S. Chatterjee
N.P. Singh
D.P. Goyal
Narain Gupta *Editors*

Managing in Recovering Markets

Springer

Springer Proceedings in Business and Economics

More information about this series at http://www.springer.com/series/11960

S. Chatterjee • N.P. Singh • D.P. Goyal
Narain Gupta

Editors

Managing in Recovering Markets

Springer

Editors
S. Chatterjee
Operations Management
Management Development Institute
Gurgaon, Haryana, India

N.P. Singh
Information Management
Management Development Institute
Gurgaon, Haryana, India

D.P. Goyal
Information Management
Management Development Institute
Gurgaon, Haryana, India

Narain Gupta
Operations Management
Management Development Institute
Gurgaon, Haryana, India

Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

About MDI

The Management Development Institute (MDI) a leading B-School located in the National Capital Region of India was established in 1973 with the active support of IFCI following an initial grant received from KFW, West Germany. Various national media surveys have ranked MDI among the top B-Schools of the country consecutively among the last 10 years. The education programs comprise of 2-year full-time PGPM, PGP-HR, PGP-IM, 15-month executive PGDBM, 3-year executive management program, doctoral level FPM/EFPM, postgraduate program in energy management, and PG diploma in public policy and management. MDI maintains high level of academic excellence in management. Various surveys have consistently ranked MDI among the top five B-Schools of the country.

MDI has a well-developed state-of-the-art infrastructure, which includes a library with a collection of over 60,000 volumes, and online access to international journals, a computer center with over 500 PCs, air-conditioned lecture halls, and syndicate rooms, besides a host of other recreational facilities. Above all, MDI has over 80 full-time faculties who have several years of experience having worked at senior positions in the industry.

MDI is the first Indian B-School accredited by the coveted Association of MBAs (AMBA), an international accreditation in London, in 2006. The milestone established the international quality standards of the Institute.

Additionally, MDI has the distinction of being among the few B-schools accredited by South Asian Quality Standards (SAQS) in 2005.

About Partner Institutions

The University of South Australia (UniSA)

The University of South Australia (UniSA) is a globally focused, locally engaged institution established on the dual principles of equity and excellence. With more than 33,000 students, the university is South Australia's largest and was the youngest Australian institution to be named in the top 50 of 2013 the Times Higher Education's top 100 global universities aged under 50. UniSA offers more than 400 degree programs across a wide range of subjects including business, law, education, arts and social sciences, health sciences, information technology, engineering, and the environment. UniSA's commitment to excellence is also reflected in the caliber of its academics and researchers. The proportion of UniSA staff holding doctorate qualifications (69 %) remains significantly above the national average. In addition, the 2012 national Excellence in Research for Australia evaluation reported that 86 % of our assessed research was rated world-class or above.

The Australian Centre for Asian Business (ACAB), UniSA, is located within the International Graduate School of Business (IGSB), Adelaide, Australia. ACAB serves both academic and industry needs through high-quality research into Asian business practices while encouraging the development of collaborative partnerships between Australian and Asian scholars, businesses, and institutions.

Faculty of Economics and Business, the University of Maribor, Slovenia

The University of Maribor, the second largest Slovene university, has provided prosperous and favorable ground for thriving evolvement of the academic community ever since the emergence of higher education horizons in 1859. The University of Maribor offers a strong educational and research infrastructure, where students and researchers in different points of their career can work in one of the 17 faculties. At the University of Maribor, the care for research and researchers is of utmost importance. The University of Maribor cooperates in European Framework Programs since 1998, and the number of international research projects is increasing each year. The undergraduate study in academic year 2011–2012 implies altogether 56 academic- and 25 professionally orientated study programs.

In 2009, the Faculty of Economics and Business (FEB), the University of Maribor, Slovenia, celebrated its 50th anniversary. The FEB is proud of this 50-year existence, which presents the tradition in the Slovenian academic area and a high degree of maturity in the international one. During these 50 years, more than 26,000 students graduated from our Faculty, hence acquiring different professional and scientific titles. The FEB offers undergraduate, masteral, and doctoral education. The Faculty of Economics and Business acknowledges research excellence and interconnectedness of research and pedagogical work of our academic staff and associates.

In academic year 2011–2012, there are 3,544 students enrolled in the University of Maribor postgraduate study programs.

Message from The Director

That the world has been under an economic stress for the last few years is now more a matter of fact than fiction or speculation. The challenges emanating from this stress affect not just the livelihoods of people or the geopolitics but goes beyond in terms of leaving long-lasting scars on the psyche of people and moral of the economies. But as Shakespeare had said, "… and it will follow as the night, the day…," the world has to recover from the economic crisis and it will recover, albeit at different rates of recovery, through different modes of recovery and following different trajectories of recovery.

The next big managerial challenge before the World is "how to manage the recovery itself in the phase of recovery." And there is not much available as a research, knowledge, or even information from the past that could guide this phase. It is therefore imperative that the worlds of practice and academia get together to chronicle the global practices, thought, endeavor, and experiences of these challenging times for influencing current practice as well as creating knowledge for prospective application.

With this purpose, the Management Development Institute, Gurgaon, has set up a series of conferences under the banner and title of "Global Conferences on Managing in Recovering Markets" (GCMRM) to be held as multiple editions over the next 3 years across different geographies attracting diverse inputs for wider dissemination and a longitudinal validation. "GCMRM" is one of the leading special initiatives on Global Research on Managing in Recovering Markets. Its high-quality research projects, seminars, and publications shall encompass almost all areas and domains of recovering markets, and thus, it is at the forefront of discussions on the many contemporary issues of international and regional challenges, opportunities, and strategic responses.

I am delighted to note the active participation and collaboration of the academia and industry in this endeavor. I hope that this edition of Springer containing the synthesis of the research papers of GCMRM curtain raiser event shall be the reference point for future research and application.

MDI   Mukul Gupta
Gurgaon, India

Message from The Dean Research

It is with deep satisfaction that I write this message for the proceedings of the event Global Conference on Managing in Recovering Markets organized during 05–07 March 2014, at the Management Development Institute, Gurgaon.

The Management Development Institute (MDI), Gurgaon, is the first premier business school to start an international academic initiative like GCMRM. Since the last three decades, we have been speaking about emerging markets. The developed world experienced a downturn and witnessed multiple financial crises. We believed that the emerging economies would now have management lessons which the developed nations may like to study and adopt to recover from their crises.

In line with the above premise, we brought an initiative such as GCMRM. The GCMRM is an initiative largely to organize a series of conferences in different continents of the world. The structure of the GCMRM is designed in a way that there is a revisit of one conference every year in the month of March in its home ground, i.e., MDI Gurgaon. The revisit to MDI is planned in a view to comprehend the learning from the conferences happening in other continents.

The curtain raiser of the series of conferences under GCMRM was organized during 05–07 March 2014. The first event of the GCMRM was a grand success with the participation of more than 10 countries and 120 premier business schools across the globe. The conference was inaugurated with the talks of invited speakers from academia and industry. The ambassador of Slovenia was guest of honor at the inaugural event. The GCMRM witnessed an overwhelming participation from global faculty including MDI faculty and doctoral students.

The conference accepted 118 high-quality research papers, case studies, and white papers from the industry of which 101 papers were presented in the conference. A completely blind review process was followed while accepting the papers for the conference, and further review was done to accept papers for a publication in the proceedings with Springer. The conference had a very fruitful discussion and exchange of thoughts. The conference was organized with three to four parallel panels of presentation with a total of 20 tracks. The conference was able to help develop an interface between multiple management universities, business schools, and industry.

I am delighted to witness a large participation, and this proceeding would leave the mark of the event in the academia and industry. I hope that the researchers and industry will be able to find this proceeding as an opportunity for future direction of research and industrial applications.

I wish to thank everyone for making this event a grand success and a good start towards the organization of the series of conference on the theme "Managing in Recovering Markets" and feel convinced that GCMRM endeavor is the right platform to discuss, deliberate, and seek credible solutions and implications of the global economic scenario.

N.P. Singh

Preface

The Management Development Institute (MDI) in association with its worldwide partner institutions has set the agenda by initiating a series of global conferences on the theme of *Managing in Recovering Markets*. The curtain raiser event was held at MDI, Gurgaon campus, from 5 to 7 March 2014.

In the last two decades, extensive research has been undertaken on the topic of emerging markets with a number of international conferences and articles being reported on it. At that time the developed markets saw an opportunity in the developing and emerging markets. However, the scenario changed as the developed markets faced severe financial turbulence in the past decade. This in turn influenced the overall growth of the emerging as well as the developed markets. What resulted was an initial stagnation in certain markets followed by signs of recovery. MDI has outlined the discourse of the current conference in view of the need for extensive research on this topic.

The first conference of the series of global conferences on the theme "Managing in Recovering Markets" in March 2014 was held at the campus of MDI in Gurgaon (India) in association with Australian Centre for Asian Business, the University of South Australia, Adelaide, Australia, and Faculty of Economics and Business, the University of Maribor, (Maribor) Slovenia.

The conference served as a platform for researchers, business practitioners, academics, policy-makers, entrepreneurs, and media persons and deliberated upon the causes and consequences of the evolving environment as also the challenges emanating therefrom. It set the tone through strategic responses to these challenges and identifying required areas of development and research for managing recovering cross-country markets. Around 120 paper presentations in the conference covered a wide range of management disciplines and set the agenda for the forthcoming global conferences planned in year 2014, 2015, and 2016.

MDI strategizes to conduct four international conferences every year for the next 3 years with the primary objective of enhancing research in the stated area. Carrying the agenda forward, MDI plans to conduct the following conferences in the coming days.

- 2nd edition of the conference from 17to 19 September 2014 at Bangkok, Thailand
- 3rd edition of the conference from 8 to 9 November 2014 at Australia Business School Adelaide, Australia
- 4th edition of the conference in December 2014 in African continent

The three conferences above will be followed by a conference at MDI, Gurgaon, India, from 11 to 13 March 2015, followed by a conference in May 2015 at Maribor, Slovenia. There will be further deliberations on the topic thereafter in the period 2015–2017 through subsequent conferences.

GCMRM Chair   S. Chatterjee
Gurgaon, India

Contents

About the Editors

S. Chatterjee is a Professor in Operations Management and Dean (Consulting and Executive Development) at the Management Development Institute, Gurgaon, India. Prior to this, he was teaching and consulting in the same area at the Administrative Staff College of India, Hyderabad, since 2002. A mechanical engineer from BITS Pilani, India, he obtained his management postgraduate diploma from IIM Bangalore, India. He has a PhD in Materials Management from Barkatullah University, Bhopal, India, while working with Bharat Heavy Electricals Limited (BHEL) at Bhopal. He has executed a number of consultancy assignments, the major ones among them being the restructuring of the Directorate General of Foreign Trade, restructuring of Engineers India Limited, work study of banking hall activities of Reserve Bank of India, Mumbai, and manpower assessment for Hyderabad Traffic Police. Dr. Chatterjee has authored a book, Applied *Materials Management*, published by Sage Publications India Private Ltd in 2005. His areas of interest include materials management, project management, supply chain management, and international trade and logistics.

N.P. Singh is a Professor of Information Management and Dean (Research and Accreditation), Management Development Institute, Gurgaon, India. Prior to this, he was at the National Institute of Financial Management (Faridabad, India), Institute of Rural Management (Anand, India), and Haryana Agricultural University (Hissar, India). Dr. Singh was awarded the Young Scientist Award by the Indian Society of Agricultural Statistics. His areas of interest are business intelligence, data warehouse, data mining, telecom management, and optimization models. He has worked as a consultant to the Ministry of Finance, Government of Sri Lanka (Asian Development Bank funded Project), a reviewer to the Ministry of Tertiary Education Government of Sri Lanka (World Bank funded Project), ATI Washington and with Indian organizations such as Karnataka Milk Federation, National Dairy Development Board (Mother Dairy, Delhi), North East Council, Ministry of Consumer Affairs, Ministry of HRD, Food Corporation of India, Security Printing and Minting Corporation of India Limited, Minister of Information Technology, National Scheduled Tribes Finance and Development Corporation, and National Thermal Power Corporation, among others.

Dr. D.P. Goyal is a Professor of management information systems and Dean of Executive Graduate Programs at the Management Development Institute (MDI), Gurgaon. A Postgraduate in Business Management and a Doctor in management information systems, Prof. Goyal has more than 27 years of corporate, teaching, and research experience to his credit. His teaching and research interest areas include management information systems, IS strategy, knowledge management, IS value for business, and business process management.

Narain Gupta is an Assistant Professor in Operations Management at the Management Development Institute, Gurgaon, India. He received his doctoral degree FPM (Fellow Programme in Management) from the Department of Production and Quantitative Methods of Indian Institute of Management, Ahmedabad, India. He has a US Copyright for an optimization-based decision support system. In addition, the corporate that he worked for earlier, Global eProcure, obtained a US Patent on his name for one algorithm developed by him for Auto-Classification of Spend-Data Visibility. Dr. Gupta has traveled to multiple counties including the USA, Denmark, China, the UAE, and Singapore for teaching, training, consulting, and conference presentations. He has published in national and international journals and presented his research in international conferences. His areas of research interest are strategic integrated supply chain planning, decision support system, mathematical modeling, process optimization, procurement analytics, and strategic sourcing, with particular interest in revenue optimization, project management, and services operations management.

