], p. 1. Referring to the donating and collecting types of KSB, many studies have examined KSB as a uni-dimensional construct [13, 23, 24, 32, 36]. On the other hand, other studies [9, 16, 17, 37], have considered KSB as a bi-dimensional construct—two dimensions, and have distinguished between KD and KC behavior.

As shown in Table 1, uni-dimension is expressed for studying KSB as one dimension, and bi-dimension is expressed for studying KSB as two dimensions, KD and KC. The following section will discuss studies that consider different types of KSB. Firstly, KD and KC behavior and secondly, voluntary and solicited KSB.

3.1 Knowledge Donating and Knowledge Collecting

Defined by Nordin et al. [16], KS behavior is expressed by donating and collecting knowledge in a mutual way among people. It was noted by Wang and Hou [38] that researchers should distinguish between both types of KSB. Naeem et al. [36] insisted that scholars should consider the nature of KSB as a bi-dimensional construct, which means knowledge donating (KD) and knowledge collecting (KC). However, they considered the nature of KSB as a uni-dimensional construct in their study. He and Wei [37] considered two perspectives in their study, 'knowledge contribution' and

Table 1 Studies show Uni-dimension and Bi-dimensions KSB

Definitions of behavioral types of KSB	Behavioral types of KSB uni-dimension/ bi-dimensions	References
KD: The inclination to 'share intellectual capital' and 'conduct it with others', i.e., 'share what they know' KC: to obtain intellectual capital from colleagues, i.e. 'learn what they know'	Bi-dimension K Donating and K Collecting	Feiz et al. [9]
K Contribution: Codifying K in the databases for others' use K Seeking: the use of K generated from others	Bi-dimension K Contribution and K Seeking	He and Wei [37]
Exchange knowledge mutually by "donating" and "collecting" knowledge. Also, "contributing K voluntarily"	Bi-dimension K Donating and K Collecting	Nordin et al. [16]
KD: "willing to share personal intellectual capital to others" (p 467) KC: "willingness of consulting colleagues to accept this intellectual capital" (p 467)	Bi-dimension K Donating and K Collecting	Lee et al. [17]
"Individuals willingly exchange and discuss their knowledge (implicit and explicit) about the products or procedures and mutually create new knowledge" (p 500)	Uni-dimensional nature of KSB construct i.e. without separating KC and KD	Naeem et al. [36]
Communicating K within formal/informal groups to apply K for the organization's performance	Uni-dimension KSB	Samadi [32]
Not often made this important distinction DK and CK	Bi-dimension. Distinguish processes of KS (donating and collecting)	Hooff and Weenen
Exchange of K, experience and skills in an interactive culture in the organization	Uni-dimension KSB	Akosile and Olatokun
Employees' exchange or dissemination of experiences, ideas or data (explicit/tacit)	Uni-dimension KSB	Al-Kurdi et al.
People share ideas, views to produce new concept	Uni-dimension KSB	Haque et al. [24]
Sharing K is the natural way to increase K value	Uni-dimension KSB	Annansingh et al. [23]
Individual level: "KS is talking to colleagues to help them get something done better" (p. 316) Org. level: to make K available by reusing and transferring K	Bi-dimension (donating and collecting)	Lin

'knowledge seeking' to validate KMS continuance models. The authors synthesized the individual's continuous intention (based on belief and attitude) and the organization's facilitators to predict continued KSB. In different contexts, individuals react differently depending on their behavioral intention which is affected by the role they play in the organization. Their study showed that individuals either contribute knowledge or seek knowledge. The factors that enhance KS are management support and the feeling of enjoyment behind helping others. Individuals did not contribute knowledge for the reasons of building an image or getting rewards and reciprocity. In the case of seeking knowledge, individuals utilize their relationship, putting effort into the behavior, but they are not motivated by the knowledge growth, support and rewards [37].

Another view worth attention is to study the effect of knowledge collecting and knowledge donating separately to understand their effects on individuals, besides understanding the antecedents of each behavior. This is reflected in the study of Feiz et al. [9] who showed that KSB, with both dimensions (collecting and donating) have a positive effect on the psychological empowerment of academics at Semnan University. A study by Lee et al. [17] examined the impact of KS on the implementation of a software process improvement (SPI). In their study, they examined KSB in both dimensions, knowledge donating (KD) and knowledge collecting (KC). Their study resulted in practical implications for top management to consider both KD and KC. This implication is to encourage effective KSB towards software success, as each dimension has its encouraging factors. To this concern, Hooff and Weenen stressed that KS has two different processes, KD and KC, that should be considered in the studies of KSB. Similarly, for Lin, a quantitative study based on a research model with collective individual, organizational and technology variables have been examined as factors affecting KSB (KD and KC). They studied 50 organizations in Taiwan and examined the factors influencing KS processes for innovation. Lin found that employees' KD and KC enabled the firm to upgrade their innovation capability. They further recommended studying how personal traits affect KSB.

The study of He and Wei [37] differentiates between knowledge seeking and knowledge contributing as each has its specification. Knowledge contribution needs resources and facilitators to achieve continuance more than KS. The facilitators have less effect on KS as individuals who need to seek information are affected by their intention. Management facilitation affects the knowledge contribution rather than knowledge seeking. Individual factors that influence knowledge seekers for continuous behavior, are reflected in system utilization and the involvement of seeking efforts. Yet knowledge growth or organizational support and rewards are not considered as factors influencing knowledge seekers for continuous behavior [37]. He and Wei [37] findings are not in line with other studies in the literature such as Naeem et al. [36] and Tan and Noor [39] who studied KSB as one dimension. As such, the effect of management facilitation will be seen on KSB as one perspective [37]. Some researchers such as Aklamanu et al. have studied KSB with the view of knowledge collection only. Their study considered the factors that influence employees to collect knowledge from others. The focus was on how HRM practices and social capital factors foster KS in the post-merger and acquisition integration. That is through three

factors: employees' abilities to share knowledge, opportunities for employees to practice; and motivation. That, in turn, will enhance employees' knowledge collecting behavior. The result showed the importance of considering both dimensions (KD and KC when testing employees' KSB).

3.2 Voluntary and Solicited Knowledge Sharing Behavior

KSB is considered to be a set of behaviors such as exchanging experiences, ideas, and information between individuals; KSB can also be known by helping each other [9, 40]. Likewise, KS is "transferring knowledge obtained in an organization with colleagues, voluntarily and under free will" [9], p. 7. To this concern, defined by Feiz et al. [9], p. 7, "Knowledge sharing is voluntary sharing of skills and experiences with others". Similarly, Nordin et al. [16] stated that when members contribute their knowledge voluntarily towards organizational memory, it is then known as KS. Al-Kurdi et al. [41], adopted the definition of KS from Davenport and Prusak and defined it as "a behavioral and voluntary activity related to knowledge donors and recipients". In the exploratory research of Cabrera et al. [14] in the services industry and IT, their study aimed to investigate the determinants of KS. They found that the majority of factors that challenge KMS and inhibit KS was individual factors (i.e., related to people), rather than sophisticated technological ones. Individual factors are illustrated as lack of communication, understanding of benefits, time, training and lack of inconsistency with their jobs. Cabrera et al. [14] argued that once rewards encourage employees to seek training and development voluntarily, they might be motivated by rewards for seeking knowledge sharing voluntarily. As such, their study intended to investigate voluntary knowledge seeking. Similarly, Kalman [35] found that some psychological factors such as commitment, self-efficacy and perceived instrumentality may have an impact on individuals to voluntarily share their knowledge. Cabrera et al. [14] planned to expand on Kalman [35] findings by investigating the effect of psychological and organizational factors on KS, considering VKSB.

To develop this argument further, [27] claimed that [14] did not examine the effect of influencing factors on voluntary KS. Hence, [27] adopted a voluntary knowledge sharing view. They revealed a unique role that has been rarely considered in the KM literature. Teng and Song [27] commented that "KS has been commonly regarded as a singular concept" (p. 114), however, it has two forms that differ in their characteristics. Teng and Song [27] study is the first to investigate KS as two different forms, voluntary and solicited, based on Social Exchange Theory [42] and the organizational change framework. Teng and Song [27] claimed that the effect of KS antecedents will not be fully understood unless the form of sharing is determined, either solicited sharing or voluntary sharing. Asrar-ul-Haq and Anwar [12] conducted a meta-analysis on 64 articles relating to KS antecedents and barriers. Their meta-review found that [27] research is the only study out of 64 that considered voluntary KS. Their study adopted the definition of voluntary KS as 'sending and receiving of knowledge without any prior solicitation' and solicited KS as the

'sending and receiving of requests for knowledge' (p. 105). The results shows that there are scarce of studies that consider the behavior of sharing knowledge, either voluntary or solicited. That in turn will affect the accuracy of the studies' results.

4 Knowledge Sharing Behavior and Motivation

The literature showed many motivational factors that vary between intrinsic and extrinsic motivation [43, 44]. Yet is not clear enough, despite that intrinsic motivation has shown better results in motivating KSB [20]. The motivational factors that foster KSB, are under three categories, organizational, technological, and individual factors, where the individual factor showed the most driving force of motivation [7], particularly in universities [24]. Organizations offer a variety of motivators to enhance employees' Intrinsic Motivation (IM) for KSB, as employees with IM are more curious about learning and risk-taking to achieve growth [45]. During work engagement, IM stems from the person's values, personal interests, or feelings of enjoyment [45, 46]. Confirmed by Wang who stated that, "individuals view some behaviors as socially desirable based on their values" (p. 873). Therefore, knowing an individual's Personality Traits (PTs) is of great importance for KM to achieve their goal in predicting KSB [11]. McCrae and Costa [47] defined PTs as "descriptions of people in terms of relatively stable patterns of behavior, thoughts, and emotions", cited in Parks-Leduc et al. [48], p. 3.

The condition of sharing knowledge voluntarily is similar to other volunteering activities, in that it is upon an individual's decision [49–51]. To voluntarily share knowledge, individuals need a motivational force. However, not all people are motivated similarly and for the same activity [52]. In other words, individuals vary in their IM towards the same activity [7], for possessing different PTs [52]. Therefore, it is important to understand the effect of their PTs, as the main motivational force [4, 22–25], on their decision to be voluntarily engaged in an activity, and to understand the role of their intrinsic motivational force, as a complementary force to volunteer [4]. In other words, it is insufficient to predict individuals' voluntary behavior depending on the motivational force, without considering their PTs.

5 Knowledge Sharing Behavior and Personality Traits

There is a poor understanding of the factors that encourage or discourage Knowledge Sharing Behavior (KSB). Scholars lack sufficient understanding of antecedents that enhance or inhibit KSB. Although there are many factors—organizational and technological, that facilitate, influence, and promote KSB, PTs as individual factors play a vital role as a driving force for KSB. As stated by Alan Webber, "In the end, the location of the new economy is not in the technology, be it the microchip or the global telecommunications network. It is in the human mind". Personality traits as

individual factors play a major role in encouraging or inhibiting KS; for example, openness to change in the Arabian context is considered to be one of the facilitating factors for KS [12].

5.1 Individual/Psychological Factors

Individual factors are known as psychological factors expressed by 'psychological ownership' that play a role in hoarding the knowledge they possess. Individuals believe that they have the right not to share their knowledge. Those who have the willingness to share their knowledge look at psychological ownership positively; they consider the benefits gained out of KS "centered to the expert person" [12], p. 10. On the other hand, unwillingness hinders KSB, as knowledge settles in the mind specifically in university settings, for being "knowledge-centric organizations" [22], p. 97. In line with [18], knowledge is personalized which makes it challenging to share.

Wahyuni referred to Constant et al. who confirmed that individuals are the ones who possess the information not the organization. In the same Vien, Lam agreed with Davenport and Prosak that individuals store the experience and knowledge gained in their minds and groups as collective minds store the collective knowledge in rules and procedures. Eagerness or willingness to share are the factors that have recently attracted the attention of researchers. In knowledge-intensive firms, [4] stated that the main force to share knowledge is the individual's willingness, whereas the complementary force is represented in the intrinsic and extrinsic motivational factors. Individuals' desire to participate in the KS processes and share their knowledge with others is a major requirement for mutual benefit [15]. To get the optimal use of knowledge, individuals or groups who possess knowledge should express knowledge clearly and understand and interpret knowledge to be useful for others [18]. This is supported by Xue et al. [53] who stated that organizations can not contribute knowledge without the willingness and the use of employees. Overall, KS depends on the individual's effort, for its nature of being sticky to individuals [38]. The characteristics of the sharer are one of the major factors that enable or hinder KS [12].

In the view of Anwar [54], "Managers should understand that success cannot be achieved without creating a knowledge-sharing environment" (p. 110). Anwar [54] tested the relationship between PTs and KSB and the role of affective states (emotions as psychological dimensions) in the workplace. The findings revealed that openness to experience, conscientiousness, extraversion and agreeableness positively affected KSB, whereas neuroticism showed negative results in predicting KSB. Some narrow PTs such as creative self-efficacy and proactive personality have shown positive relationships with KSB prediction [54]. In addition, both affects (emotions), positive and negative, play a positive mediating role in the relation between PTs and KSB. Anwar [54] recommended that employees with supportive PTs are more suitable for

KS and training in the workplace. He asserted that once managers and staff are aware of people's personality types, many conflicts in the workplace will be resolved [54].

5.2 PTs and individual's Behavior

Different results have been found regarding the effect of PTs on individual behavior. For example, in Giluk and Postlethwaite [55] study, both conscientiousness and agreeableness showed the strongest negative effect on students' unethical behavior (cheating and others). This result is in accordance with the research of Anwar [54] in the effect of conscientiousness and agreeableness on knowledge sharing behavior, showing that even though both contexts are different, the PT has a similar effect on individuals' behavior such as sharing their knowledge and being against unethical behavior. Whereas the study of Pei-Lee et al. showed that university students with high neuroticism showed a positive effect on online KSB. This finding contradicts [54] research, in which, he reported that neuroticism showed a negative effect on employees' KSB. This reflects that on some occasions, the same traits may show different results in different settings. However, both studies share the same results regarding extraverted individuals, as both studies showed that extraversion has a positive effect on KSB. As seen in Table 2, PTs react differently in different contexts and in different means of KSB.

Recent studies [56] asserted to consider the most influencing factor of personality traits, that is related to altruism to influence KS. Almuqrin and Mutambik [57], showed that the donating form of KSB is affected by altruism. Elaborated by Thielmann et al., that the interaction of interdependent situations with the related personality trait affects prosocial behavior. That is to expand the understanding of the role of personality traits in shaping the human pro-sociality of individuals. The importance and the need for more investigation of the effect of PTs on KSB is still recommended by scholars [58]. In conclusion, there is a convergence among studies regarding the salient importance of individual factors in the stimulation or inhibition of KS.

6 Knowledge Sharing Behavior in Higher Educational Institutions

In the context of Higher Education Institutions (HEIs), universities as knowledge-intensive institutions [59] or "knowledge-centric organizations" [22], consider KM as their main aim to gain competitive advantage [59]. Where knowledge is produced, managed and disseminated to students, harnessed for the benefit of students and society [59]. HEIs are known for their close relations with all layers of society and link organizations together, as such, KS is a key factor for their success [9].