Contributors

Abhilash Acharya IIM, Ranchi, India

Sharad Agarwal IIM, Ranchi, India

Shikha Aggarwal MDI, Gurgaon, India

Ahmed Awad Alanuzi STC, Riyadh, Kingdom of Saudi Arabia

Sunil Ashra MDI, Gurgaon, India

Gita Bajaj MDI, Gurgaon, India

Sangeeta Shah Bharadwaj MDI, Gurgaon, India

Nalin Bharti IIT, Patna, India

Jyotsana Bhatnagar MDI, Gurgaon, India

Samo Bobek University of Maribor, Maribor, Slovenia

Sumedha Chauhan MDI, Gurgaon, India

Sakhhi Chhabra MDI, Gurgaon, India

Arindam Das IIFT, New Delhi, India

Saini Das IIM, Indore, India

Meeta Dasgupta MDI, Gurgaon, India

Mridul Dharwal University of Rajasthan, Jaupir, India

Rati Dhillon Bharti College, University of Delhi, New Delhi, India

Amreen Fatima Lucknow University, Lucknow, Uttar Pradesh, India

Niharika Gaan MDI, Murshidabad, Kolkata, India

Kumar Gaurav IIT, Patna, India

Sandeep Goel MDI, Gurgaon, India

K.R. Gola Sharda University, Greater Noida, India

D.P. Goyal MDI, Gurgaon, India

Mukul P. Gupta MDI, Gurgaon, India

Narain Gupta MDI, Gurgaon, India

Rajen Gupta MDI, Gurgaon, India

Jelena Horvat University of Zagreb, Varaždin, Croatia

S. Kalra MDI, Gurgaon, India

Kanwal Kapil MDI, Gurgaon, India

Sheeba Kapil IIFT, New Delhi, India

Avinash Kapoor MDI, Gurgaon, India

Prabjot Kaur Uttarakhand Technical University, Dehradun, India

Jitendar Bittoo Khatri MDI, Gurgaon, India

Ravi Kiran Thapar University, Patiala, Punjab, India

Dilip Kumar Institute for Financial Management and Research, Chennai, India

Pankaj Madan Gurukul Kangri Vishwavidyalaya, Haridwar, India

Pranjali Madhur MAEER's Maharashtra Institute of Technology, Pune, Maharashtra, India

Rojalin Mishra IIT, Bhubaneswar, India

Jaydeep Mukherjee MDI, Gurgaon, India

A. Neelima Sharda University, Greater Noida, India

Giang Phung ESCP Europe, Paris, France

Anandan Pillai MDI, Gurgaon, India

Tominc Polona University of Maribor, Maribor, Slovenia

Shegorika Rajwani IIFT, New Delhi, India

Aparna Raman MDI, Gurgaon, India

M.K. Rao IIT, Roorkee, India

Saima Rizvi IILM, Gurgaon, India

Durga Prasad Samontaray King Saud University, Riyadh, Kingdom of Saudi Arabia

Amrita Sandhu MDI, Gurgaon, India

Manisha Seth Hierank Business School, Noida, India

Deependra Sharma Amity University Haryana, Gurgaon, India

Kirti Sharma MDI, Gurgaon, India

S.K. Sharma MDI, Gurgaon, India

Satyendra Kumar Sharma BITS, Pilani, India

Asmita Shukla IIT Bhubaneswar, Bhubaneswar, Odisha, India

Bindu Singh IIT, Roorkee, India

D. Singh MDI, Gurgaon, India

Harshita Singh MDI, Gurgaon, India

Harvinder Singh IMT, Ghaziabad, India

N.P. Singh MDI, Gurgaon, India

Shelly Singhal MDI, Gurgaon, India

Priyanka Sinha IIT, Patna, India

Manoj Srivastava MDI, Gurgaon, India

Michael Tröge ESCP Europe, Paris, France

Šebjan Urban University of Maribor, Maribor, Slovenia

Rajan Yadav Delhi Technological University, New Delhi, India

Yashwant Singh Yadav IIM, Ranchi, India

Susumu Yamamoto Ritsumeikan Asia Pacific University, Oita, Japan

Simona Sternad Zabukovšek University of Maribor, Maribor, Slovenia

Chapter 1
A Dynamic Conditional Correlation Analysis-Based Approach to Test Financial Contagion in Developing Markets

Shegorika Rajwani and Dilip Kumar

Abstract This paper examines the contagion from US and Britain markets to Asian markets, namely, China, Japan, India, and Malaysia. The period of study spreads over 6 years from January 3, 2006, to December 19, 2011. We split the study period into three sub-periods which include: (1) pre-crisis period or quiet period from January 3, 2006, to July 31, 2007; (2) crisis period from August 1, 2007, to February 26, 2010; and (3) post-subprime crisis period from February 27, 2010, to December 19, 2011. The sub-periods have been taken based on the recommendations by Horta et al. (Contagion effects of the subprime crisis on developed countries, CEFAGE-UE working papers 2009/01, University of Evora, CEFAGE- UE, Portugal, 2009) and Naoui et al. (Int J Econ Financ 2(3):85–96, 2010a, J Bus Stud Q 2(1):15–28, 2010b). The significant change (increase) in the degree of correlation has been taken as a measure of contagion. We model the time-varying conditional correlation using bivariate dynamic conditional correlation generalized autoregressive conditional heteroskedasticity (DCC GARCH) model for all the three sub-periods separately for US-Asian market and Britain-Asian market pairs. We observe significant contagion effect from US and Britain stock markets to all Asian markets during the period of subprime crisis. However, after subprime crisis, we do not find any evidence of contagion from the USA to Japan and China and from Britain to China.

Keywords Contagion • Stock markets • Financial crisis • Interdependence • DCC GARCH

S. Rajwani (✉)
Research Scholar, Research Division, Indian Institute of Foreign Trade,
New Delhi, India
e-mail: shegorika@gmail.com

D. Kumar
Senior Faculty Associate, Department of Finance, Editorial Associate, Journal
of Emerging Market Finance (Sage Publication), Institute for Financial Management
and Research, 24, Kothari Road, Nungambakkam, Chennai 600034, India
e-mail: dksic212@gmail.com; dilip.kumar@ifmr.ac.in

1 Introduction

Repeated occurrence of crisis and crashes in the international financial markets has drawn interest of researchers around the globe to explore the interlinkages among the financial markets of various economies. The Great Depression in 1929, the Exchange Rate Mechanism (ERM) attacks of 1992, the Mexican crisis in 1994, the East Asian crisis of 1997, the Russian collapse of 1998, the terrorist attack in the USA in 2001, the subprime crisis in the USA, and the current European debt crisis in European region, almost all these crises originated in one country but the tremors were felt in different countries of different shapes, sizes, and fundamentals (Forbes and Rigobon 2002; Gallegati 2012). Hence, a need is felt to examine the transmission of shocks from one country to another, maybe due to integration of financial and commodity markets.

To understand the propagation mechanism of shocks from one country to another, one needs to differentiate between interdependence and contagion. Emerging markets have been hit most of the times as they have underdeveloped financial markets, structures, and large public deficits (Billio and Pelizzon 2003). They have a tendency to catch cold first if any developed market gets pneumonia. A rationale behind this phenomenon is that the countries have similar policy framework or macroeconomic fundamentals. They might also have trade linkages or similar investor group and behavior. The impact of shock might be different for different countries due to their structural framework and many other factors. On the other hand, it is difficult to sense the impact of crisis in one country on those economies which do not share similar trade and other macroeconomic fundamentals. Thus, a need was felt to understand the "tequila effect" of the markets.

The US subprime crisis increased the interest among the researchers to examine the impact of country-specific crisis on the other parts of the world. The researches done till now show somewhat mixed results. Using VAR model, Majid and Kassim (2009) have found high degree of integration between the US market and Malaysia and Indonesia. Karim et al. (2011) did not find the impact of the US crisis on the long-run co-movement among the stock index futures markets from Japan, Singapore, China, and Thailand. Naoui et al. (2010b) find significant conditional correlation between emerging markets and US markets except for the Chinese market based on the DCC GARCH model. Celik (2012) examines the contagion was found for most of the developed and emerging countries using DCC GARCH approach. On the other hand, Naoui et al. (2010a) find that Brazil, Mexico, and Argentina have very high correlation with the US market, unlike China, Hong Kong, Korea, and Tunisia. Using copula approach, Wen et al. (2012) examine the contagion between the energy market and stock market during the US subprime crisis. Gallegati (2012) find that Brazil and Japan are the only countries (out of the countries under study) which showed contagion at all scales with the US market using wavelet approach.

The existing literature has thrown some light on the issue of contagion on the emerging and developed markets; hardly any study has been done to examine the impact of the US mortgage crisis on the Asian markets, namely, China, Japan, India, and Malaysia. Of late, new terms have emerged to define various emerging economies

like BRIC, BRIICKS, BRICET, etc. This paper seeks to examine the existence of contagion in the Asian economies from the US market, pre and post the subprime crisis. The data used in this study are daily closing stock market indices of the above markets, spanning over a period of 6 years from January 3, 2006, to December 19, 2011. Policy makers seek to study the existence of contagion among markets so that they can strategically manage risk and it further helps in asset allocation. If the markets are contagious, then the investors will be unable to reap benefits through international diversification of portfolio. In such a case, the policy makers will further frame policies so that they can insulate themselves from inflicting heavy damage from various crises.

The onset of subprime crisis has further given food for thought to the researchers in exploring the effects of the financial crisis on the Asian markets. Post the Great Depression, the subprime crisis has been labeled as the worst financial crisis (Jaffee 2008). The crisis has not only affected the financial markets of the USA but has also affected other financial markets worldwide (Majid and Kassim 2009). Our contribution to the existing literature is to study the impact of US subprime crisis on few Asian financial markets by using DCC GARCH model by dividing the data into pre-crisis, during crisis, and post-crisis period. The findings of the study may be useful for the investors who diversify their portfolio internationally and make capital budgeting decisions in these regions.

The rest of the paper is organized in the following way. In Sect. 2, a brief review of literature is conducted to identify the lacunae in the existing studies and focus on the specific objectives of the present study. Section 3 presents the econometric methodology. Section 4 describes the data used. Section 5 provides the empirical results, followed by concluding observation in Sect. 6.

2 Present State of the Art

During periods of high volatility, markets tend to be correlated which in turn has important implications on policy formulation for international portfolio diversification, capital adequacy, and risk management strategy by managers (Billio and Pelizzon 2003). Studies on integration have potential benefits of asset allocation and financial stability of a country (Ibrahim 2005). Capital mobility and removal of barriers between countries have increased the movement of capital and, thus, the need for international portfolio diversification and risk reduction. This has increased the need to study correlation patterns among countries, especially during turbulent times. It is generally understood that the correlation among markets may differ drastically during quiet period versus crisis period. This will further help investors in hedging their positions in the market to avoid losses. Hence, a need was felt to study whether markets are interdependent on each other. This further gives rise to clarify the definition of interdependence and how it is different from contagion.

Lot of research has been done on contagion, but the researchers have not been able to arrive at a professional consensus, and hence, it remains as the most debated topic. Following Forbes and Rigobon 2002, "*contagion is defined as a significant*

increase in the cross market correlation during the period of crisis." To infer whether there exists contagion between any two countries, one needs to compare the correlation between the countries, pre (before/tranquil) and during (turmoil) the crisis. If a country is hit by a crisis; the correlation between the countries significantly increases from tranquil period to period of turmoil; then there exists contagion between the countries. However, if two countries are highly correlated and remain highly correlated post the crisis too, then the countries are said to be interdependent on each other. This is so because crisis in one country did not lead to significant increase in correlation between the countries. Interdependence between countries is when they are highly/strongly correlated in tranquil times.

Several economies have experienced crisis in the recent past. This has drawn attention of various researchers, academicians, and policy makers. Further, in recent past, various emerging economies have opened up to international investors and companies for investment and trade. International linkages have been increasing, especially for stocks traded in major financial markets (Goldstein and Michael 1993). Thus, integration among the financial markets has increased due to stock market crash of October 1997 and Asian crisis of 1997 (Lee and Kim 1993; Arshanapalli and Doukas 1993; Francis et al. 2002; Yang et al. 2003; Hwahsin and Glascock 2006; Karim and Majid 2009). If the markets are integrated, then the returns from international diversification will tend to diminish.

Previous studies on the integration of Asian stock markets have given mixed results. No contagion between US and various Asian markets has been reported by Chan et al. (1992) and Ibrahim (2005). However, evidences of cointegration among Asian emerging markets and developed markets were found (Arshanapalli et al. 1995; Masih and Masih 1999; Majid et al. 2008; Karim and Majid 2009). In a more recent study on the impact of the US subprime crisis on the integration and comovements of emerging stock markets, namely, Malaysia and Indonesia, it was found that the stock markets tend to show greater degree of integration during the crisis period than during tranquil period (Majid and Kassim 2009). Studies conducted previously on US markets suggest that the US market is one of the most influential stock markets in the world. It was found that the US market is a "global factor" which affects most of the Asian markets (Cheung and Mak 1992). It was further found that the ASEAN markets show greater degree of influence toward US stock markets than the Japanese market (Arshanapalli et al. 1995; Ibrahim 2005; Majid et al. 2008). The Japanese stock market was found to significantly move the Malaysian market compared to the US during the post-crisis period (Yusof and Majid 2006; Karim and Majid 2009).

There have been different views on the impact of the US subprime crisis on the Asian markets. These views focus on international linkages and have been categorized as coupling versus decoupling debate. The "decoupling theory" argues whether the emerging Asia is decoupling itself from the global business cycle. The theory suggests that the strong growth in the Asian region and the rising purchasing power will increase Asia's own final demand, and it may weather out the adverse consequences of the US subprime crisis (Majid and Kassim 2009; Raj and Dhal 2008). The coupling theory is of the view that focuses more on global linkages of Asian economies. The demand of intermediate goods has increased over a period of

time within the Asian region. This may due to increased trade among countries in the Asian region or increase in the exports made by Asian countries to countries in other parts of the world. It was further suggested that the rapid economic integration within Asian region is linked to global integration. Instead of decoupling, the emerging Asia has rather been coupling with countries like the USA, the UK, and Japan (Kim et al. 2011).

3 Methodology

3.1 DCC GARCH Model

In the empirical analysis, DCC GARCH model of Engle (2002) is being used to test the contagion during global financial crisis. The major advantages of using the model are as follows:

(a) The model helps in the detection of possible of changes in conditional correlations over time, which allows us to detect dynamic investor behavior in response to news and innovations.
(b) The DCC measure is appropriate to investigate possible markets during crisis periods (Corsetti et al. 2005; Boyer et al. 2006; Chiang et al. 2007; Syllignakis and Kouretas 2011).
(c) The DCC model estimates the correlation coefficients of the standardized residuals and so accounts for heteroskedasticity directly (Chiang et al. 2007).
(d) Since the volatility is adjusted by the procedure, the time-varying correlation (DCC) does not have bias from volatility. Unlike the volatility-adjusted cross-market correlations employed in Forbes and Rigobon (2002), DCC GARCH continuously adjusts the correlation for time-varying volatility. Hence DCC GARCH provides a superior measure for correlation (Cho and Parhizgari 2008).

The multivariate DCC GARCH model is defined as follows:

$$\varepsilon_{i,t} = z_{i,t}\sqrt{h_{i,t}} \tag{1.1}$$

$$h_{i,t} = \omega_{i0} + \sum_{j=1}^{2}\alpha_{ij}\varepsilon_{j,t-1}^2 + \sum_{j=1}^{2}\beta_{ij}h_{j,t-1}, \quad \text{for } i,j = 1,2 \tag{1.2}$$

where $z_{i,t}$ is the standardized residual and $h_{i,t}$ is the conditional variance.

$$H_t = D_t P_t D_t \tag{1.3}$$

where H_t is the 2×2 conditional covariance matrix, P_t is the conditional correlation matrix, and D_t is a diagonal matrix with time-varying standard deviations.

$$D_t = \text{diag}\left(\sqrt{h_{11}}, \sqrt{h_{22}}\right) \tag{1.4}$$

and

$$P_t = \text{diag}\left(\left(Q_t\right)^{-1/2}\right)Q_t\,\text{diag}\left(\left(Q_t\right)^{-1/2}\right) \tag{1.5}$$

where Q_t is a (2×2) symmetric positive definite matrix, $Q_t = (q_t^{ij})$, and is given as

$$Q_t = (1-\theta_1-\theta_2)\overline{Q} + \theta_1\,z_{t-1}z_{t-1}' + \theta_2 Q_{t-1} \tag{1.6}$$

where $\overline{Q}$ is a (2×2) matrix of the unconditional correlation of standardized residuals. θ_1 and θ_2 are nonnegative scalars and it is assumed that $\theta_1+\theta_2<1$. The estimates of correlation are given as

$$\rho_{i,j,t} = \frac{q_{i,j,t}}{\sqrt{q_{i,i,t}\,q_{j,j,t}}}$$

The diagonal bivariate GARCH model assumes the dynamic conditional correlation between asset returns to be zero, i.e., $\rho_{i,j,t}=0$ for all i and j. On the other hand, the constant conditional correlation considers $P_{i,j}=\rho_{i,j}$ and $P_t=P$.