Table 2 The PT effect on KSB in a different context

Literature examples	Context	Themes	Categories
Pei et al.	**Malaysia University** students/online KSB	**Online** activities on Malaysian university students' attitude for **KS** are **positively** affected by neuroticism	Neuroticism
	Openness was found to have an **opposite** result with students' attitude towards online KS	Openness	
	For **extroverts** being emotionally positive and effective. They are most likely to incline to team satisfaction and might **contribute to KS**	Extroverts	
	Online activities on Malaysian university students' attitude for KS are **positively** affected by extraversion	Extraversion	
Rahman et al.	Testing PT on tacit KSB among academics in **HEIs** in **Bangladesh**	Showed that Big-five personality traits have a successful effect on tacit **knowledge** sharing behavior (TKSB) among academics in HEIs by online social network; **Conscientiousness** proved insignificant results in relation with knowledge sharing behavior	Conscientiousness
Deng et al.	Testing the effect of PT and Trust on Information sharing for **Chinese youth** on **social media**	Adopted two dimensions from Big-five PT, to investigate the impact of personality traits, **agreeableness and conscientiousness**, on **information**-**sharing** behavior in social media, mediated by trust. Results: **Conscientiousness** showed a **direct** significant impact on information-sharing behavior. **Agreeableness** showed an **indirect** effect mediated by trust	Agreeableness and conscientiousness
Lotfi et al.	The influence of PT on KSB on **academics** in public **universities in Malaysia**	Showed significant results on KS openness showed the more influencing factor	Conscientiousness, extraversion and openness

Table 2 (continued)

Literature examples	Context	Themes	Categories
Agreeableness is not Statistically significant **Neuroticism** showed a negative effect		Neuroticism and agreeableness	
A study done on **engineers** in different areas such as electrical, civil and mechanical, the **results** showed that the traits influenced **KSB** are **openness, agreeableness and conscientiousness**		Openness, agreeableness and conscientiousness	

With the rapid growth of KM research, KS among academics is considered strongly in universities, as academics are intellectual leaders in producing knowledge for the sake of society's development [24]. Simultaneously, KS is the cornerstone for KM to achieve the goal of sustainable competitiveness [1, 59]. Most importantly, HEIs are shifting from Elite Higher Education to Mass Higher Education, aiming to be positioned as Educational Hubs [60]. Therefore, HEIs need to prioritize KS, to enhance their power, compete globally, and overcome the challenges of upgrading their standards [60].

Although academics are knowledge workers, for being engaged in activities related to knowledge creation and dissemination through teaching and researching, HEIs are still facing knowledge hoarding among academics, and their reluctant behavior towards KS, causing a dilemma to universities. Academics as intellectual leaders should share knowledge to gain effective KM. However, academics still resist KS and are concerned about their well-being rather than striving to achieve HEIs' goals towards society. Therefore, KS management is an emerging area in the academic field. Facing the fact that, academics cannot be forced to share their knowledge; instead, organizations need to foster KSB with the support of motivators as influencing factors. Specifically, that academics hoard knowledge rather than share [23]. Although this is the case in various settings, the context of HEIs faces the challenge in a more critical manner. Due to the scarce research regarding KSB in terms of knowledge dissemination in HEIs, researchers made a call for greater studies to understand the factors that influence academics' willingness to share knowledge. Individuals are differently motivated for their different personality traits [52]. From this challenge stems the need to study employees' PTs to help in predicting sustainable voluntary behavior.

The findings of Al-Kurdi et al. revealed that the value of collaboration and helping colleagues should be consistently encouraged which, in turn, will reflect on encouraging academics' KSB internally and externally. Al-Kurdi et al. also recommended studying PTs as an individual factor that will affect KSB.

6.1   Knowledge Sharing in HEIs Context

Effective knowledge management (KM) is important for HEIs to improve their processes such as teaching and learning, curriculum improvement and research, administration, and planning. Changing to a knowledge society is a trend of organizations that is being followed by HE for universities to be distinguished from others. Such a trend stems from the need to develop KS methods [23]. Although sharing knowledge is important for all organizations, it is essential for HEIs as knowledge is deep-seated in the universities [25]. "Sharing knowledge is the main reason of universities' existence". The role of universities is to continuously be the source of disseminating knowledge and knowledgeable graduates to serve and improve society [60].

The unique process in KM is the sharing process more than the storing process, as sharing is newly adopted by organizations, specifically in HEIs, where academics are utilizing and generating knowledge in their community [25]. KS in universities is considered the biggest issue in the KM field, however, more than 8% of the KM projects, to enhance KSB, had failed [24]. The KM research is growing to enhance the organization's understanding of managing knowledge as an important factor for their innovation and success [24]. One of the reasons for failure is in understanding the conflict between considering knowledge as the power to gain competitive advantage leading to hoarding, or dealing with knowledge as the power when disseminated for a necessity [25]. For example, in Malaysia, to support HEIs to be excellent centers for HE and to position their universities at the international level, KM is a prerequisite of great importance [16]. Since the utility of KM is for knowledge creation, sharing, and usage, [9] used the process of knowledge usage to empower faculty members. Showing that KS has a significant effect on organizational memory that, in turn, has a positive effect on academics' empowerment. Universities have a unique feature of relationships, they are connected with society layers and play a role in connecting organizations together. This feature keeps KS in a highly important position as a key factor for the success of universities [9]. Annansingh et al. [23] referred to Alvesson who offered characteristics for HEIs to be classified as knowledge intensive institutions, such as significant problem solving, creative environment, independence and heavy reliance on individuals, professionals, and knowledge workers who hold critical information [23]. In the same line, Hoq and Akter showed that universities play an important role in creating a collaborative environment among faculties to ease the process of KS and offer the authority to encourage KM initiatives and be part of the development of KM processes. Haque et al. [24] insist that universities should consider knowledge as a weapon and adopt KM strategies to recommend KS in their institutions.

Regarding the influencing factors for KS in HEIs, [24] found that there is insufficient research on KS determinant factors related to individuals, organizations and technologies in developing countries. Al-Kurdi et al. supports this as they discovered that developing countries such as the Middle East, Africa and South America lack sufficient research on KM in HEIs. The study by Ali et al. illustrated reasons behind

the lack of research on KM and KS in HEI opposed to the business sector. One reason is that not all universities recognize the benefit of KM. As a result, universities will not give enough attention to establishing suitable systems and policies which affect the willingness of a faculty to participate in KS activities. Nevertheless, academics have a loyalty to their departments more than to the university itself. In developing countries, there is limited research that has targeted universities regarding the effect of individual, organizational and technological factors as determinants of KSB [25, 33, 37]. In addition to the factors that affect the intention to share knowledge, it has been argued that sophisticated technological factors are not a priority in front of the personal factors that strongly affect the KSB [24]. Scholars argued that insufficient studies are targeting KS among academics in HEIs despite its recognition in a variety of organizations [41]. KS among faculties in HEIs attracted the attention of researchers, however, few studies are actually tackling KS issues in HEIs [9]. As shown by Bibi and Ali [33], for the success of HEIs, knowledge gaps need to be resolved by a leading and thinking approach and a healthy knowledge environment needs to be developed. These recommendations were built on Naser et al. [59] research that encouraged finding knowledge gaps.

These studies all drive to a conclusion that universities in developed countries are moving towards promoting KS, and face the challenge of high-risk competition to secure the sustainability of KS [23]. Whereas in Malaysia and India, researchers are still in the phase of examining the factors that encourage or inhibit KS specifically the individual factors that concern the willingness and decision to share knowledge [22, 24, 25]. KS is insufficient particularly in the academic context [22], therefore, voluntary KS is vital and necessary [32]. Bahrain is one of the countries that was mentioned in a study by Ghasemy et al. [60], who recommended studying the work values of universities, as Bahrain is planning to position itself as an educational hub in the region.

7 Conclusion

The HRM literature sheds light on KSB and its influencing factors for the lack of a clear empirical and theoretical framework. The heterogeneous theoretical background is still under debate. Despite the evidence provided by the literature regarding the importance of KS for the well-being of society, the literature shows a lack of research on KS among academics in HEIs. The main aim of this paper is to discuss the challenges of KSB in the educational sector, specifically in HEIs as knowledge-intensive firms. Likewise, challenges of KSB for the society's development need to be addressed. Thus, in addition to focusing on PTs as barrier or enabler for KSB, the idea of 'possessing knowledge is power' need to be shifted to 'sharing knowledge is more powerful'.

The introduction of vision 2030, opens the way to HEIs to compete in the market with knowledge dissemination. HEIs must embrace and acquaint themselves with new recruitment and training strategies, based on examining the academicians'

personality traits, for a sustainable KSB, such as Voluntary KSB. The requirements of high-quality standards universities, led countries to position themselves as educational hubs. Governments must intensify their efforts and increase investment in motivational strategies for voluntary KSB. In this regard, strengthening the recruitment strategies and studying training needs assessments, based on personality traits, is vital important to support academics towards voluntary KSB. Moreover, rethink of new approaches to build academicians personality traits to motivate individuals to promote KSB.

Based on the literature review in light of sustained KSB, this piece of work is to position the VKSB phenomenon firmly in the academic literature. Filling the prementioned gap, the results will provide insights into the challenges facing HE sectors and will enhance managers' strategies in the areas of KM and HR, adopting personality traits in mapping personality-based strategies. Nevertheless, the adopted constructs are within the global issues that Bahrain should consider in the contexts of higher education, as motivation for sharing knowledge voluntarily are some of the priorities for universities. Overall, the studies of the relationship between academics' personality traits and KSB are still limited and developing. Specifically, the fragmented insight into KSB in HEIs indicates the need for more studies in this area. Scholars and practitioner need to intensify researches that fill the VKSB gaps.

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Persuasiveness Towards Organic Food Products Among Metropolitans

Nittymol Antony and S. Saranya

Abstract The initiative of 'Green revolution' which is to address the increased population and demand made the natural way of agriculture deteriorated. Organic food products are grown naturally without applying chemicals and fertilizers with moral and ethical principles of traditional cultivation. In India, the market for chemical free food items has been expanding quickly in recent years. The primary driver of the market's growth has been the growing health consciousness among the customers in major cities of India. The gradual consumption of organic food in metropolitan cities as part of a healthy diet is a noteworthy development in light of health concern. Besides, in view of consumption of organic food products and health benefits connected to it, the preference for organic food items is increasing rapidly. There are many factors associated with the buying behaviour of every individual. This article is an attempt to identify the persuading factors of an individual towards consuming organically grown food items. These factors are associated with their perception, health related factors, buying power, social status, and environmental consciousness. The present study also identifies the role of demographic factors on consumption of organic food products.

Keywords Consumer preference · Organic food products · Individual and social factors

1 Introduction

In a developing nation like India, two-thirds of its population depends on agriculture for their livelihood, which contributes around 14% to GDP of the country. Organic farming is a way of agriculture, which was prevalent right from the start of agriculture,

N. Antony (✉) · S. Saranya
Kristu Jayanti College, Bengaluru, India
e-mail: nittymol@kristujayanti.com

S. Saranya
e-mail: saranyamanikandan@kristujayanti.com

but later dropped in favor of more productivity and profit. It is again gaining popularity in these days. The initiative of 'Green revolution' which is to address the increased population and demand made the natural way of agriculture deteriorated. When one crop was grown at times per season, now the farmers started growing more than one crops using fertilizers at the same time. The higher number of growing crops are meant for the good amount of profits to the farmer and optimal utilization of the land.

Organic food products are grown naturally without applying chemicals and fertilizers with moral and ethical principles of traditional cultivation. In India, the market for organically grown food items has been expanding quickly in recent years. Over the past few years, the demand for organic food items in India has increased significantly and hence the consumption for the same has expanded quickly.

The production of organic food items uses natural ingredients as opposed to conventional food, which uses artificial pesticides and fertilizers. Organic food items are therefore healthier as it does not contain any chemical residues. Products that fall under the category of organic food items include a variety of food categories, such as fruits and vegetables, dairy products, pulses and food grains. The primary driver of the market's growth has been the growing health consciousness among the customers in major cities of India. The gradual consumption of organic food in metropolitan cities as part of a healthy diet is a noteworthy development in light of health concern. Besides, in view of consumption of organic food products and health benefits connected to it, the preference for organic food items is increasing rapidly. There are many factors associated with the buying behaviour of every individual. This article is an attempt to identify the persuading factors of an individual towards consuming organically grown food items. These factors are associated with their perception, health related factors, buying power, social status, and environmental consciousness. The present study also identifies the role of demographic factors on consumption of organic food products.

In order to make the concept more comprehend, this paper is divided into five parts. The first section covers introduction to the topic and the second section deals with the detailed review of literatures conducted. The research design together with the objectives, statement of the problem and the details regarding data collection are explained in the third section of this paper. Section four contains the detailed analysis of the data and finally the conclusions based on the study are given in the last section.

2 Review of Literature

Brata et al. [1] is of the opinion that quality in superior, healthy products, freshness is some of the main intrinsic qualities of organic factors influencing consumer behavior towards organic food consumption. The extrinsic qualities like price, labels, etc. are some of the factors influencing towards organic food consumption. The pandemic made the people to pay more attention to the food items what they purchase as

Covid-19 has increased concerns towards environment, health, and sustainability, that changed their market behaviour and consumption pattern.

Samuel and Emimol stated that there was a relation between sales of organic products per month and marketing strategies. The researcher also concluded that consumers became more food consciousness as they are aware of harmful impact of pesticides and chemicals exist, but they do not know the place of purchasing it. Hence, the retailers should make them aware about it by adopting marketing strategies.

Anish and Ramachandran stated that consumers had a genuine attitude influencing the consumers purchase intention towards organic food products. Knowledge, Environmental consciousness, availability of such products and their price are the most influencing factors for the consumers purchase intention and their attitude level towards chemical free food products. The researcher also suggested that the Government to take initiatives to promote the usage of organic food products and thereby to increase the attitude and purchase intention of the consumers for no chemical food products, which really help future generations to lead a healthy life.

Deepthi and Sreeya [2] found that there was a relation between age and information source about organic food products. The researcher also stated that there is a variation between gender and their opinion about organic food products. It is concluded that there is no awareness among the respondents about organic food products and hence more awareness program should be initiated to create the awareness about it.

Gupta and Aggarwal [3] tried to study the buying behaviour of customers in choosing organic food products. It is revealed that the absence of trust about the originality of organic items was the main reason behind not purchasing organic food products and therefore the dealers should adapt new approaches to gain trust among them. It is also revealed that consumers of organic products had great impact on psychological factors towards their purchase.

Dash et al. [4] states that perception and demand towards organic food products are related with socio-economic factors of the consumer. Friends and the family members of consumers also has a role in their decision making process. They also consider other aspects of the organic food products like eco friendliness, free from harmful chemicals or pesticides, safety etc. The authors also highlight the role of government and no government agencies in creating awareness among the public as good number of consumers were not even aware about the organic products.

Singh and Verma [5] analyzed the actual buying behavior of Indian consumers towards organic food products. It was identified that the customer attitude towards chemical free food products are affected by factors like knowledge, price, subjective norms and health consciousness. Availability of these products also is a matter while deciding the consumption of organic products. The authors also commented that socio economic factors also intervene the buying behavior.

Munshi et al. [6] argues that there is a high demand for organically grown food products as the consumers are more focused about their health and nutrition. But there exist a gap between the awareness among the consumers and the trust they have in organic products. A major portion of the population is not having the awareness about the product, another portion has awareness but lack trust in the product and only few perceive organic foods as an important. Similar finding was observed by

Sharma and Singhvi [7]. In the Indian scenario where population is huge and safety and health of the people is major concern, demand for organic products are raising rapidly. The main cause for such scourging increase is the concern for environment, health and safety. The preference for chemical free products is of utmost priority among the public. But interesting fact is that there is lack of awareness as well as markets are also not available easily. This is a major hindrance.

Gundala and Singh [8], have studied the factors influencing the consumer attitude towards preferring organically produced food products. They argue that there is a huge difference in desire to purchase and their actual purchase. Some of the consumers have an intention to purchase but their actual purchase depends on the availability of products at their convenience. Actual purchase sometimes is not dependent on the intention. The knowledge of the consumers, price of the product, availability of the products health consciousness and some other subjective factors affect the actual consumption of organic food products.