3.2 Contagion Effect Test with Dynamic Conditional Correlation Coefficient

To test the consistency of dynamic correlation coefficients between international stock markets in the pre-crisis and crisis periods to judge the contagion effect, we use t-statistics. We define null and alternative hypothesis as

$$H_0 = \mu_\rho^{\text{crisis}} = \mu_\rho^{\text{pre-crisis}},\ H_1 = \mu_\rho^{\text{crisis}} \neq \mu_\rho^{\text{pre-crisis}} \tag{1.7}$$

where $\mu_\rho^{\text{pre-crisis}}$ and μ_ρ^{crisis} are conditional correlation coefficient means of population in the pre-crisis and crisis periods. If the sample sizes are n^{crisis} and $n^{\text{pre-crisis}}$, the population variances σ_{crisis}^2 and $\sigma_{\text{pre-crisis}}^2$ are different and unknown. The means of dynamic correlation coefficients estimated by DCC are $\rho_{ij}^{\text{crisis}}$ and $\rho_{ij}^{\text{pre-crisis}}$ and the variances are s_{crisis}^2 and $s_{\text{pre-crisis}}^2$, the t-statistic is calculated as

$$t = \frac{\left(\overline{\rho}_{ij}^{\text{crisis}} - \overline{\rho}_{ij}^{\text{pre-crisis}}\right) - \left(\mu_p^{\text{crisis}} - \left(\mu_p^{\text{pre-crisis}}\right)\right)}{\sqrt{\dfrac{s_{\text{crisis}}^2}{n^{\text{cirsis}}}} + \sqrt{\dfrac{s_{\text{pre-crisis}}^2}{n^{\text{pre-cirsis}}}}} \tag{1.8}$$

$$\textit{where}\ \ s_{\text{crisis}}^2 = \frac{1}{n^{\text{crisis}}-1}\sum_{t=1}^{n^{\text{crisis}}}(\rho_{ij}^{\text{crisis}} - \overline{\rho}_{ij}^{\text{crisis}})^2$$

$$s^2_{\text{pre-crisis}} = \frac{1}{n^{\text{pre-crisis}} - 1} \sum_{t=1}^{n^{\text{pre-crisis}}} (\rho_{ij}^{\text{crisis}} - \bar{\rho}_{ij}^{\text{crisis}})^2 \quad ; \text{ the degree of freedom } v \text{ is}$$

$$v = \frac{\left(\dfrac{s^2 \text{ crisis}}{n^{\text{crisis}}} + \dfrac{s^2 \text{ pre-crisis}}{n^{\text{pre-crisis}}} \right)}{\dfrac{\left(\dfrac{s^2 \text{ crisis}}{n^{\text{crisis}}} \right)^2}{n^{\text{crisis}} - 1} + \dfrac{\left(\dfrac{s^2 \text{ pre-crisis}}{n^{\text{pre-crisis}}} \right)^2}{n^{\text{pre-crisis}} - 1}} \tag{1.9}$$

If t-statistics is significantly greater than the critical value, H_0 is rejected supporting the existence of contagion effect.

4   Data and Preliminary Analysis

Data employed in this study are log returns of daily closing stock market indices for the USA, the UK, India, Japan, Malaysia, and China. The various indices that have been considered in the current study are shown in Table 1.1.

The period of study spreads over a period of 6 years starting from January 3, 2006, to December 19, 2011 (1,118 observations). The data have been compiled from Bloomberg.

Determination of crisis period is a very difficult decision (Kaminsky and Schmukler 1999). We split the study period into three sub-periods which include: (1) pre-crisis period or quiet period from January 3, 2006, to July 31, 2007; (2) crisis period from August 1, 2007, to February 26, 2010; and (3) post-subprime crisis period from February 27, 2010, to December 19, 2011. The sub-periods have been taken based on the recommendations by Horta et al. (2008) and Naoui et al. (2010a, b). The significant change (increase) in the degree of correlation has been taken as a measure of contagion. To avoid spurious results, we eliminated those observations where data were unavailable, because of holidays or other reasons, for at least one market.

Table 1.1 Detail of indices used

Country	Index
India	BSE SENSEX
China	Shanghai Stock Exchange Composite Index (SSECI)
Japan	Nikkei 225
Malaysia	FTSE Bursa Malaysia Index
USA	S&P 500
UK	FTSE 100

Tables 1.2, 1.3, and 1.4 provide the descriptive statistics of returns of the data under study for pre-crisis, crisis, and post-crisis periods. During the pre-crisis period, the average returns of all the economies under study are positive. All the returns series exhibit lower volatility (with respect to data from the crisis period). Moreover, all returns series are negatively skewed and exhibit significant excess kurtosis (leptokurtic behavior). During the crisis period, except for India, all other index returns are negative, are extremely volatile, and exhibit significant excess kurtosis. During this period, except for the UK and India, all other series are negatively skewed. During the post-crisis period, the US, the UK, and Malaysia exhibit positive returns and China, Japan, and India exhibit negative average returns. During this period, all returns series are negatively skewed (except for India) and exhibit significant excess kurtosis. Overall, it can be said that the Asian markets are

Table 1.2 Descriptive statistics for the pre-crisis period (January 3, 2006, to July 31, 2007)

	USA	UK	China	Japan	Malaysia	India
Minimum	−0.0353	−0.0338	−0.1130	−0.0511	−0.0603	−0.0700
Maximum	0.0213	0.0245	0.0792	0.0677	0.0272	0.0667
Mean	0.0005	0.0004	0.0045	0.0002	0.0014	0.0017
Std. dev.	0.007765	0.00876	0.021828	0.013368484	0.009036	0.018207
Skewness	−0.48833	−0.64271	−0.93979	−0.15278081	−1.52289	−0.48321
Kurtosis	2.182609	1.966056	5.252802	2.864585552	10.22024	2.386992

Table 1.3 Descriptive statistics for the crisis period (August 1, 2007, to February 26, 2010)

	USA	UK	China	Japan	Malaysia	India
Minimum	−0.1378	−0.1033	−0.1276	−0.1292	−0.0873	−0.1280
Maximum	0.0940	0.0982	0.0933	0.0999	0.0581	0.1611
Mean	−0.0006	−0.0004	−0.0008	−0.0011	−0.0002	0.0001
Std. dev.	0.022047	0.020916	0.026945	0.024281	0.013293	0.027252
Skewness	−0.70308	0.028354	−0.04862	−0.90558	−0.60211	0.181091
Kurtosis	5.321786	3.811992	1.786665	5.631415	7.178117	4.460316

Table 1.4 Descriptive statistics for the post-crisis period (February 27, 2010 to December 19, 2011)

	USA	UK	China	Japan	Malaysia	India
Minimum	−0.0690	−0.0541	−0.0558	−0.1115	−0.0423	−0.0446
Maximum	0.0551	0.0508	0.0422	0.0552	0.0266	0.0620
Mean	0.0003	0.0000	−0.0009	−0.0006	0.0004	−0.0002
Std. dev.	0.015345	0.013985	0.014943	0.015768	0.007709	0.013939
Skewness	−0.28104	−0.04212	−0.50521	−1.10377	−0.96221	0.322559
Kurtosis	2.586436	2.021205	1.580044	7.780096	5.394022	1.567363

impacted by the US subprime crisis as well as the European debt crisis (negative returns in the post-crisis period).

5   Empirical Results

Figure 1.1 reports the time-varying conditional correlations estimated from DCC GARCH model for US-Asian market and UK-Asian market pairs. We observe wider fluctuations in the conditional correlations during the period of subprime
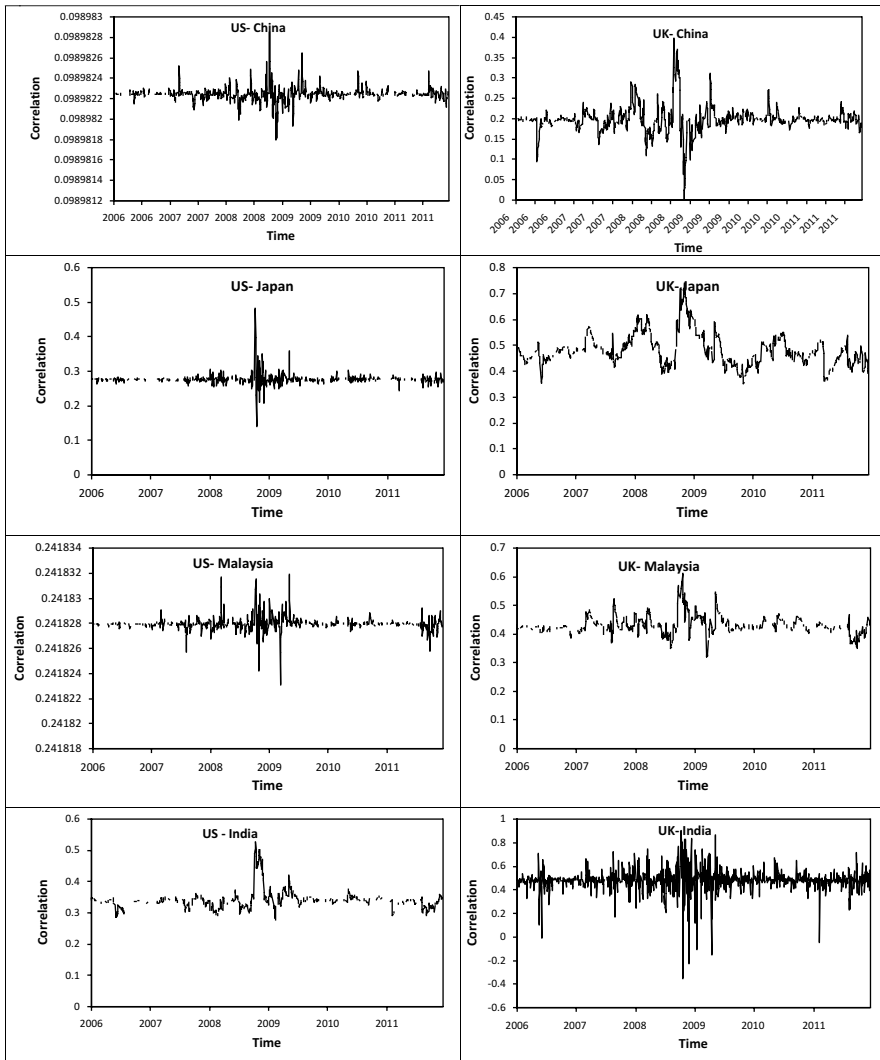
Fig. 1.1   Time-varying conditional correlation estimated by DCC GARCH model

crisis (2007–2009) for all US-Asian market and UK-Asian market pairs under study. We also observe volatility in the correlations of UK-Asian market pairs during the period of European debt crisis (2009–2011). This indicates that indeed the crisis in developed markets impacts the developing markets.

Table 1.5 reports the unconditional correlations estimated using conventional approach and the average of the dynamic conditional correlations for pre-crisis, crisis, and post-crisis periods. Results indicate that except for China, all other Asian markets exhibit increase in conditional correlation with respect to the US market during the period of subprime crisis. Further, similar findings are observed with unconditional correlation approach. After subprime crisis, we observe increase in conditional correlation for US-Malaysia and US-India pairs. The US-Japan pair does not exhibit any significant change in the average conditional correlation value; however, the unconditional correlation for US-Japan exhibits significant decline during the post-crisis period.

For the UK-Asian market pairs, the average values of conditional correlation and the unconditional correlation exhibit significant increase in the crisis period with respect to the pre-crisis period. Except for UK-China pair, all other UK-Asian market pairs exhibit decline in the correlation in the post-crisis period with respect to the crisis period. The UK-China pair also exhibits decline in the correlation value, but decline is very small with respect to other cases. These findings indicate that the Asian markets are influenced by the movements in developed markets.

Table 1.6 reports the results of *t*-test to examine the significant change in the conditional correlation in the US-Asian market and UK-Asian market pairs over the pre-crisis and crisis period and crisis and post-crisis period. Results support the significant contagion from the US and UK markets to Asian markets over the study period with the exceptions for US-Japan and UK-China pairs after subprime crisis for which we do not find any evidence of contagion.

6   Concluding Observations

The paper examines whether there has been financial contagion from US and UK to few Asian markets defined above during the 2008 financial crisis by using stock returns data during time period from January 3, 2006, until December 19, 2011. Financial crises and their contagion have been long studied and modeled by economists, and several alternative definitions of financial contagion have been used. The period of study was categorized into three: pre-crisis period or quiet period from January 3, 2006, to July 31, 2007; crisis period from August 1, 2007, to February 26, 2010; and post-subprime crisis period from February 27, 2010, to December 19, 2011. We first compare the correlation coefficients between stock returns of the USA (a crisis country) and developed state (UK) with few Asian markets like Japan, India, China, and Malaysia during the non-crisis and crisis period. Investigation is based on the dynamic conditional correlation approach. We find significant

Table 1.5 Comparative analysis of unconditional correlation and DCC

	Unconditional					Conditional				
	Pre-crisis	Crisis	Post-crisis	% age diff (pre-crisis and crisis)	% age diff (crisis and post-crisis)	Pre-crisis	Crisis	Post-crisis	% age diff (pre-crisis and crisis)	% age diff (crisis and post-crisis)
With respect to the USA										
China	0.181	0.065	0.186	64.032	−186.750	0.181	0.065	0.186	64.032	−186.750
Japan	0.165	0.305	0.239	−84.521	21.617	0.165	0.239	0.239	−44.809	0.102
Malaysia	0.194	0.281	0.160	−44.850	43.145	0.191	0.281	0.208	−46.895	25.885
India	0.203	0.392	0.283	−92.964	27.686	0.203	0.389	0.283	−91.353	27.126
With respect to the UK										
China	0.093	0.221	0.229	−136.306	−3.601	0.093	0.221	0.227	−136.259	−3.047
Japan	0.375	0.554	0.365	−47.858	34.149	0.373	0.554	0.363	−48.435	34.506
Malaysia	0.365	0.468	0.370	−28.109	20.870	0.329	0.468	0.374	−42.416	19.984
India	0.381	0.517	0.480	−35.860	7.270	0.381	0.516	0.477	−35.217	7.545

Table 1.6 Dynamic conditional correlation coefficient and contagion effect test

	Pre-crisis		Crisis		Post-crisis		_t_-stat (pre-crisis and crisis)	_t_-stat (crisis and post-crisis)
	Mean	SE^2	Mean	SE^2	Mean	SE^2		
With respect to the USA								
China	0.181	0.000	0.065	0.000	0.186	0.000	3,648,594.955	−3,851,346.459
Japan	0.165	0.000	0.239	0.000	0.239	0.000	−8.899	0.029
Malaysia	0.191	0.000	0.281	0.000	0.208	0.000	−28.944	15.837
India	0.203	0.000	0.389	0.000	0.283	0.000	−109.640	88.038
With respect to the UK								
China	0.093	0.000	0.221	0.000	0.227	0.000	−52.873	−1.442
Japan	0.373	0.000	0.554	0.000	0.363	0.000	−39.479	33.707
Malaysia	0.329	0.000	0.468	0.000	0.374	0.000	−15.960	74.197
India	0.381	0.000	0.516	0.000	0.477	0.000	−21.803	4.257

contagion from US and UK markets to Asian markets under study with the exceptions for US-Japan and UK-China pairs for which after subprime crisis we do not find any evidence of contagion.