3 Research Methodology

3.1 Statement of the Problem

The consumption knowledge and purchasing power of consumers have increased over the years. Consumer's focus also changed from simple purchase to selective purchase. The rise in environmental consciousness among the public have made the consumers to purchase by giving due weightage to the environment. The major portion of spending of a person is for food. As people become more environment friendly, they started preferring organic products to non-organic products. There are many factors associated with the buying behaviour of every individual. The present study was carried out to identify the factors that persuade an individual towards consumption of organic food products. Most of these factors are related with their perception, buying power, social class, etc. The study also identifies the role of demographic factors on the purchase of organic products.

3.2 Objectives of the Study

The present study aimed at identifying the factors that persuade metropolitans to purchase organic food products with the following sub-objectives.

1. To study the role of demographic factors on preference of organic food products among metropolitans.
2. To analyze the factors that influence metropolitans to purchase organic food products.

3. To analyze the moderating effect of individual and social factors on preference of organic food products.

3.3 Research Design

Research methodology is a systematic way to identify solution for research problems. The present study has used contemporary method of research combining both quantitative and qualitative research methods. The present study aims at identifying the persuading factors towards consumption of organic food products by metropolitans. The study was restricted to consumers of organic food products in Bengaluru city alone. The data for the present study was mainly collected with the help of structured questionnaires distributed through online mode. The questionnaire consists of questions pertaining to demographic aspects of the respondents, social factors and various factors that determine their preference for organic products. The sampling methodology used for the collection of the data was convenient sampling. The targeted respondents were 120. The questionnaires complete in all respect only were considered for the analysis. Therefore number of respondents included in the study was restricted to 100. Secondary data collected from various literatures were also used to support the data collected. The data collected through primary data was analyzed with the help of various statistical tools such as descriptive statics, percentage analysis and Structural Equation Model.

3.4 Conceptual Framework of Study

Based on literatures, it is identified that the factors like buying power, health consciousness, attitude towards spirituality, social status and their concern for environment. Consumers assume that purchase and usage of organic products is a healthy habit and it can lead towards sustainability. The conceptual framework for the present study is displayed in Fig. 1.

The factors considered to assess the consumer's preference towards organic food products for the present study are individual factors and social factors. The variables under individual factors are health, buying power and perception towards organic products. Environmental consciousness and social status are the variables under social factors. Each of the variables was assessed with the help of 5 point likert scale statements in which "5 denote strong agreement and 1 denote strong disagreement".
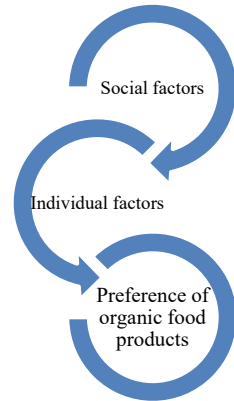
4 Analysis and Interpretation

The demographic characteristics of the respondents in the present study are given in
Table 1. Majority of the respondents were female as they take up the responsibility
of purchasing food items for the family and 93% of female respondents prefer food
products that are organic in nature. Major consumers of chemical free food prod-
ucts belong to age group of 30–50 years and among them, more than 95% prefer to
purchase organically grown food products. Youngster's and elderly people's prefer-
ence towards organic products is comparatively less. More than three-fourth of the
respondents were married and taking care of consumption need of the family. Most of
the respondents were salaried people having an annual income between Rs.250000
to Rs.500000. More than 90% of the salaried class prefers to purchase organic food
products.

4.1 Factors Persuading Towards Consumption of Organic
Food Products

The present study considered two major factors viz. individual and social factors
in order to determine the consumer's preference towards organic food products.
Health, buying power and perception are the variables considered under individual
factors. Environmental consciousness and social status are the variables considered
under social factors. Structural Equation Modeling was used to find out the effect of
independent variables on consumer's preferences. The effect of individual factors on
preferences is displayed in Fig. 2. The regression weights of individual factors are
given in Table 2.

From Table 2, it is observed that the regression weights of independent variables
under individual factors are significant against dependent variable, preferences. The

Table 1 Demographic profile of the respondents

Gender group	%	Preference	
		Yes	No
Male	31	28 (90%)	3 (10%)
Female	69	64 (93%)	5 (7%)
Total	100	92 (92%)	8 (8%)
Age group			
Below 30 years	10	8 (80%)	2 (20%)
30–40 years	39	37 (95%)	2 (5%)
40–50 years	28	27 (96%)	1 (4%)
50–60 years	19	17 (89%)	2 (11%)
Above 60 years	4	3 (75%)	1 (25%)
Total	100	92 (92%)	8 (8%)
Marital status			
Single/others	23	21 (91%)	2 (9%)
Married	77	71 (92%)	6 (8%)
Total	100	92 (92%)	8 (8%)
Occupation			
Salaried	78	75 (96%)	3 (4%)
Self-employed	14	10 (71%)	4 (29%)
Others	8	7 (88%)	1 (12%)
Total	100	92 (92%)	8 (8%)
Annual income			
< Rs.250,000	8	6 (75%)	2 (25%)
Rs.250,000 to Rs.500,000	79	75 (95%)	4 (5%)
Above Rs.500,000	13	11 (85%)	2 (15%)
Total	100	92 (92%)	8 (8%)

Source Primary data

estimated values between health, buying power, perception towards consumer's preference are 0.368, 0.304 and 0.233 respectively. All the estimates are significant at 1% level of significance. The combined effect of individual factors towards consumer preferences is 0.593 which is shown in Fig. 2. The effect of social factors on preferences is displayed in Fig. 3. The regression weights of social factors are given in Table 3.

Environmental consciousness and social status are the two independent variables considered under the social factors. The estimates of both these variables towards consumer's preference are 0.379 and 0.664 respectively. The overall estimates of social factors towards consumer's preference are 0.909. All the estimates of social factors are significant at 1% level of significance. The details are shown in Fig. 3.
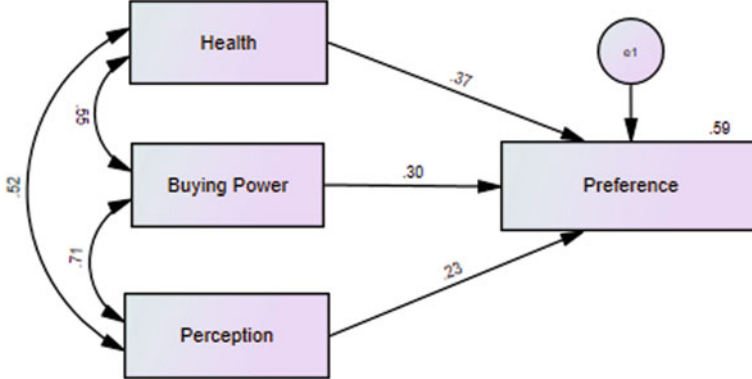
Fig. 2 Individual factors

Table 2 Regression weights of individual factors

Indicator variable		Dependent variable	Estimate	S.E	C.R	P
Health	←	Preference	0.368	1.332	7.063	***
Buying power	←	Preference	0.304	1.959	5.875	***
Perception	←	Preference	0.233	1.485	5.612	***

***0.001 level of significance
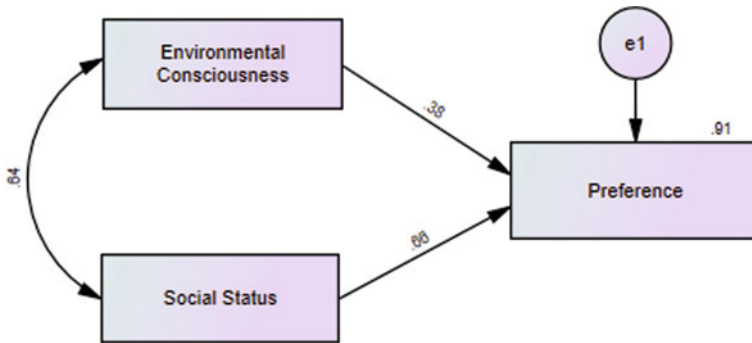
Fig. 3 Social factors

Table 3 Regression weights

Indicator variable		Dependent variable	Estimate	S.E	C.R	P
Environmental consciousness	←	Preference	0.379	0.231	4.125	***
Social status	←	Preference	0.664	0.111	4.658	***

***0.001 level of significance

The combined effect of individual and social factors towards consumer's preference is displayed in Fig. 4. The estimation between individual factors and preference was 0.59 whereas the estimation between social factors and preference was 0.91 as shown in Figs. 2 and 3. But the combined effect of individual and social factors on preference is 0.92 as shown in Fig. 4. Among the two factors, the estimation between individual factor and preference is more than the estimation between the social factor and preference as the estimate of the former is 0.806 as against 0.23 of latter.