References

Arshanapalli B, Doukas J (1993) International stock market linkages: evidence from the pre-and post-October 1987 period. J Bank Financ 17:193–208

Arshanapalli B, Doukas J, Lang L (1995) Pre and post- October 1987 stock market linkages between US and Asian markets. Pac Basin Financ J 3(1):57–73

Billio M, Pelizzon L (2003) Contagion and interdependence in stock markets: have they been misdiagnosed. J Econ Bus 55(5/6):405–426

Boyer B, Kumagai T, Yuan K (2006) How do crisis spread? Evidence from accessible and inaccessible stock indices. J Financ 61:957–1003

Celik S (2012) The more contagion effect on emerging markets: the evidence of DCC- GARCH model. Econ Model 29(5):1946–1959

Cheung YL, Mak SC (1992) A study of the international transmission of stock market fluctuation between the developed markets and the Asian-Pacific markets. Appl Financ Econ 2:1–5

Chiang TC, Jeon BN, Li H (2007) Dynamic correlation analysis of financial contagion: evidence from Asian markets. J Int Money Financ 26(7):1206–1228

Cho JH, Parhizgari AM (2008) East Asian financial contagion under DCC-GARCH. Int J Bank Finance 6(1):2

Chan K (1992) A further analysis of the lead lag relationship between the cash market and the stock index futures markets. Rev Financ Stud 5:123–152

Corsetti G, Pericolli M, Sbracia M (2005) Some contagion, some interdependence: more pitfalls in tests of financial contagion. J Int Money Financ 24:1177–1199

Engle R (2002) Dynamic conditional correlation: a simple class of multivariate generalized autoregressive conditional heteroskedasticity models. J Bus Econ Stat 20(3):339–350

Forbes K, Rigobon R (2002) No contagion, only interdependence: measuring stock market comovements. J Financ 57(5):2223–2261

Francis I, Kim S, Yoon JH (2002) International stock market linkages: evidence from the Asian financial crisis. J Emerg Mark Financ 1:1–29

Gallegati M (2012) A wavelet – based approach to test for financial market contagion. Comput Stat Data Anal 56(11):3491–3497

Goldstein M, Michael M (1993) The integration of the world capital markets. IMF working paper. International Monetary Fund, Washington, DC

Horta P, Mendes C, Vieria I (2008) Contagion effects of the US subprime crisis on developed countries. CEFAGE-UE working papers 2008/08

Hwahsin C, Glascock JL (2006) Stock market linkages before and after the Asian financial crisis: evidence from three greater China economic area stock markets and the US. Rev Pac Basin Financ Mark Polic (RPBFMP) 9(2):297–315

Ibrahim MH (2005) International linkage of stock prices: the case of Indonesia. Manag Res News 28(4):93–115

Jaffee DM (2008) The US mortgage subprime crisis: issues raised and lessons learned. Working paper no. 28, The Commission on Growth and Developed, Washington, DC, pp 1–36

Kaminsky GL, Schmukler SL (1999) What triggers market jitters? A chronicle of the Asian crisis. J Int Money Financ 18(4):537–560

Karim BA, Majid MSA (2009) International linkages among stock markets of Malaysia and its major trading partners. J Asia Pac Bus 10(4):326–351

Karim B, Mohamad J, Karim S (2011) The subprime crisis and stock index futures markets integration. J Risk Financ 12(5):400–408

Kim S, Lee JW, Park CY (2011) Emerging Asia: decoupling or recoupling. World Econ 34(1):23–53

Lee SB, Kim KJ (1993) Does the October 1987 crash strengthen the co-movements among national stock markets. Rev Financ Econ 3(1/2):89–102

Majid MSA, Kassim SH (2009) Impact of 2007 US financial crisis on the emerging equity markets. Int J Emerg Mark 4(4):341–357

Majid MSA, Meera AKM, Omar MA (2008) Interdependence of ASEAN-5 stock markets from the US and Japan. Glob Econ Rev 37(2):201–225

Masih AM, Masih R (1999) Are the Asian stock market fluctuations due mainly to intra-regional contagion effects? Evidence based on Asian emerging stock markets. Pac Basin Financ J 7(3–4):251–282

Naoui K, Khemiri S, Liouane N (2010a) Crises and financial contagion: the subprime crisis. J Bus Stud Q 2(1):15–28

Naoui K, Liouane N, Brahim S (2010b) A dynamic conditional correlation of financial contagion: the case of the subprime credit crisis. Int J Econ Finance 2(3):85–96

Raj J, Dhal S (2008) Integration of India's stock market with global and major regional markets. Regional financial integration in Asia: present and future. In: Proceedings of the first workshop of the Asian Research Network for Financial markets and Institutions organized by the BIS and the Hong Kong Institute for Monetary Research in Hong Kong SAR on 21 January 2008, Basel, Bank for Internet. Settlements, ISBN 9291317780. – 2008, pp 202–236

Syllignakis MN, Kouretas GP (2011) Dynamic correlation analysis of financial contagion: evidence from the central and eastern European markets. Int Rev Econ Financ 20(4):717–732

Wen X, Wei Y, Huang D (2012) Measuring contagion between energy market and stock market during financial crisis: a copula approach. Energy Econ 34(5):1435–1446

Yang J, Kolari JW, Min I (2003) Stock market integration and financial crisis: the case of Asia. Appl Financ Econ 13:477–486

Yusof RM, Majid MSA (2006) Who moves the Malaysian stock market- the US or Japan? Empirical evidence from the pre-, during and post-1997 Asian financial crisis. Gadjah Mada Int J Bus 8:367–406

Chapter 2
Achieving Business Agility Through Service-Oriented Architecture in Recovering Markets

Sangeeta Shah Bharadwaj, Sumedha Chauhan, and Aparna Raman

Abstract Organizations in recovering markets are struggling to sustain and grow. These markets are characterized by turbulence in terms of market volatility and uncertainties. Over the years, there has been a greater need of alignment of IT strategies with business strategies. However, business leaders have always been skeptical towards IT spending because of the perceived gap between business needs and IT. The changing landscape of IT through emerging technologies such as cloud computing and service-oriented architecture is addressing the gap by providing flexibility, agility, and scalability. This research paper addresses the role of service-oriented architecture (SOA) in achieving business agility in organizations. The existing enterprise systems such as ERP, CRM, SCM, etc. are making organizations very efficient, but end-to-end value chain agility is not achieved through these hardwired independent enterprise systems (Alter, Defining information systems as work systems: implications for the IS field. Eur J Inf Syst 17(5):448–469, 2008). SOA addresses this gap by identifying the business services needs and then delivering it. SOA integrates the heterogeneous IT applications that may exist in organizations. In recovering markets, competiveness is achieved by using the technology efficiently and effectively. In this research paper, a conceptual model has been designed to address the business value chain agility through SOA.

Keywords Value chain agility • Digital options • Service-oriented architecture

1 Introduction

Agility today forms an important part of an organization's competitive strategy (Yusuf et al. 1999). It is defined as the ability to sense and respond to unanticipated challenges in business (Sharifi and Zhang 1999). Organizations in emerging market are driven by regulatory changes, market volatility, and increasing customer

S.S. Bharadwaj (✉) • S. Chauhan • A. Raman
Management Development Institute, Mehrauli Road,
Sukhrali, Gurgaon 122007, India
e-mail: ssbharadwaj@mdi.ac.in; sumedha.chauhan@gmail.com;
aparnarraman@gmail.com

expectations. To survive in such an environment, an enterprise should have the capability to first sense the unanticipated demand of its customers and, more importantly, to respond to it in a timely manner, keeping in mind the quality and reliability of the services. This dynamic capability to sense unexpected threats, opportunities, as well as environmental changes and make use of existing resources, knowledge, and processes to quickly respond is called *enterprise agility* (Goldman et al. 1995; Yang and Liu 2012). Thus, enterprise agility enables an enterprise to compete and deal with turbulent environment and survive. However, to be agile at the enterprise level, an enterprise should be agile from the point where it receives raw material from its suppliers to the point where the finished products reach the consumer.

Organizational agility involves the agility in value chain which includes the activities like designing, producing, marketing, delivering, and supporting the products. An agile organization has the abilities to design and deliver innovative products (Swafford et al. 2006). The objective of this study is to discuss the agility at various functions of the value chain. This will help in understanding the horizontal integration aspect of the business value chain in terms of agility, which is missing from the existing literature. Another objective is to understand how IT can act as enabler in making the business value chain more agile.

This paper first discusses the value chain model and how IT directly and indirectly enables the agility at the enterprise level. Further, it discusses about the framework of business value chain agility in which the agilities at different steps of the value chain are discussed and how IT enables each one of them. Finally, it presents the service-oriented architecture as a solution to enhance value chain agility and help in tight coupling of horizontal integration.

2 Literature Review

2.1 Porter's Value Chain Model

Porter's value chain is regarded as one of the most comprehensive strategic framework for a company's value creation process (Sanchez and Heene 2004). It identifies the sources of sustainable competitive advantage: "Competitive advantage cannot be understood by looking at an enterprise as a whole. It stems from the many discrete activities an enterprise performs in designing, producing, marketing, delivering and supporting its product." All of the activities included in Porter's value chain model can contribute to relative cost advantage and build a foundation for the differentiation (Porter 1985).

The division of the value chain into parts helps the enterprise to understand which activities add value and which of them do not (Ketchen and Hult 2007). The porter's value chain separates the activity of the enterprise into a sequential stream of core (primary) and non-core (support) activities. The porter's value chain is based on the process view of organizations. The organization is viewed as a service, which is made up of subsystems of inputs, transformation processes, and output processes. The pri-

mary activities consist of the inbound logistics, operations, outbound logistics, marketing, and sales and service. The secondary activities are procurement, human resources management, technological development, and infrastructure.

The primary activities are those which are involved in the actual and physical creation of the product, sales of the product, its distribution, and the post-sales services. The inbound and outbound logistics which are product interrelations along with the market interrelations, marketing, and sales and postsales are the major components. The support facilitates the primary activities and involves the infrastructure, technology interrelation, procurement interrelation, and human resource management (Ireland and Webb 2007; Mowen and Hansen 2007). Most of the organizations do not do all the production in-house, and therefore, external linkages of upstream suppliers and then delivering them to downstream ones become critical in today's scenario. Also, there is a physical and an information processing component in each value activity. These components consist of steps to capture, manipulate, and channel data (Porter and Millar 1985).

2.2 Role of IT in Enterprise Agility

Information technology (IT) empowers the sensing and responding capabilities of an enterprise by enhancing the enterprise's capacity to gather and process information in a dynamic environment. These capabilities can be enhanced directly and indirectly through digital options (Huang et al. 2012; Sambamurthy et al. 2003; Overby et al. 2006). For the direct effect of IT, an enterprise must possess an adequate level of IT capability so that it can sense the changes that are pertinent to its business brought about by advances in IT. IT capabilities are significant for responding in the industries that are driven by IT such as telecom and financial services.

More importantly, IT indirectly enhances the performance of an enterprise by contributing to the performance of its business processes like manufacturing and supply chain (Overby et al. 2006). This is done through digital options which are IT-enabled capabilities in the form of digitized work processes and knowledge systems (Sambamurthy et al. 2003). IT helps in enabling the reach and richness of these digital options. A digitized knowledge system is the way to maintain repository of knowledge and promote sharing of knowledge by the experts in the organization. Digitized knowledge reach is the comprehensiveness and accessibility of the available codified knowledge in the enterprise. Further, knowledge richness is enhanced by IT as it can enable an enterprise to attain high quality in a timely and customized manner (Sambamurthy et al. 2003; Overby et al. 2006). Digitized processes refer to the IT-enabled, common and connected processes. IT also expands process reach which enables an enterprise to integrate with its customers, suppliers, distributors, etc. Similarly process richness improves the quality of information available to the partners of the enterprise by making it more timely and accurate (Sambamurthy et al. 2003; Overby et al. 2006). Knowledge-oriented IT enhances the sensing dimension, while process-oriented IT enhances the responding dimension of agility (Overby et al. 2006).

3   Business Value Chain Agility for the Manufacturing Sector

This section discusses the agilities at each of the core and non-core activities of Porter's value chain model, namely, inbound and outbound logistics, operations, sales, and services. It also discusses how IT acts as enabler in making these activities agile.

3.1   Inbound and Outbound Logistics

Supply chain activities are divided into inbound logistics, like receiving, storing, and inventory control of the raw material, and outbound logistics, like storing the finished product, sending it to the customers, and fulfilling the order (Hult et al. 2007). Through supply chain management, an enterprise collaborates with its value chain partners to integrate its business processes which in turn help it in meeting unpredictable demands of its customers (Agarwal et al. 2006). In the dynamic environment, the needs of the customers are uncertain; hence, an agile supply chain is needed to overcome such situations. *Supply chain agility* is the capability of aligning the network and its operations in order to rapidly respond to the changing customer requirements (Ismail and Sharifi 2006; Sharp et al. 1999). Hence, supply chain agility is required to survive in the dynamic environment as it facilitates the synchronization of supply with demand (Gligor and Holcomb 2012).

The quality of relationship with the supplier, high level of information sharing, and greater connectivity among the enterprises in the supply chain are the three significant enablers of the agile supply chain (Christopher 2000). Information technology solutions like enterprise resource planning (ERP) can help in achieving each of these conditions by providing easy and rich interaction, real-time information sharing, and better connectivity with the suppliers and distributors. For example, if a sales team is able to forecast the market demand effectively, then this information can be fed to the supply chain and production department which in turn help them in procuring the correct amount of material from the suppliers. This can only be achieved with the use of IT because an enormous amount of information can be obtained from diverse geographic locations and on real-time basis. This, in turn can be disseminated to both forward and backward supply chain paths as soon as possible to meet the changed environment effectively.

In addition to supply chain agility, agility among partners like suppliers (inbound logistics) and distributors (outbound logistics) can be achieved by making use of their knowledge, assets, and competencies to build a strategic and extended network (Zaheer and Zaheer 1997).

Partnering agility can help in exploring the opportunities for innovation and can be done by building alliances and partnership. Digital process and knowledge reach and richness help in enhancing partnering agility as new competencies can be integrated by the enterprise in its value network (Sambamurthy et al. 2003).

3.2 Operations

Activities that transform raw material into finished product fall under this step of the value chain. The ability of business processes to attain accuracy, speed, and cost economy in the exploitation of opportunities for innovation and competitive action is called *operational agility* (Cohen and Levinthal 1990; Gupta et al. 2006; March 1991). Operational agility makes sure that an enterprise can create new processes and redesign the existing ones. Digital process reach and richness support operational agility as the business processes can be rapidly sequenced and coordinated along the complete value chain (Sambamurthy et al. 2003). For example, the use of IT can enable a culture of greater interaction among production and sales departments. This can help in tight coupling of sensing and responding capabilities of the enterprise as the sales department can forecast the demand and the production department can manufacture the goods or services to fulfill it.

Manufacturing agility is the ability to survive and thrive in an unpredictable, competitive, and continuously changing environment by responding quickly and effectively to the dynamic market changes driven by customer demands (Gunasekaran 1998). To achieve this, there ought to be strong sensing capabilities (achieved through agility in sales) feeding into an IT-enabled lean manufacturing unit. Similarly, the production function itself should be quite flexible to respond effectively to the changed environment. IT can support the integration of various feedback paths, material flow, and interaction among different production functions. Real-time information sharing, tightly coupled production functions all enabled by IT, would help in only producing exactly what is required and exactly when required. For example, if different warehouses of an enterprise can share the information in real time and the enterprise can estimate the geographic distribution of demand in advance, these factories can work in tandem to fulfill the demand without straining the resources.