A confirmatory factor analysis using AMOS was conducted and the results are extrapolated in Fig. 4. The path loading of all the factors leading to consumer preferences are significant. The fit indices suggest that the model meets the recommended levels specified by goodness of fit indices where x^2/df(CMIN) is 1.996, CFI value is 0.911, GFI value is 0.926, AGFI value is 0.859, NFI value is 0.908, and RMSEA is 0.053. All the values are significant as these values are within the threshold limits. This suggests that the model is fit. The details are shown in Table 4.
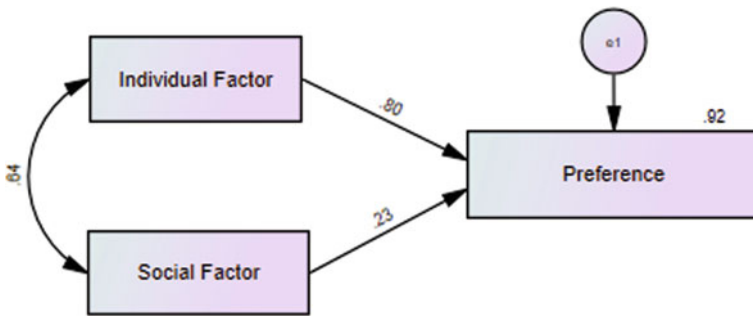

Fig. 4 Combined effect

Table 4 Model fit index

Fit indices	Recommended value	Hypothesized model	Structural model
CMIN (x^2)	< 2	1.996	1.145
CFI—comparative fit index	> 0.90	0.954	0.911
GFI—goodness-of-fit index	> 0.90	0.962	0.926
AGFI—adjusted goodness-of-fit index	> 0.80	0.822	0.859
NFI—normed fit index	> 0.90	0.897	0.908
RMSEA	< 0.08	0.062	0.053

5　Conclusion

The present decade speak about sustainability and environment protection to ensure sustainable growth of all living beings. Efforts are taken to promote sustainability at grass root level. Producing and consuming organically grown food product is one such initiative taken by people towards sustainability. In cities like Bengaluru the availability of organic food products is a challenge. Many NGOs and super markets offer wide range of organic food products. The present study was conducted to determine the factors leading towards consumer's perception towards organically grown food items. It was identified that there are many factors that affect the buying behavior of consumer's. The consumers are very selective when it comes to products that claim superiority over other normal products. Individual and social factors were considered in the present study as the factors that have an effect on preference towards organic food products. Health consciousness, buying power and their perception towards organic products are the variables under individual factors. Among these, health consciousness is the most important factor that consumers consider while choosing organic products. Consumers also consider some of the societal aspects while deciding about organic food products. Some of them are conscious about the environment and some others consider their social status. Among these two factors, it was found that consumer's social status play more important role in their choice of organic products. The combined effect of individual and social factors on consumer preferences was also analyzed in the present study. The results of the study show that individual factors have more significant role in their preference towards organic food products rather than the social factors.

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Identifying Company's Ethical Behavior to Its Stakeholders: The Role of Board of Directors

Peni Nugraheni (ID)**, Syed Musa Alhabshi** (ID)**, and Romzie Rosman** (ID)

Abstract Company business ethics covers not only social and environmental responsibility, but also the maintenance of the company's relationship and commitment to its stakeholders. This study aims to examine the effect of board of directors' (BOD) characteristics on disclosure of company ethics-to-stakeholder. The samples of this study are shariah compliant companies listed at the Indonesian stock exchange. The study used content analysis to measure the level of ethics-to-stakeholders disclosure. Data analysis uses panel data regression and shows that board education has positive influence, while size, nationality diversity, and meeting frequency of BOD do not influence company's ethics-to-stakeholder disclosure. However, the findings show the high level of disclosure which indicate that the sharia compliant companies concern with ethical behaviour to their stakeholders. Different stakeholders have different interests, and it is the duty of BOD to accommodate all the interests. Rights and obligations of each party should be stated clearly to ensure that the agreement is based on mutually beneficial relationship.

Keywords Board of directors · Business ethics · Disclosure · Stakeholders

1 Introduction

Stakeholders have an important role for the development and sustainability of a company because the goals of the company can be achieved with the cooperation and collaboration with stakeholders. Companies must maintain their relationship with their stakeholders through ethical behavior. The values of an organization will help the managers and employees in determining the behaviour expected by the stakeholders [1]. Krasodomska and Ewelina [2] state that managers are required

P. Nugraheni (✉)
Universitas Muhammadiyah Yogyakarta, Yogyakarta 55183, Indonesia
e-mail: peninugraheni@umy.ac.id

P. Nugraheni · S. M. Alhabshi · R. Rosman
IIUM Institute Islamic Banking and Finance, Gombak, Selangor 53100, Malaysia

to be able to meet the stakeholders' expectations, consider their views in making decisions, and maintain the relationship with them.

Managing stakeholders is the duty of management [1] to ensure the rights of stakeholders and safeguard long-time relationship with them. Stakeholders have different interests in a company, so the management is responsible to formulate the policy offering a mutually beneficial relationship between company and stakeholders. Companies usually have the policies that regulate ethical behaviour and relationships with their stakeholders which are outlined in the company's code of ethics and disclosed in the annual report. Unethical actions can lead to fraud. The survey conducted by Association of Certified Fraud Examiners [3] concerning fraud in Indonesia states that fraud disclosures are most commonly found in media reports amounting 38.9% as can be seen in Fig. 1. This indicates that disclosure in media report is considered very effective to minimize the occurrence of fraud.

This survey also shows that unethical actions occur because the directors do not serve as a role model and the internal supervision is weak. Company's anticipatory steps including code of ethics are one of the preventive measures to minimize unethical behavior. Katmon et al. [4] states that it is difficult to find business ethics issues in Indonesian companies because the business ethics implementation is often just a voluntary formality.

Unethical behavior of a company can affect people's judgment and attitude towards the company which in turn can degrade the company reputation. Companies usually only disclose their ethical policy, including their relationship with stakeholders, without providing an adequate explanation on what types of policies apply for the stakeholders. This makes difficult for readers of the annual report to assess the ethical attitude of the company.

Not only does Board of directors (BOD) play an important role in making business-related decisions, but the characteristics of BOD influence the extent of information disclosure to public. Fuente et al. [5] argues that the level of disclosure is influenced
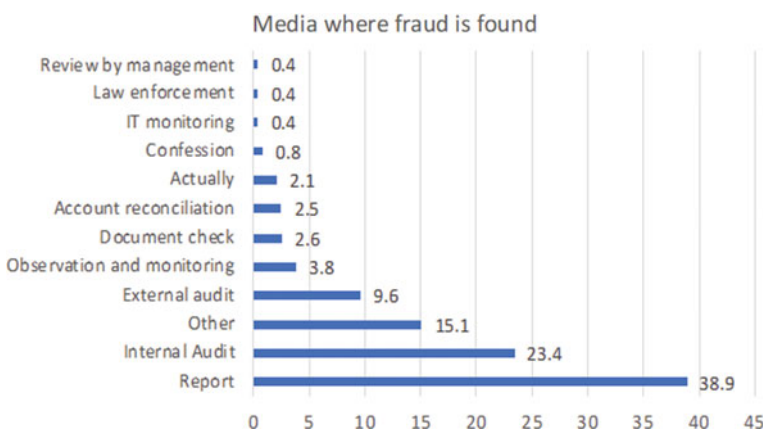

Fig. 1 Media necessitate disclosure of fraud

by the characteristics of BOD as a result of decision-making process. The level of disclosure shows the extent to which a company wants to share the information related to its activities. Many scholars mention that the characteristics of BOD that can be studied include size, diversity, composition, and educational background [5–7]. Chernysheva and Shepelenko [8] states that the composition of board can affect the level of company disclosure. The composition of board can be seen from the aspect of size, diversity, expertise, and education.