3.3 Sales

Activities which facilitate buyers purchasing the product fall under sales. Today, customers act as cocreators and contribute to product design and development instead of being just the receiver of the products and services. To be agile at this step, an enterprise should have the ability to co-opt with customers in exploring and exploiting the opportunities for innovation and competitive action. This is called *customer agility* (Roberts and Grover 2012a, b; Sambamurthy et al. 2003). There should be a strong match between customer sensing and responding capabilities for the greater customer agility effect. Digital process reach and richness enhance customer agility by making use of virtual communities and customization, while digital knowledge reach and richness help in product configuration knowledge delivery (Sambamurthy et al. 2003).

For example, the forecasting process aims to attain the exact customer demands. Developing a salesperson portal can ease the issue because the information can directly be exchanged between the sales department in headquarters and the local market (Huang et al. 2012).

3.4 Service

This step of the value chain includes the activities like maintaining and enhancing the value of the product by providing customer support services. The different elements of services strategy are competitive capabilities, portfolio of strategic choices regarding policies, infrastructure, staffing, and structure and integration system of coordination (Roth and Jackson 1995). Maintaining interaction with current and future customers of the enterprise to create a profitable and long-term relationship and as a result improving the shareholder value is called customer relationship management (CRM). This requires the integration of people, processes, and marketing and operations capabilities through the use of information technology (Payne and Frow 2005). Therefore, CRM agility can be defined as the *ability to effectively monitor and manage the relationship with customers by rapidly sensing and responding to their support and services demand in the volatile environment, thereby retaining and increasing the value of customers by increased customer loyalty and market and wallet share*. CRM agility is required so that the customer-facing processes can keep pace with the business objectives and marketplace (Pega 2013). A front office, flexible yet tightly integrated with the back office, can improve the effectiveness of marketing, increase sales, and result in more satisfied customers.

The *operational agility* in the service strategy is defined as the capabilities that are associated with exemplar services (Kogut and Zander 1992; Chase and Hayes 1991). Menor et al. (2001) use these competitive capabilities for services to excel in service quality, delivery, flexibility, and low cost. For example, in the 1990s, McDonald's needed more operational agility in operations to compete. The operational agility developed by McDonald's in its services along with the flexible production process helped it in gaining sustainable competitive advantage. It provides quality in customer service as well as invests in training and building technical skills. The investment in information technology in the service-based processes has helped it leverage its quality in front of its customers. Figure 2.1 presents the business value chain agility framework.

3.5 Procurement

The flexibility in the procurement benefits the value chain agility. The agility in procurement focuses on the effective management of relationships with the external enterprises (Swafford et al. 2006) and is tightly related to *supply chain agility*.
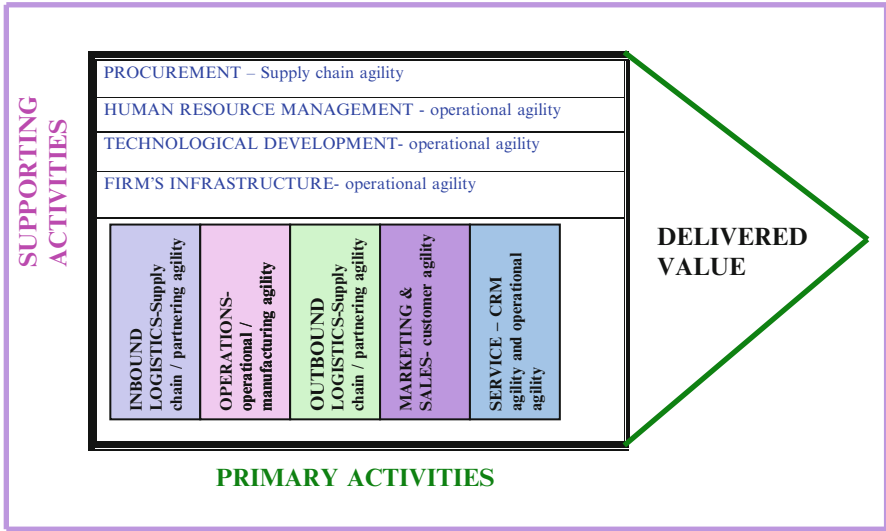
Fig. 2.1 Business value chain agility framework (Adapted from Porter's Value Chain, 1985)

The procurement typically is concerned with the management of the purchase and delivery of material and forms a close linkage between supplier and internal activities. It further improves the responsiveness and customer satisfaction (Narasimhan and Das 1999). IT can impact value chain agility by reducing response time and improving interfirm network relationships.

3.6 Human Resources, Technological Development, and the Enterprise's Infrastructure

The *operational agility* is a must for an organization to quickly respond to the needs. The human resources, technological development, and the enterprise's infrastructure help in providing quality in customer service. Information technology plays a role in all the three components as it helps in the right allocation of human resources, helps in technological development, as well as helps in the right investment of the enterprise's infrastructure as per the advanced need of technology.

Today, various enterprises have hardwired independent IT solutions like ERP, CRM, SCM, etc. to achieve efficiencies and agilities at the individual level. Though these systems are the best of the breed solutions, there is a need to achieve end-to-end value chain agility to be more successful and competitive. The next section presents service-oriented architecture as a solution to this problem. Figure 2.2 presents the system without SOA which is closed, monolithic, and in silos.
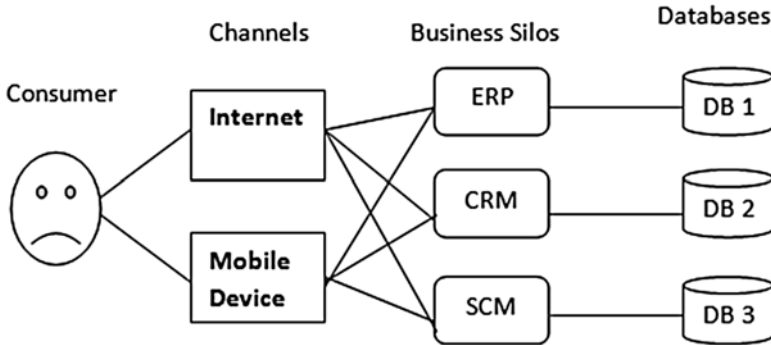
Fig. 2.2 System without SOA

4 Service-Oriented Architecture

Service-oriented architecture is a way to specify, identify, and organize distributed computing services into the loosely coupled applications. It provides an architectural paradigm to help in the simplification of integration (Papazoglou and Heuvel 2007). Thus, loose coupling helps the system to retain the internal integrity of these elements while making the entire system flexible. SOA is considered to be an effective way to achieve business agility (Brown 2008). It is a set of discrete software modules or computation services that can link the resources on demand. Therefore, it provides a platform to design flexible systems for an agile environment that can adapt to the dynamic needs (Ren and Lyytinen 2008).

One of the major benefits of SOA is service reusability. It implies that services are not employed to meet a narrow need but to address many service situations, for example, having a piece of code that can be generalized across multiple business cases. This situation can only be achieved if service consumption goes up which in turn gives chance to application builds to recognize the services that can be reusable. As SOA is needed to support flexibility at the enterprise level, reusability in the services is a logical aspect (Ren and Lyytinen 2008; Oracle 2009). Further SOA helps in business modeling and structuring of organizations so that the individual capabilities are leveraged and complexity is reduced. This helps in greater adaptation to change and greater ability for the businesses to monitor and react.

SOA is regarded as a core IT asset in organizational integration. In the past, organizational integration studies have majorly focused on ERP. SOA allows the organization to integrate various elements, taking care of the problems that could occur in different versions of EAI. Service Oriented Architecture is a software design pattern which specifies, identifies, and organizes distributed computing services into the loosely coupled applications (Bieberstein et al. 2006). As per Matei and Bank (2011), SOA separates organization function according to which it could be reused or combined to meet user needs. The framework is provided by SOA, so that the functionality can be accessed as services on network. Joachim et al. (2013)

assert that SOA governance mechanism is required for agility-related benefits like modularity, scalability, integration, and service reuse.

The SOA maturity model has been proposed by Inaganti and Aravamudan 2007 which gives an idea about the scope of SOA adoption, capabilities of architecture, SOA expansion stages, and return on investment, and cost-effectiveness. From a technical perspective, SOA is an approach where services provide reusable functionality, and from a business perspective, SOA is a way of exposing legacy functionality to remote clients, implementing new business process models by utilizing third-party assets (Bierberstein et al. 2006). Kontogiannis et al. 2008 defined a problem, planning, and solution space for SOA. Ordanini and Pasini 2008 mention that SOA helps in service coproduction and value cocreation.

SOA helps in meeting the needs of scalable platform for growth and seamless integration, cross organization collaboration, and successful alignment of the IT and the business teams. It helps services to talk to each other, which makes the entire value chain more agile. For example, the procurement department wants to know the total number of products that have been sold so that it can know the accurate amount of raw material that it has to order to the supplier through SCM. SOA makes it possible for the procurement department to access CRM database where sales and service data gets stored. Similarly, the salesperson can manage the demand better, since the procurement department can easily access required details due to the interconnection among the systems because of SOA. In this way, agility at one level further stimulates the effect of agility at another level, as a result making the entire business value chain agile. SOA contributes in three major ways: It adds to business agility by providing an abstraction layer to simplify and accelerate change. It also helps in process orchestration to maximize productivity. Further, it leads to elimination of data and application silos. SOA also helps in cost-effectiveness as it extends the lifecycle of older IT assets. It enables faster time to market with a low opportunity cost. It is able to tackle small discrete projects than large monolithic projects (Gabhart and Bhattacharya 2008). Figure 2.3 presents the system after the introduction of SOA.
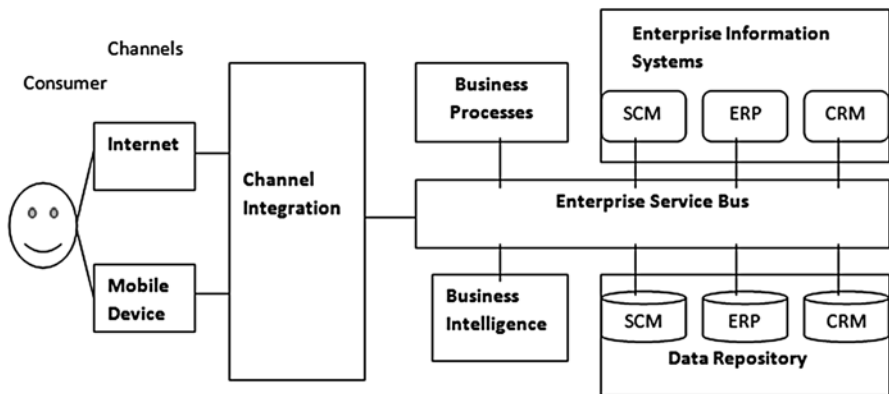
Fig. 2.3 System with SOA

5 Adding Value Through Service-Oriented Architecture: A Case of an Indian Telecom Company

One of India's largest telecom companies wanted to scale its operations to meet the needs of 1.5 million customers per month. The firm wanted to ensure cost reduction with the help of elimination of duplicate systems and support systems. The requirement was to integrate and share the business processes and increase customer satisfaction and retention. They leveraged SOA platform to enable efficiency and save costs. The project involved the integration of multiple systems including CRM, billing system, and other applications which had to be integrated with new and upgraded applications. Eleven applications had to be integrated. This integration exhibited the integration of core processes of the service value chain. The business processes were standardized across all telecom circles. The SOA framework was based on the WebSphere stack of technologies. They also used the data management tool and the business intelligence tool of one of the largest technology and consulting organizations. The service-oriented architecture not only powered the service organization to strengthen its value chain but also to achieve business agility.

The business agility derived through the solution could be seen in the real-time responses. The telecom model was a largely prepaid, and therefore, if a customer recharges the account at Rs 10, the process of transaction goes through three to five systems for eight to ten million customers. The SOA system made them more agile by building 150 reusable services handling seven to eight million transactions per day. The dashboard powered by SOA gives the details of the transaction and therefore facilitates and improves customer service and therefore aids in hyper growth. The customer agility, partnering agility, and operational agility were achieved in the desired manner.

The SOA had enabled the telecom organization to get the picture of employee productivity, sales force productivity, and service activation times and improve the quality of services. SOA ensured dynamic process integration which enhanced organizational agility. The whole process supported the growth from 5 crore to 13 crore subscribers. The customer issue severity 1 was reduced by 40 % and the availability targets for business critical application increased from 98.2 to 99.5 %.

6 Conclusion

As per the literature, agility is a very important aspect for an enterprise to be successful and competitive as it enables it to sense and respond in a dynamic environment in emerging markets. For an agile organization, there must be synergies amongst different value chain components and their agility. Today, organizations have best-in-breed IT solutions available to them in the form of CRM, SCM, ERP, etc. However, these systems have failed to provide agility in the entire value chain due to lack of coupling among them. Emerging technologies like cloud computing and SOA have emerged as a solution to this problem as it enables loose coupling among applications. SOA enables and facilitates automation of information

transfer, stronger connection with customers and suppliers, enhanced business decision making, and greater employee productivity. It can help in value chain agility by providing a comprehensive solution that improves the business processes by consolidation of redundant operations and dynamic ability to adapt to the needs. Therefore, SOA allows value chain integration (Brown 2008) which further improves customer satisfaction, enables easier integration of services, reduces duplication of data, increases agility through governance focus, and increases integration with partners. The conceptual model presented in the paper helps us understand the role of SOA in improving business agility. Further, this model can be tested with the help of case studies or quantitative techniques to evolve with the exact scenario in the industry today.