Disclosure of company's information can include corporate social responsibility and business morals and ethics as a form of accountable activities [9]. A company's business ethics does not only cover its social and environmental responsibility, but also the maintenance of its relationship and commitments to the stakeholders. Unfortunately, the business ethics concerning stakeholders have not received much attention. CSR in the form of social and environmental activities are more of concern to companies. CSR disclosure has a positive effect on companies, such as increasing business reputation and stakeholder loyalty involving employees, consumers, and shareholders [9]. In fact, company's business ethics shows an organizational commitment to ethical behaviour, which means that all company activities move in ethical corridors and will not harm other parties [10]. Disclosure of business ethics shows that a company's ethical policies have been socialized so that all stakeholders know their respective rights and obligations. Moreover, business ethics for public companies is important to identify the extent of their awareness and commitment to carry out the ethical business activities.

This study aims to examine the effect of BOD characteristics on the disclosure of company policies in relation with their relationships with stakeholders in sharia compliant companies in Indonesia. The BOD characteristics include BOD size, nationality diversity, meeting number, and education. This study differs from the previous research in three matters. First, the dependent variable in this study is disclosure related to the policy on the relationship between company and stakeholders. The previous research on disclosure discussed more about CSR activities. This study specifically observes the disclosure of ethics on company relationship with the stakeholders. Second, the important role of stakeholders has been discussed a lot, but the extent to which companies are concerned about this has not been done much in previous research. The practice of business ethics in Indonesia is very challenging because its application adapts to the values of the nation's norms and culture that are different from those of the Western countries [4]. Moreover, disclosure in the countries with emerging market (such as Indonesia) still needs to be done considering that these countries have an important role in the development of world economy.

Third, this study takes the samples of Indonesian shariah compliant companies. The number of shariah compliant companies in Indonesia is growing significantly, becoming an alternative investment chosen by Muslim community and reaching 80% of the Indonesian total population. In stock exchange, shariah compliant companies have their own terms regarding prohibited transactions [11]. Investors of shariah compliant companies consider the ethical issues when they make decision [12]. However, the disclosure of policy on ethics of these companies in the annual reports is rarely studied and identified to know the level of ethical issues disclosure. Shariah

compliant companies are expected to have higher level of business ethics because their purpose is not only to maximize profit, but also to develop socioeconomic justice [13]. The sections of this study consist of literature review, research methodology, findings and discussion, and conclusion.

2 Literature Review

2.1 Board of Directors

Board of directors (BOD) is responsible for the operations of company. BOD characteristics are one of the aspects that affects the effectiveness of directors' performance, including establishing relationships with stakeholders. BOD as an organ of a company has a collegiate duty and responsibility in managing the company.

Indonesia adopts two-tier board which means that there is a separation between supervisory function (board of commissioners) and management function (board of directors). The policies which BOD makes can affect a company's performance, including its relationship with the stakeholders. Shariah compliant companies should provide information not only on financial data, but also other information needed by the stakeholders to make economic and religious decision making [13]. Included in BOD tasks are to establish business ethics that guide the company's operational activities as well as BOD participation in planning and implementing business ethics because it is a demand from the investors [14].

2.2 Business Ethics for Stakeholders

Ethical issues on companies increase public attention to business ethics adopted by the companies. The ethical issues in companies include bribery, financial fraud, child labor, and discrimination in the workplace [9]. Business ethics can build a healthy and mutual relationship with the stakeholders involving shareholders, consumers, and business partners. Directors need to disclose the business ethics to stakeholders as a form of communication and transparency and at the same time demonstrating company commitment to always behave ethically. The fulfilment of stakeholders' interests is carried out through the provision of benefits for both the company and stakeholders. For the company, this will support the continuity of the business, and for the stakeholders, it will provide added value [15]. Said et al. [12] state that investors use ethical issues as a consideration in making investment decisions.

The growth of sharia compliant companies in Indonesia makes ethical issues in these companies a concern for public. The society expects that the implementation of business ethics in sharia compliant companies can be the same or even higher than that of other companies because of the activities of sharia compliant companies

must be in accordance with the religious teachings. The company business ethics of a sharia compliant company should be unique since it is an elaboration of the moral values contained in the company's vision and mission. Ethics will affect the effectiveness of management in improving company performance because ethical behavior will ensure that the company fulfils all the interests of its stakeholders [16]. BOD plays an important role in creating an ethical climate where ethical values are integrated into the corporate culture and disseminated to all parties within the company [14]. Company policies on ethics should be disseminated, implemented, and disclosed to demonstrate the company commitment to the policies which have been set.

2.3   Hypothesis Development

Relationship Between Board Size and Ethics Disclosure

BOD size refers to the number of BOD members. A large number of directors will facilitate the directors' responsibilities for the preparation and implementation of business ethics in the corporate environment including its disclosure. Disclosure of an activity in a company's annual report will be easier if the behavior has indeed been carried out by the company. The larger the size of the board, the stronger the encouragement given by the members for the best performance of the company through provision of information to stakeholders [17]. Isa and Muhammad [17] and Issa et al. [18] have found that the BOD size has positive effect on company information disclosure. Therefore, the hypothesis of the study is as follows.

H1: Board size has positive influence on ethics disclosure.

Relationship Between Board Nationality Diversity and Ethics Disclosure

Board nationality diversity is the percentage of foreign directors in the board. Hartmann and Carmenate [6] state that heterogeneous membership will lead to better responsibility for all stakeholders. Not only do foreign directors contribute to company policies on business ethics, but they will also encourage the company to have more disclosure of the company information. Disclosure increases the reputation and added value to a company because it shows the company commitment to implement ethical behaviour in its activities. The different culture due to the presence of foreign directors will influence the information disclosure in various ways [6].

Foreign directors will improve the quality of decision-making process, thus improving the disclosure of company information [19]. In other words, the level of disclosure can be influenced by the existence of foreign directors [19]. Hartmann and Carmenate [6] reveal that BOD nationality diversity has positive influence on CSR disclosure. This study proposes the hypothesis as follows.

H2: Board nationality diversity has positive influence on ethics disclosure.

Relationship Between Board Meeting and Ethics Disclosure

Board meeting demonstrates the commitment of board members to discuss the issues around the company. According to [6], the more meetings conducted by directors, the better control will be performed by management. Board meetings are a forum for discussion and decision making, including the decision on company's attitude towards disclosure of company ethics, in the form of both policies and implementation as well as the attitude towards ethical issues in the company. All the strategic policies are discussed in the board meeting, therefore, the frequency of meeting will impact the decision quality, including improvement of company information disclosure [8].

Rao and Tilt [20] argue that board meeting is an indication of active board and will improve the reputation of company. Moreover, through meeting, board members can arrange business operations by considering many factors, including maintaining the relationship with stakeholders. Hartmann and Carmenate [6] and Chernysheva and Shepelenko [8] argue that board meeting influences CSR disclosure. Therefore, this study submits the hypothesis as follows.

H3: Board meeting frequency has positive influence on ethics disclosure.

Relationship Between Board Education and Ethics Disclosure

Level of education can influence decision made by board members to support company performance. Board membership with diverse educational background will influence the board ability in decision-making process [7]. Education can also reflect the ability of directors in managing the company, including meeting the information needs of stakeholders by information disclosure. Education is expected to increase information disclosure [5]. According to [7], education shapes the value and cognitive ability of an individual and will influence the quality of strategic decision.