References

Agarwal A, Shankar R, Tiwari MK (2006) Modeling the metrics of lean, agile and leagile supply chain: an ANP-based approach. Eur J Oper Res 173(1):211–225

Alter S (2008) Defining information systems as work systems: implications for the IS field. Eur J Inf Syst 17(5):448–469

Bieberstein N, Bose S, Fiammante M, Jones K, Shah R (2006) Service-Oriented Architecture (SOA) Compass-business value. Planning, and enterprise roadmap, IBM developer Works

Brown PC (2008) Implementing soa: total architecture in practice. Addison-Wesley Professional, Upper Saddle River

Chase RB, Hayes RH (1991) Beefing up operations in. Manag Rev 33(1):15

Christopher M (2000) The agile supply chain: competing in volatile markets. Ind Mark Manag 29(1):37–44

Cohen WM, Levinthal DA (1990) Absorptive capacity: a new perspective on learning and innovation. Adm Sci Q 35(1):128–152

Gabhart K, Bhattacharya B (2008) Chapter 3: SOA value proposition. In: Service Oriented Architecture (SOA) field guide for executives. Wiley, Hoboken

Gligor DM, Holcomb MC (2012) Understanding the role of logistics capabilities in achieving supply chain agility: a systematic literature review. Supply Chain Manag 17(4):438–453

Goldman SL, Nagel RN, Preiss K (1995) Agile competitors and virtual organizations: strategies for enriching the customer, vol 8. Van Nostrand Reinhold, New York

Gunasekaran A (1998) Agile manufacturing: enablers and an implementation framework. Int J Prod Res 36(5):1223–1247

Gupta AK, Smith KG, Shalley CE (2006) The interplay between exploration and exploitation. Acad Manag J 49(4):693–706

Huang PY, Ouyang TH, Pan SL, Chou TC (2012) The role of IT in achieving operational agility: a case study of Haier, China. Int J Inf Manag 32(3):294–298

Hult GTM, Ketchen DJ, Arrfelt M (2007) Strategic supply chain management: improving performance through a culture of competitiveness and knowledge development. Strateg Manag J 28(10):1035–1052

Inaganti S, Aravamudan S (2007) SOA maturity model. BP Trends, April 2007, 1–23

Ireland RD, Webb JW (2007) A multi-theoretic perspective on trust and power in strategic supply chains. J Oper Manag 25(2):482–497

Ismail HS, Sharifi H (2006) A balanced approach to building agile supply chains. Int J Phys Distrib Logist Manag 36(6):431–444

Joachim N, Beimborn D, Weitzel T (2013) The influence of SOA governance mechanisms on IT flexibility and service reuse. J Strateg Inf Syst 22(1):86–101

Ketchen DJ Jr, Hult GTM (2007) Bridging organization theory and supply chain management: the case of best value supply chains. J Oper Manage 25(2):573–580

Kogut B, Zander U (1992) Knowledge of the firm, combinative capabilities, and the replication of technology. Organ Sci 3(3):383–397

Kontogiannis K, Lewis GA, Smith DB (2008) A research agenda for service-oriented architecture. In: Proceedings of the 2nd International Workshop on Systems Development in SOA Environments. ACM, New York, pp 1–6

March JG (1991) Exploration and exploitation in organizational learning. Organ Sci 2(1):71–87

Matei G, Bank RC (2011) SOA and PM, a partnership for successful organizations. Inform Econ 15(4):39–54

Menor LJ, Roth AV, Mason CH (2001) Agility in retail banking: a numerical taxonomy of strategic service groups. Manuf Serv Oper Manag 3(4):273–292

Mowen M, Hansen D (2007) Managerial accounting, 8th edn. Thomson South-Western, Mason

Narasimhan R, Das A (1999) An empirical investigation of the contribution of strategic sourcing to manufacturing flexibilities and performance*. Decis Sci 30(3):683–718

Oracle (2009) What is reusable service? Retrieved 19 July 2013 from the World Wide Web: http://www.oracle.com/technetwork/articles/bechara-reusable-service-087796.html

Ordanini A, Pasini P (2008) Service co-production and value co-creation: the case for a service-oriented architecture (SOA). Eur Manag J 26(5):289–297

Overby E, Bharadwaj A, Sambamurthy V (2006) Enterprise agility and the enabling role of information technology. Eur Manag J 15(2):120–131

Papazoglou MP, Van Den Heuvel WJ (2007) Service oriented architectures: approaches, technologies and research issues. VLDB J 16(3):389–415

Payne A, Frow P (2005) A strategic framework for customer relationship management. J Mark 69(4):167–176

Pega (2013) Customer relationship management systems. Retrieved 18 July 2013 from the World Wide Web: http://www.pega.com/fr/customer-relationship-management-systems

Porter ME (1985) Competitive advantage: creating and sustaining superior performance. Free Press, New York

Porter ME, Millar VE (1985) How information gives you competitive advantage. Harv Bus Rev 63(4):149–161

Ren M, Lyytinen K (2008) Building enterprise architecture agility and sustenance with SOA. Commun Assoc Inf Syst 22(1):75–86

Roberts N, Grover V (2012a) Investigating firm's customer agility and firm performance: the importance of aligning sense and respond capabilities. J Bus Res 65(5):579–585

Roberts N, Grover V (2012b) Leveraging information technology infrastructure to facilitate a firm's customer agility and competitive activity: an empirical investigation. J Manag Inf Syst 28(4):231–270

Roth AV, Jackson WE III (1995) Strategic determinants of service quality and performance: evidence from the banking industry. Manag Sci 41(11):1720–1733

Sambamurthy V, Bharadwaj A, Grover V (2003) Shaping agility through digital options: reconceptualizing the role of information technology in contemporary firms. MIS Q 23(2):237–263

Sanchez R, Heene A (2004) The new strategic management. Wiley, New York

Sharifi H, Zhang Z (1999) A methodology for achieving agility in manufacturing organisations: an introduction. Int J Prod Econ 62(1):7–22

Sharp JM, Irani Z, Desai S (1999) Working towards agile manufacturing in the UK industry. Int J Prod Econ 62(1):155–169

Swafford PM, Ghosh S, Murthy NN (2006) A framework for assessing value chain agility. Int J Oper Prod Manage 26(2):118–140

Yang C, Liu HM (2012) Boosting firm performance via enterprise agility and network structure. Manag Decis 50(6):1022–1044

Yusuf YY, Sarhadi M, Gunasekaran A (1999) Agile manufacturing: the drivers, concepts and attributes. Int J Prod Econ 62(1):33–43

Zaheer S, Zaheer A (1997) Country effects on information seeking in global electronic networks. J Int Bus Stud 27(1):77–100

Chapter 3
An Analysis of Foreign Direct Investment with Special Reference to Indian Economy

A. Neelima, Mridul Dharwal, and K.R. Gola

Abstract Foreign direct investment (FDI) has become the major stake for globalization of firms. It is belived that India's generous and fast-growing native markets, well-synchronized and mounting financial markets, large density of population who speaks English, and its democratic government has created an eye-catching spot for investment. However India has not succeeded in captivating the FDIs to its potentiality. To brief, a few concerns include widespread corruption, multifaceted and prolonged investment procedures and business sanctions processes, old-fashioned way of land acquisitions, inflexible labor laws, and poor contract administration. To add to this, India's GDP growth has slowed down for the past one year, and its large economic and current account deficits and persistent inflation increased the concerns. In view of the growing competition and to invite foreign direct investments (FDI), the present paper tries to evaluate the emerging trends and outlines of foreign direct investment in response to various policy measures broadcasted by the government of India.

Keywords FDI • Investment climate • Government policies

1 Introduction

In today's modern day of globalization, the foreign direct investment plays a dynamic and an energetic role to all the underdeveloped nations as well as the nations which are in the phase of development. To be more precise, how this foreign direct investment has an impact to the domestic market is clearly explained in many empirical works. The major advantage in having a foreign direct investment is that it generates a strong foundation for the capital inflows to the economy, which creates an opportunity to spread across the modern high technology which in turn recommends having an infrastructure, thereby yielding a number of potential employment opportunities which will finally lead to high raise in production.

A. Neelima • M. Dharwal (✉) • K.R. Gola
School of Business Studies (SBS), Sharda University, Greater Noida, India
e-mail: Mridul.Dharwal@sharda.ac.in

And the other advantage is that FDI is that most powerful investment because it is non-debt creating which gives more stability in regard to result orientation. India is keen on encouraging foreign investors and their investments in India. There has been a huge transformation over a decade about the insight of FDI. To add potential to the above statement, India has been ranked the second best destination for FDIs after China (A K ATKERNEY 2012–17). It has been observed and noticed that nations which have faced severe chronic current account deficits have opted for long-term FDIs in order to have a stable economy, while the domestic volatile portfolio investments which have brought a huge gap and deficit in the current account are being avoided. Hence the best suggested way for India is to have FDI flows which will fill the gap of current account deficit which was around 4.8 % of GDP (Planning commission, 12th five year plan 2012–17). Normally FII flow is more defenseless to external shock, whereas FDIs on the other hand are more stable and effective. When it comes to Indian scenario, the variations are mainly because of inability to act upon the inappropriate management behaviors, not because of external factors, which will have a bad impact on long-term FDIs. Therefore the expression of understanding the concept of FDI plays a very crucial role. Always a good empathetic way of using FDI gives the investor a piece of confidence and assurance. In the very recent times, the government of India has taken well-founded measures to give comfort for FDIs. However not all the sectors are providing the same luxury for FDIs. Certain sectors have been undergoing policy reforms towards FDIs, but unfortunately it has been hung up in a stalemated parliament giving rise to uncertainty.

2   Global Trends and Patterns in Foreign Direct Investment

Foreign direct investment movements have fallen down to an estimated US $ 1.3 trillion which is 18 % less when compared to that of US $ 1.6 trillion in the year 2011. This downfall has created an uncertainty for an investment company and investor. The root cause for this uncertainty has been due to the fragile macroeconomic environment constructed by lower growth rates of GDP, trade, capital information, employment, no. of alleged risk factors in the policy atmosphere, eurozone catastrophe, the US fiscal rock face, and too many changes of governments in 2012. FDI flows to developing economies remained relatively robust in 2012, reaching US$ 680 billion, the second highest ever recorded. Developing economies absorbed an extraordinary US$130 billion more than those of the developed countries. FDI inflows to developing Asian economies fell by 9.5 % due to the deteriorations across most subregions and major economies, including China, Hong Kong (China), India, the Republic of Korea, Singapore, and Turkey. However, 2012 inflows to Asia were still at the second highest level recorded, accounting for 59 % of FDI flows to developing countries (UNCTAD 2012; Global investment trend monitor 2013). FDI to India has declined by 14 %, though it remained

at the high altitudes achieved in the recent years. The country's forecasts in attracting FDI have been improving, appreciations to the ongoing efforts to open up key economic sectors.

3 Trends and Patterns of Foreign Direct Investment in India

Due to the transformation in the definition of foreign direct investment, the movements in foreign investment since 2000–2001 are not comparable to the data prior to this year. This is an effort to bring in line with international practices (DIPP 2003). The definition differed from that of the IMF which includes external commercial borrowings, reinvested earnings, and subordinated debt. In an attempt to bring the complete Indian characterization in sync with IMFs characterization, the coverage of FDI since 2000–2001 includes equity capital (i.e., RBI automatic route, SIA/FIPB route, NRI, and acquisition shares), reinvested earning (including earnings of FDI companies), and other direct capital (intercorporate debt transactions between related entities). In the year 1990, India had less than $1 billion FDI, but a recent survey conducted by UNCTAD (2013a, b) projected that India has emerged one of the best suitable places for FDI investments. There has been a major transformation in the sectors like telecommunications, services, hardware, software, and infrastructure, which had a huge inflow from FDIs. India has become one among the leading sources of FDI. The government of India allowed FDI in various sector such as aviation up to 49 %, broadcast sector up to 74 %, and multibrand retail up to 51 %. Moreover in supply chain there has been complete 100 % ownership for cold chain development, thereby allowing foreigners to invest with full proprietorship to accommodate India's increasing demand for effective food supply systems, thus making a way to reduce the waste in fresh food and to feed the prospective demand of fast-growing India, which in turn creates a very effective, efficient, profitable investment option for the FDIs (Department of Industrial Policy and Promotion 2012) (Tables 3.1 and 3.2).

Table 3.1 Fact sheet on foreign direct investment (FDI) from April 2000 to February 2013

Cumulative FDI flows into India (2000–2013)		
(A) Total FDI inflows (from April 2000 to February 2013)		
1. Cumulative amount of FDI inflows (equity inflows + "reinvested earnings" + "other capital")		US$ 287,127 million
2. Cumulative amount of FDI equity inflows (excluding amount remitted through RBIs – NRI schemes)	Rs. 888,083 crore	US$ 191,757 million
(B) FDI inflows during financial year 2012–2013 (from April 2012 to February 2013)		
1. Total FDI inflows into India (equity inflows + "reinvested earnings" + "other capital") (as per RBI monthly bulletin dated: 10.04.2013)		US$ 33,912 million
2. FDI equity inflows	Rs. 113,610 crore	US$ 20,899 million

Source: Department of Industrial Policy and Promotion (DIPP), http://dipp.nic.in

Table 3.2 Sector-specific FDI policy

Sl. no.	Sector activity	% of FDI cap equity	Entry route
1.	Agricultural and animal husbandry	100 %	Automatic
2.	Industry		
	(a) Mining	100 %	Automatic
	(b) Coal and lignite	100 %	Automatic
	(c) Petroleum and natural gas	100 %	Automatic
3.	Manufacturing		
	Any industrial undertaking which is not a micro- or small-scale enterprise, but manufactures items reserved for the MSE sector would require government route where foreign investment is more than 24 % in the capital. Such an undertaking would also require an industrial license under the Industries (Development and Regulation) Act 1951, for such manufacture		
4.	Defense	26 %	Government
5.	Service sector		
	(a) Civil aviation (greenfield projects)	100 %	Automatic
	(b) Asset reconstruction companies	49 %	Government
	(c) Banking – private sector	74 %	Government
	(d) Banking – public sector	20 %	Government
	(e) Broadcasting	74 %	Automatic up to 49 %, beyond 49 %, and up to 74 %
	(f) Print media	26 %	Government
6.	Commodity exchange	49 %	Government
7.	Development of township, housing, and construction development	100 %	Government
8.	Credit information companies	49 %	Government
9.	Industrial park	100 %	Automatic
10.	Insurance	26 %	Automatic
11.	NBFC	100 %	Automatic
12.	Pharmaceuticals	100 %	Automatic up to 49 %, beyond 49 %, and up to 74 %
13.	Power exchange	49 %	Government
14.	Telecommunication	74 %	Automatic up to 49 %, beyond 49 %, and up to 74 %
15.	Retailing		
	(a) Cash and carry wholesale	100 %	Automatic
	(b) Single brand trading	100 %	Government
	(c) Multi-brand Trading	51 %	Government

Source: DIPP, Ministry of Commerce & Industry, Government of India "Consolidated FDI Policy" Effective from April 5, 2013. For detail explanation of sectoral caps visit http://dipp.nic.in/English/Policies/FDI_Circular_01_2013.pdf
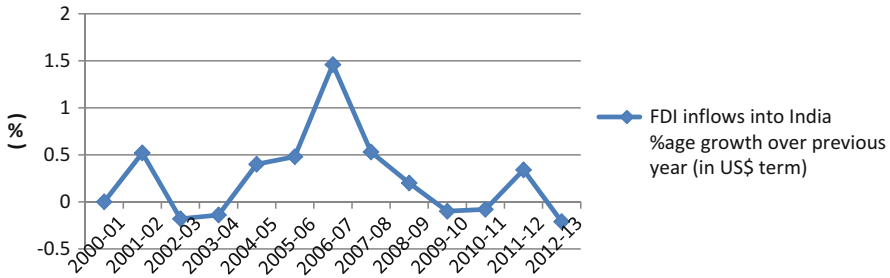
Fig. 3.1 Foreign direct investment in India (2000–2013) (Source: Department of Industrial Policy and Promotion (DIPP)

India experienced its slowest growth in a decade in 2012 and also struggled with risks related to high inflation. As a result, investor confidence was affected, and FDI inflows to India declined significantly. Though India has observed a remarkable rise in the flow of FDI over the last few years, it receives comparatively much lesser FDI compared to China. Even smaller economies in Asia such as Hong Kong, Mauritius, and Singapore are much ahead of India in terms FDI inflows (UNCTAD 2012). Gross foreign direct investment (FDI) inflows into India have slowed since mid-2012, after a recovery from post crisis. While the overall trend in FDI inflows into India has broadly been in line with global trends, India has to deal with few issues; these include the uncertain global environment, relatively high energy prices, slowdown in domestic demand, persistently high inflation, and high cost of capital. The slowdown in government machinery, especially since the graft-related investigation came to the forefront, has affected approvals for not only domestic investment projects but also FDI projects. India's current account deficit is likely to widen to 5 % of GDP in 2012–2013. While a reduction in the current account deficit is expected, it may remain relatively high in 2013–2014. Since September 2012, the government has taken policy initiatives to correct the bad growth mix (low investment spending coupled with high fiscal deficit). These efforts are already helping reverse the stagflation-type environment (Fig. 3.1).