Directors who have higher level of education are expected to have better understanding of ethics therefore apply the ethical behaviour which can serve as a guide for other employees. Maringka and Rahmani [3] states that unethical actions of an organization are due to the absence of good examples from the superiors. Companies that implement business ethics, including that related to stakeholders, will be open to providing information to the public through information disclosure in the annual report. Fahad and Rahman [19] that board education has positive effect on CSR disclosure in banking sector in Arabian Gulf countries. Fuente et al. [5] also reveal the positive effect of board education on the quality of CSR disclosure in Malaysia. The hypothesis of this study is thus formulated as follows.

H4: Board education has positive influence on ethics disclosure.

3   Research Methodology

The samples of this study are shariah compliant companies listed at the shariah securities list in Indonesian capital market. This study used purposive sampling method with the criteria: (1) shariah compliant companies listed at the Indonesian Stock Exchange in the consecutive three years from 2017 to 2020; (2) publishing annual report during the period; and (3) having all data needed in this study. The samples were presented in a balanced way. The dependent variable in this study is ethics-to-stakeholder disclosure (ESD) level. The reference index for that was derived from the guidance of good governance for Islamic business (GGIB) published by National Committee on Governance (NCG) of Indonesia. There are two considerations of using this index. First, GGIB is intended for sharia business, encompassing the institutions that have declared themselves as shariah business entities and those that have not. It is certainly very much in line with the samples of this study, namely shariah compliant companies. Second, because the samples of this study are Indonesian companies, this study uses an index originating from Indonesian guidance, which is in accordance with the characteristics of Indonesian business environment.

There are twenty-three items from four stakeholders consisting of investment partner, employee, business partner, and community and consumers. This study used content analysis to measure the items of disclosure, where 1 was granted if the items were disclosed in the annual report, and 0 was given if the company did not publish them in the annual report. The index of disclosure was calculated using formula of total item disclosed by the company divided by total maximum score of disclosure.

The independent variables in this study are board of directors' (BOD) characteristics that consist of size, nationality diversity, meeting frequency, and education background. Board size (DirSize) is measured by the number of board members. Board nationality diversity (Dirfor) represents the percentage of foreign members. Board meeting (DirMeet) is identified by the number of meetings per year. Board education (DirEdu) measures the percentage of the board members holding postgraduate degree. This study used control variables, namely firm size (FSize/total asset), return on equity (ROE), and Leverage.

This study used some techniques to analyze the data, including descriptive statistical analysis to give an overview of the study objects represented by the sample data. Moreover, static panel data regression was used to examine the relationship between the independent and dependent variables. The estimation of panel data regression model can be done using several approaches, i.e. common effect model, fixed effect model, and random effect model. The selection of the suitable method used Breush-Pagan Lagrange Multiplier test and Hausman test. The regression model of the study is as follows.

4   Finding and Discussion

The population of the study is non-financial shariah compliant companies (SCC) listed at Indonesian stock exchange. Based on the data, there were 81 companies from various sectors resulting in the total of 324 data. Table 1 shows the results of descriptive statistics.

Panel data regression selection was conducted using Breush and Pagan Lagrangian multiplier test and Hausman test. Breusch Pagan LM test showed the p-value of $0.0000 < 0.05$, indicating that random effect model (REM) was suggested. The results of Hausman test showed the probability value of $0.0359 < 0.05$, meaning that Fixed Effect Model (FEM) was accepted. Based on the results, this study used fixed effect model. In this study, multicollinearity test was also conducted, and the results showed low correlation between variables which proved that there was no multicollinearity.

Diagnostic test was conducted to test the estimation of the model. The results showed that this model had the problems of heteroscedasticity and cross sectional dependence. In addition, time specific should be included in the model. Therefore, this study used fixed effect model with robust standard error, and the statistical results are presented in Table 2.

Board size showed the regression coefficient of 0.708 and significance value of 0.376. It means that board size does not influence the company's ethics-to-stakeholder disclosure. Thus, H1 is not supported. The result supports the study conducted by [21] which found that board size did not influence CSR disclosure in Australian companies. Ayadi [1] argues that the decision of companies to disclose reports to stakeholders is influenced by the characteristics of the companies and the contextual aspects (social, economic, and political factors). Some samples of this research were taken during the Covid-19 pandemic, where they experienced low or negative financial performance, so the attention of all the board members might focus on the companies' financial performance (economic factors) than the other aspects.

Board nationality diversity measured by the proportion of foreign directors showed the regression coefficient of -0.015 and significance value of 0.909. This

Table 1 Descriptive statistics

Variable	Mean	SD	Min	Max
ESD	81.24	9.868	34.18	97.47
BODSize	5.67	2.192	2	14
BODcomp	10.6	18.245	0	75
BODmeet	20.519	13.003	6	81
BODEdu	44.29	28.316	0	100
ComSize	29.618	1.576	25.8	34.7
ROE	5.597	38.41	-396.83	142.9
Leverage	42.441	20.194	0	97.26

Table 2 Panel data regression results

SD	Coefficient	Robust SE	T	P > t
DirSize	0.708	0.795	0.89	0.376
Dirfor	− 0.015	0.13	− 0.11	0.909
DirMeet	0.028	0.094	0.29	0.769
DirEdu	0.16	0.053	2.21	0.03
Fsiz	3.162	1.661	1.9	0.061
Lev	0.096	0.058	1.66	0.102
Constant	− 26.805	50.179	− 0.53	0.595
R^2		0.1071		
Wald chi^2 (11)		0.013		
Prob > chi^2		0.0247		

result indicates that the presence of foreign directors does not influence ethics disclosure; therefore, the second hypothesis (H2) is not supported. The result supports the previous study by [6]. The influence of foreign members on disclosure is determined by the culture and experience of the members in their home countries [6]. If ethics disclosure is not the focus in their home countries, their presence will not affect ethics disclosure in their current companies.

The regression coefficient value of board meeting frequency was 0.028 and the significance value was 0.769. Board meeting frequency does not influence ethics disclosure, thus H3 is not supported. The result is in line with the study performed by [20, 22]. If there is no issue between stakeholders and company, this aspect may not be a priority in the BOD discussions, so the disclosure of the relationship between company and stakeholders will not be different. Even if BOD recommends an increase in the extent of disclosure, if BOD only makes decisions without being involved in the implementation process, it may not have any effect on the disclosure made [22].

Board education showed the coefficient and significance values of 0.116 and 0.030 respectively, less than alpha value. Thus, the education level of board members has positive influence on the disclosure. Therefore, H4 is supported. This study corroborates the research of [19] which argues that board education has positive influence on CSR disclosure in the Council of Arabian Gulf Countries. Higher level of education will improve the capability of board members to identify and understand the expectation of stakeholders, thus will disclose more company's policies to its stakeholders.

5   Conclusion

This study aims to examine the effects of BOD characteristics on ethics disclosure related to stakeholders. The results show that board education has positive influence, while board size, board nationality diversity, and board meeting frequency do not have influences on the ethics to stakeholder disclosure. However, the concern of society toward the business ethics of companies cannot be ignored. Companies are required to carry out their activities ethically. The business ethics guidelines will be used as a reference for companies to conduct their business activities and to deal with stakeholders. The ability of BOD to maintain good relationship with stakeholders can be realized into the policy or regulation related to stakeholders. The policy can be disclosed in the annual report, so the stakeholders can access the information on the company concern of the stakeholders. Different stakeholders have different interests, and it is the duty of BOD to accommodate all of those interests. The rights and obligations of each party should be stated clearly to ensure that the agreement is based on mutually beneficial relationship. It is also the duty of managers to disseminate the code of conduct or ethics that has been set by company to ensure that all internal stakeholders comply with the business ethics and implement it in all business activities.

This study has several limitations. First, the information disclosure investigated by this study was only observed from the companies' annual reports. Meanwhile, many companies make the policies related to stakeholders and include it in the companies' code of ethics. Future research is recommended to include code of ethics as the material for content analysis. Second, the items of ethics to stakeholder disclosure referred to the guidelines made by the Indonesian governance committee for sharia business entities, so they could not be used for conventional companies. However, the items of disclosure remain general in nature, so the study related to shariah compliant companies in other countries can also use this index.

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