Mauritius topping the list of India's foreign direct investment mainly because India has a Double Taxation Avoidance Treaty with Mauritius, under which the corporate registered there, can choose to pay taxes in the island nation. Experts said companies prefer to route their investment through the famous Mauritius route because of as low as three percent effective rate of corporate tax on the foreign companies incorporated there (Table 3.3).

India emerged as one of the most favored destinations for investment in the service sector due to low-cost wages and wide demand-supply gap in financial services particularly in banking, insurance, and telecommunication. Gradually India has become important center for back-office processing, call centers, technical support, medical transcriptions, knowledge process outsourcing (KPOs), financial analysis, and business processing hub for financial services and insurance

Table 3.3 Share of top investing countries' FDI equity inflows (financial years): amount rupees in crores (US$ in million)

Rank	Country	2010–2011 (April–March)	2011–2012 (April–March)	2012–2013 (April–Feb.)	Cumulative inflows (April 2000–Feb 2013)	% age to total inflows in terms of US $
1	Mauritius	31,855 (6,987)	46,710 (9,942)	48,786 (8,970)	338,257 (73,139)	38 %
2	Singapore	7,730 (1,705)	24,712 (5,257)	10,831 (1,984)	88,419 (19,136)	10 %
3	UK	12,235 (2,711)	36,428 (7,874)	5,736 (1,069)	80,397 (17,537)	9 %
4	Japan	7,063 (1,562)	14,089 (2,972)	11,559 (2,111)	69,410 (14,425)	8 %
5	USA	5,353 (1,170)	5,347 (1,115)	2,923 (537)	50,812 (11,101)	6 %
6	Netherlands	5,501 (1,213)	6,698 (1,409)	9,054 (1,672)	41,379 (8,781)	5 %
7	Cyprus	4,171 (913)	7,722 (1,587)	2,490 (459)	32,160 (6,858)	4 %
8	Germany	908 (200)	7,452 (1,622)	3,473 (637)	24,300 (5,258)	3 %
9	France	3,349 (734)	3,110 (663)	3,483 (646)	16,861 (3,572)	2 %
10	UAE	1,569 (341)	1,728 (353)	969 (177)	11,289 (2,419)	1 %
Total FDI inflow from all countries[a]		97,320 (21,383)	165,146 (35,121)	113,610 (20,899)	888,616 (191,878)	

Source: Department of Industrial Policy and Promotion (DIPP), http://dipp.nic.in

% age worked out in US$ terms and FDI inflows received through FIPB/SIA + RBI automatic route + acquisition of existing shares only

[a]Includes inflows under NRI Schemes of RBI

claims. However, increased competition, rising wages, and other costs have caused Indian firms to face tough times. The rise in FDI flows to India has been accompanied by strong regional concentration. The top six states, viz., Maharashtra, New Delhi, Karnataka, Gujarat, Tamil Nadu, and Andhra Pradesh, accounted for over 70 % of the FDI equity flows to India between 2008–2009 and 2011–2012. Despite impressive growth rates achieved by most of the Indian states as well as aggressive investment promotion policies pursued by various state governments, the concentration of FDI flows across a few Indian states continues to exist (Table 3.4).

After analyzing the trend between FDI, it is time to bring some meaningful comparison between FDI, FIIs, and GDP. To facilitate this purpose, data were selected

Table 3.4 Sectors attracting highest FDI equity inflows amount in Rs. crores (US$ in million)

Rank	Sector	2010–2011 (April–March)	2011–2012 (April–March)	2012–2013 (April–Feb.)	Cumulative inflows (April 2000–Feb 2013)	% age to total inflows in terms of US$
1	Services sector[a]	15,054 (3,296)	24,656 (5,216)	25,839 (4,747)	1,71,817 (37,151)	19 %
2	Construction development: townships, housing, built-up infrastructure	7,590 (1,663)	15,236 (3,141)	6,853 (1,260)	1,00,655 (22,008)	12 %
3	Telecommunications (radio paging, cellular mobile, basic telephone services)	7,542 (1,665)	9,012 (1,997)	5,585 (107)	57,663 (12,660)	7 %
4	Computer software and hardware	3,551 (780)	3,804 (796)	2,546 (466)	52,664 (11,671)	6 %
5	Drugs and pharmaceuticals	961 (209)	14,605 (3,232)	5,960 (1,114)	48,828 (8,861)	5 %
6	Chemicals (other than fertilizers)	10,612 (2,354)	18,422 (4,041)	1,488 (272)	40,388 (8,861)	5 %
7	Automobile industry	5,864 (1,299)	4,347 (923)	7,111 (1,303)	37,896 (8,061)	4 %
8	Power	5,796 (1,272)	7,678 (1,652)	2,887 (529)	36,101 (7,828)	4 %
9	Metallurgical industries	5,023 (1,098)	8,348 (1,786)	7,479 (1,393)	34,415 (7,434)	4 %
10	Hotel and tourism	1,405 (308)	4,754 (993)	17,548 (3,217)	33,031 (6,589)	4 %

Source: Department of Industrial Policy and Promotion (DIPP), http://dipp.nic.in
FDI sectoral data has been revalidated in line with that of RBI, which reflects minor changes in the FDI figures (increase/decrease) as compared to the earlier published sectoral data
[a]Services sector includes financial, banking, insurance, nonfinancial business, outsourcing, R&D, courier, tech. testing and analysis

from RBI monthly bulletin and DIPP Annual Report (2012–13). It has been observed that both FDI and FII flows are very important to bridge the gap of current account deficit which was around 4.8 % of GDP, but FII flows (hot money) are more vulnerable to external shock, whereas FDI flows are considered to be more stable. In the case of India, the fluctuations in FDI flows are not mainly because of external factor, but it is due to internal mismanagement, which is going to impact long-term investment prospects. Therefore it has become very important to understand the critical factor and try to restore the confidence of the investors (Fig. 3.2).
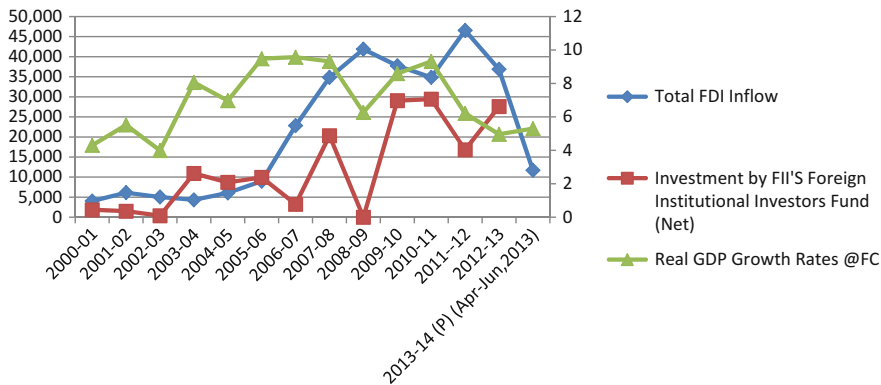
Fig. 3.2 FDI, FIIs, and GDP growth rates – India (Source: RBI Bulletin September 2013 dt. 10.09.2013 (Table No. 34 – FOREIGN INVESTMENT INFLOWS); Planning Commission Macro Economic Summary 1990–2013, 30 September)

4 Literature Review: FDI and Economic Growth

Standard economic theory points to direct causal relationship between economic growth and FDI that can run in either direction (Colen et al. 2008). On one hand, FDI flows can be induced by host country economic growth if the host country offers a sizeable consumer market in which case FDI serves as a substitute for commodity trade or if growth leads to greater economies of scale and cost efficiency in the host country (Groh and Wich 2009). On the other hand, FDI itself may contribute to host country economic growth by augmenting the country's capital stock; introducing complementary inputs, technology transfer, and skill acquisition; or increasing competition in the local industry. Of course FDI may also inhibit competition and thus hamper growth, especially if the host country government affords extra protection to foreign investors in the process of attracting their capital (Hadjila and Iuliana 2010). Basu et al. (2003) study a panel of 23 developing countries from Asia, Africa, Europe, and Latin America and find the causal relationship between GDP growth and FDI to run both ways in more open economies and in only one direction – from GDP growth to FDI – in more closed economies. Trevino and Upadhyaya (2003) find a comparable result, based on their study of five developing countries in Asia, that the positive impact of FDI on economic growth is greater in more open economies. Alam (2000) in his comparative study of FDI and economic growth for Indian and Bangladesh economy stressed that though the impact of FDI on growth is more in case of Indian economy, yet it is not satisfactory. By using a vector error correction model (VECM), Chakraborty and Basu (2002) tried to find the short-run dynamics of FDI and growth. The study reveals that GDP in India is not Granger caused by FDI; the causality runs more from GDP to FDI, and the trade liberalization policy of the Indian government had some positive short-run impact on the FDI flow. The study by Sahoo and Mathiyazhagan (2003) also supports the view that FDI in India is not able to enhance the growth of the economy.

5   Methodology of the Study

A *log linear regression* function has been applied to know the impact of FDI in India in terms of GDP. The degree of significance of coefficient of regression is verified by the application of "t-test". The strength of linear relationship between the dependent variable and independent variable is measured by the coefficient of determination. The data analyzed in this paper has been collected from the reliable sources, i.e., journals, articles, research papers, economic survey, Ministry of Commerce, and Handbook of Statistics by the RBI and Department of Industrial Policy & Promotion (DIPP).

5.1   Hypothesis Testing

- *Ho* – The null hypothesis assumes that "FDI has no significant impact on growth".
- *Ha* – The alternative hypothesis accepts that "FDI has significant impact on growth".

The null hypothesis (Ho) assumes that there is no significant impact of FDI on the growth of Indian economy. The alternative hypothesis (Ha) accepts that there is significant impact of FDI on the growth of Indian economy. In order to test the hypothesis, the variables have been converted into natural log where FDI has been taken as independent variable and natural log of GDP as a dependent variable. It is stated that the independent variable is significant at any level of significance with t-value of 7.9 and on the other hand constant, i.e., dependent variable is significant at any level of significance with t-value of 17.8. It shows that there is a clear impact of FDI on GDP and some other unknown factors also play a significant role. In Table 3.5, the "B" value is 0.34 % which indicates that the elasticity between FDI and GDP is 0.34 %. It resulted that 1 % increase in FDI leads to 0.34 % increase in GDP that helps in boosting the growth rate of India. If FDI increases 10 %, then it may increase the GDP growth rate by 3.6 %. Therefore, Ho is rejected and Ha is accepted as there is significant impact of FDI on India's GDP (Table 3.5).

Table 3.5 Coefficients summary

Coefficients						
		Unstandardized coefficients		Standardized coefficients	*t*	Sig.
Model		*B*	Std. error	Beta		
1	(Constant)	8.452	.473		17.863	.000
	Log FDI	.344	.043	.936	7.971	.000

Source: Economic survey, DIPP & RBI, based on Table 3.6
Dependent variable: Ln GDP

Table 3.6 Foreign direct investment (FDI) and gross domestic product (GDP)

Year	FDI (Rs. in crore)	GDP (RM)	LNFDI	LNGDP
2000–2001	18,406	122,410	9.820432	11.71513
2001–2002	29,235	134,392	10.28312	11.80852
2002–2003	24,376	145,055	10.10135	11.88487
2003–2004	19,860	162,291	9.896463	11.99715
2004–2005	27,188	180,908	10.21053	12.10574
2005–2006	39,774	191,393	10.59097	12.16208
2006–2007	103,367	213,444	11.54604	12.27113
2007–2008	140,180	274,316	11.85068	12.52204
2008–2009	173,741	282,003	12.06532	12.54967
2009–2010	179,059	299,129	12.09547	12.60863
2010–2011	138,462	325,228	11.83835	12.69228

Source: Economic Survey of 2010–2011 & CSO and FDI fact sheet of DIPP from September, 2005 to April, 2011 in iram Khan, 2012
LNFDI = natural log of FDI inflow of sector, LNGDP = natural log of GDP

5.2   Government of India Initiatives to Attract Foreign Direct Investment

- The policy pertaining to the foreign direct investment is being periodically reviewed and liberalized. The government has raised the cap on FDI to 100 % in telecom and more than 26 % on a case-by-case basis in defense and allowed FDI up to 49 % under automatic route in various sectors including single brand retailing, state-run oil refineries, commodity houses, stock exchange, and clearing corporations. These measures have been notified vide Press Notes No. 4 to 8 2012, issued by the Department of Industrial Policy & Promotion, Ministry of Commerce and Industry.
- The government put out a tighter definition of control and ownership in an Indian firm with foreign stakeholder. FDI policy should define control in the same way as the companies' bill. "Control" shall include the right to appoint a majority of the directors or to control the management or policy decisions including by virtue of their shareholding or management rights or shareholders agreements or voting agreements. The change in the definition of "control" would impact the determination of direct and indirect foreign shareholding in an Indian entity owned or controlled by a resident or a nonresident.
- Besides allowing FDI in new sectors, the need of multiple approvals from government and regulatory agencies that exist in certain sector has been given up. FDI up to 100 % is allowed under automatic route in most sectors, and no approval is required from either the government or RBI. Investors are only required to notify within 30 days to concerned regional RBI office.
- The government push to project through the cabinet committee on investment (CCI) seems to be making a difference on the margins, most notably to the power sector.

- State governments are also committed to simplify rules and procedures to attract foreign direct investment. Single Window System is now in existence in most of the states for granting approval to set up industrial units. To attract foreign investors in their states, many of them are offering incentive packages in the form of various tax concessions, reduced power tariff, interest subsidies and capital, land at low cost, etc.
- In order to bring it in line with international practices, foreign investment through GDRs/ADRs and foreign currency convertible bonds (FCCBs) is treated as FDI. Indian companies are allowed to raise equity capital in the international market through the issue of GDR/ADRs/FCCBs. These are not subject to any ceilings on investment.
- The government is revisiting its policy on special economic zones in the hope of rekindling interest among investors. With industry and state government citing problems with land acquisition, the commerce department is considering relaxing the minimum area requirement for more sectors in the amendments in the SEZ rules.
- The Ministry of Overseas Indian Affairs in partnership with the Confederation of Indian Industry (CII) has set up an Overseas Indian Facilitation Centre (OIFC) as a not-for-profit trust, to facilitate nonresident Indians (NRIs), overseas corporate bodies of overseas Indians, and nonresident Indians who want to invest in India.
- In order to ease the process for foreign investors to invest in India, OIFC has developed an online toolkit – investment guide to India. The toolkit serves as a simple, practical, and stagewise investment guide for the nonresident Indians wanting to invest in India.

6   FDI Issues and Policy Recommendation

- India is striving hard to achieve a stable growth rate which can be possible only when we improve the level of productivity. FDI data reveals that India's volume of FDI has increased largely due to mergers and acquisitions (M&As) rather than large greenfield projects. M&As do not necessarily show infusion of new capital into a country if it is through reinvested earnings and intracompany loans. Investment friendly environment must be created on priority to attract large greenfield projects. Regulations should be simplified so that realization ratio is improved. To maximize the benefits of FDI persistently, India should also focus on developing human capital and technology.
- Attracting quality foreign direct investment in manufacturing sector is one of the greatest challenges India is facing right now. Manufacturing sector has greater scope of low-end, labor-intensive manufacturing jobs for unskilled population when compared with service sector. It is widely reported in large number of studies that India lags behind in terms of business environment (ranked 134 out of 189 countries by Ease of Doing Business 2014) which is not conducive for doing business. These factors are acute labor market rigidities, dealing with construction
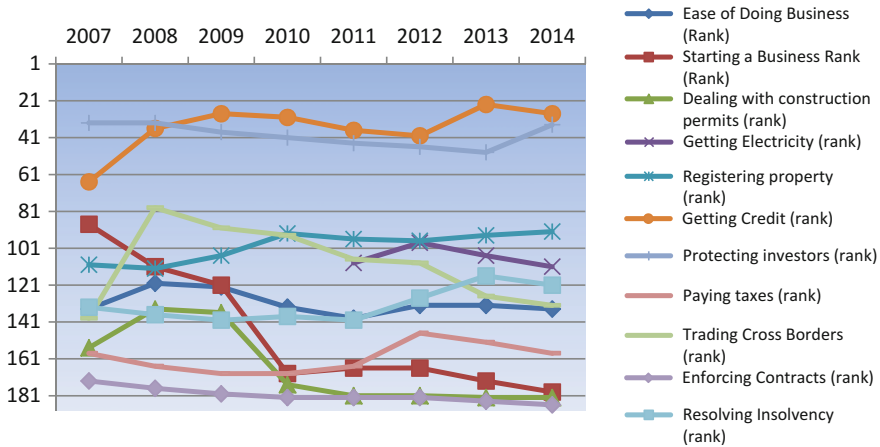
Fig. 3.3 World Bank, Ease of Doing Business Rank India (Source: World Bank, Ease of Doing Business, 2014)

permits and getting electricity. Other problems are that of protection of investors, registering property, lack of rationale tax structure, corruption and competition rules, and time taken in enforcing contracts (Fig. 3.3).

- The issues of regional disparities of FDI in India need to address on priority. States play an important role in the economic reforms. Many states are making serious efforts to simplify regulations for setting up and operating the industrial units. In order to attract foreign investors in their states, many of them are offering packages in the form of capital, tax rebates, interest subsidies, reduced power tariff, etc. However, efforts by many state governments are still not encouraging.

- Over 40 % of India's foreign direct investment is routed through Mauritius and tax havens like Cayman Island and Virgin Island through a maze of subsidies. Such a high level of FDI contributed by a low-tax country like Mauritius indicates that all is not well. This is not good for the state exchequers and financial stability of the country.

- One of the greatest advantages India has is huge pool of working population. However, due to poor quality of primary and higher education, there is still an acute shortage of talent and skills. Foreign direct investment in education sector is considered to be less than 1 %, which needs to be encouraged by proper liberalization which should not compromise the quality of education. The issues of commercialization of education, regional gap, and structural gap have to be addressed on priority.

- Indian economy by and large depends upon agriculture. Foreign direct investment in this sector should be encouraged. There is plenty of scope in food processing, agriculture services, and agriculture machinery. The issue of food security, interest of small farmers, and marginal farmers need cannot be ignored for the sake of mobilization of foreign funds for development.

- India must focus on the development of equity and debt market. Steps should be taken to improve the depth and liquidity of debt market as many companies may prefer leveraged investment rather than investing their own cash. Looking for debt funds in their own country invites exchange rate risk.
- In order to promote technological competitiveness of India, foreign direct investment into research and development should be encouraged. Intellectual property rights such as copyrights and patents need to be addressed on priority. Special package can be encouraging in mobilizing FDI in R&D.

7   Conclusion

Foreign direct investment can help the domestic economy to enhance competitiveness, employment generation, technology diffusion, and accessibility of financial resource. India is attracting a low level of foreign direct investment largely due to poor business environment prevailing in the country. Business climate in India has become ever investment friendlier today due to its ongoing reforms. However, a lot is to be done if we want to emerge as one of the major recipients of FDI inflows. Investors are showing interest to invest in India; therefore it has become very important to provide good quality infrastructure, liberalized FDI policies, and attractive regulatory policies. FDI of course might be one of the important sources of financing the economic development. It is very important to understand that FDI alone is not a solution for unemployment, poverty eradication, and other economic problems. India needs a massive investment to achieve the millennium development goals. Policy makers need to ensure transparency and consistency in policy making along with comprehensive long-term development strategy.

References

Alam MS (2000) FDI and economic growth of India and Bangladesh: a comparative study. Indian J Econ IXXX(1), No. 316: 1–15

Basu P, Chakraborty C, Reagle D (2003) Liberalization, FDI, and growth in developing countries: a panel cointegration approach. Econ Inquiry 41(3):510–516

Chakraborty C, Basu P (2002) Foreign direct investment and growth in India: a cointegration approach. Appl Econ 34(1):1061–1073

Colen L, Maertens M, Swinnen J (2008) Foreign direct investment as an engine for economic growth and human development: a review of the arguments and empirical evidence. Leuven Centre for global governance studies, Working Paper no. 16

Department of Industrial Policy and Promotion (DIPP) (2012) Fact sheet on Foreign Direct Investment. Available at http://dipp.nic.in

Department of Industrial Policy and Promotion "Annual Report", Ministry of commerce and industry, Government of India, 2012–13

DIPP (2003) Revised data on Foreign Direct Investment. The FDI compilation report and the first action taken report of the TMG are available in RBI and DIPP websites http://www.rbi.org.in and http://www.dipp.nic.in

Global investment trend monitor "The rise of BRICS FDI and Africa" Special edition published by UNCTAD, 25 March 2013. This report exclusively discussed about the BRICS net FDI inflow among member countries

Groh AP, Wich M (2009) A composite measure to determine a host country's attractiveness for foreign direct investment. Working paper 833. IESE, Business School, University of Navara

Hadjila KS, Iuliana M (2010) Business climate, political risk and FDI in developing countries: evidence from Panel Data. Int J Econ Financ 2(5)

Iram K (2012) Impact of Foreign Direct Investment (FDI) on Indian economy: a sectoral analysis. Int J Res Commer Econ Manag 2

Kearney AT (2012) Cautious Investors feed a tentative recovery. AT Kearney Foreign Direct Investment Index. Available at www.atkearney.com

Multi-Year Expert Meeting on Investment for Productive Capacity-Building-and Sustainable Development *"Regional Integration and Foreign Direct Investment",* UNCTAD 2013

Planning commission, Government of India "Faster, Sustainable and More Inclusive Growth" An approach to the twelfth five year plan, 2012–17

Sahoo D, Mathiyazhagan MK (2003) Economic growth in India: does foreign direct Investment inflow matters? Singapore Econ Rev 48(2):151–171

Trevino LJ, Upadhyaya KP (2003) Foreign aid, FDI and economic growth: Evidence from Asian countries. Transnatl Corp 12(2):119–135

UNCTAD (2012) Towards a new generation of investment Policies. World Investment report, 2012. Available at http://unctad.org

UNCTAD (2013a) World investment report "Global value chains: investment and trade for development". United Nation Publication, New York, Sales No. Sales No: E.13.II.D.5

UNCTAD (2013b) Investment country profiles India. A detailed study done by UNCTAD dealing with issues related to investment and enterprise development

World Bank (2014) Understanding regulation for small and medium size enterprise. Ease of Doing Business Report. Available at http://www.doingbusiness.org

Chapter 4
An Empirical Analysis of Price Discovery in Indian Commodity Markets

Shelly Singhal and Sunil Ashra

Abstract In an efficient market, the prices should be reflected simultaneously in futures and spot markets without a time lag. However, in the practical world, there is often supposed to be some time lag between the information spillover between spot and futures markets. In this study an attempt has been made to empirically validate the flow of information and price discovery in the context of Indian commodity markets. Daily data from the four spot and four futures indices of MCX for a span of 8 years from June 2006 to 2013 has been analyzed for the study. Engle–Granger (EG) procedure and vector error correction model (VECM) have been employed in the empirical analysis. The results of the study reveal that cointegration exists in all the spot and futures indices except for MCXAGRI. After the data set was reduced up to June 30, 2012, MCXAGRI was also found to be cointegrated. For the three different commodities, the information flow was found to be different. In agriculture commodities the information flow was found to be bidirectional. In MCXMETAL the spillover effect was found from futures market to spot market, and the reverse was found for MCXENERGY. In COMDEX, a weighted index of all three different markets, the price discovery takes place from the spot market to the futures market. However, the results are mixed and not unambiguous on the direction of spillover effect for all the commodities.

1 Price Dynamics of Commodity Markets: An Introduction

Price discovery is a continuous process of arriving at a price from the information prevailing in the market. Competitive price discovery is a major economic function and, indeed, a major economic benefit of futures trading. Through this, the available

S. Singhal (✉) • S. Ashra
Management Development Institute, Gurgaon, India
e-mail: fpm13shelly_s@mdi.ac.in; sunil@mdi.ac.in

information is continuously transmitted into the futures price, providing a dynamic barometer of supply and demand status (Easwaran and Ramasundaram 2008). Information flow between spot and futures markets facilitates price fixation of commodity through mutual understanding between the buyer and the seller for which the price has to be paid in the predetermined time in future. This reduces the chances of very high prices in return for protection against extremely low prices, technically called hedging, i.e., price risk management or risk transfer function.

The essence of the price discovery function hinges on whether new information is reflected first in changes of futures prices or changes of spot prices. In an efficient market, all the information available in the marketplace is immediately incorporated in the prices of assets. Since futures and spot markets represent the same commodity, their price should exhibit a mutual (similar) response to a given information event. Therefore, price in the futures market and its corresponding spot market should move contemporaneously in response to the arrival of information. However, due to certain factors like ease of short sale, lower transaction cost, institutional arrangement, and market microstructure effect, there exists a lead–lag relationship between spot and futures markets.

The lead–lag characteristics of futures and spot market illustrate how rapidly one market incorporates information relative to the other. These characteristics also indicate the efficiency of their functioning as well as the degree of integration between the two markets (Karolyi and Stulz 1996). Traders act faster and at lower cost in the futures market as compared to spot market (Grossman and Miller 1988). If information is reflected first in futures price and subsequently in spot price, futures price should Lead spot price, indicating that the futures market performs the price discovery function (Zapata et al. 2005). Wahab and Lashgari (1993). put forward the general principle that spot price is affected by past spot price, current and past futures price, and other market information. Similarly futures price is affected by past futures price, current and past spot price, and other market information. Thus, the causality appears to be bidirectional. They further argue that the lead–lag pattern between futures and spot price changes as new information arrives. Each may lead the other as market participants shift information for clues that are relevant to their position which may be spot or futures. The summary hypothesis that can be derived from the above discussion is that there is some rationale for the hypothesis that futures price leads spot price and also for the hypothesis that spot price leads futures price.

Against this background, the present paper examines the price discovery process and volatility spillovers in Indian spot–futures commodity markets through Engle–Granger (EG) cointegration approach and vector error correction model (VECM). This study considers the four futures and spot indices of Multi-Commodity Exchange of India (MCX) representing relevant sectors, like agriculture (MCXAGRI), energy (MCXENERGY), metal (MCXMETAL), and the composite index of metal, energy, and agro-commodities (MCXCOMDEX).

Review of literature

Author	Year	Data set	Methodology	Finding
Kawaller et al.	1987	S&P 500 futures and the S&P index using minute by minute data for the period 1984–1985	Three-stage least square regression analysis	Futures price movements consistently lead the spot index movements by up to 45 min
Harris	1989	S&P 500 index and futures during the October 1987 stock market crash	Correlation technique and weighted least squares (WLS) model. Five minute data has been used	Futures market leads the spot market
Cheung and Ng	1990	S&P 500 index over 15 min interval from April 1982 to June 1987	GARCH model	Futures returns lead spot returns by at least 15 min
Stoll and Whaley	1990	S&P 500 and the MMI futures for the period 1982–1987	ARMA(p, q) process	Futures market leads the spot market
Chan et al.	1991	Stock index and stock index futures markets of the S&P 500	Bivariate GARCH model	Futures returns lead spot returns by about 5 min
Wahab and Lashgari	1993	S&P 500 and FTSE 100 index for the period 1988–1992	Cointegration and error correction model (ECM)	Spot market leads to futures markets
Abhyankar	1995	FTSE 100 stock index futures and cash index using hourly data for the period 1986–1990	AR(2) and exponential GARCH(1, 1)	Index futures leads the spot index
Koutmos and Tucker	1996	Intraday volatility spillover between stock index and index futures markets	EGARCH	Futures market leads the stock market
Booth et al.	1997	Volatility spillovers in Scandinavian stock markets, namely, Danish, Norwegian, Swedish, and Finnish stock markets for the period May 2, 1988, to June 30, 1994	EGARCH	Volatility transmission was found to be asymmetric

(continued)

(continued)

Author	Year	Data set	Methodology	Finding
Turkington and Walsh	1999	Shares Prices Index (SPI) futures and the All Ordinaries Index (AOI) for Australia	ARMA (p, q), bivariate VEC and VAR models and impulse response functions	Bidirectional causality between the SPI futures and spot AOI index
Park	2001	Won–dollar spot and offshore forward, i.e., NDF markets	Augmented GARCH	During the pre-reform period, a mean spillover effect exists from the spot to the NDF market. Post reform, however, the results are reversed
Moosa	2002	Spot and 1-month futures prices of West Texas Intermediate (WTI) crude oil covering the period from January 2, 1985, to July 1996	Garbade and Silber's (1983) model	Price discovery function was performed in futures market
Badrinath and Apte	2013	Volatility spillovers among the stock market, foreign exchange market, and call money markets in India	Multivariate EGARCH models	Asymmetric volatility spillovers across stock, foreign exchange, and money markets
Raju and Karande	2003	Nifty index and Nifty index futures	Cointegration and GARCH techniques	Futures market leads the spot market
Zhong et al.	2004	Mexican stock index futures markets effectively serve the price discovery function	VEC and EGARCH models	Futures trading had been a source of instability for the spot market
Gerard	2004	Spillover effects between US S&P 500 futures and Hong Kong stock and futures markets	Structural systems approach	Unidirectional transmission effects from volatility of the Hang Seng index futures (HSIF) to volatility of the HSI

Author	Year	Market/Data	Methodology	Findings
Theissen	2005	DAX index and DAX index futures markets in Germany	Threshold error correction	Futures market leads to price discovery process
Raymond and Tse	2004	Price discovery among Hang Seng index, Hang Seng index futures market, and the tracker fund	Multivariate GARCH techniques	Movements of the three markets are interrelated. The futures markets contain most information, followed by the spot market
Fu and Qing	2006	Chinese spot–futures markets	Johansen cointegration, VECM, and bivariate EGARCH model	Significant bidirectional information flows between spot and futures markets in China, with futures being dominant
Thenmozhi and Thomas	2007	Nifty and S&P CNX Nifty futures	VECM-SURE and EGARCH models	Spot market dominates the futures market in terms of return and volatility
Srinivasan	2009	The NSE spot and futures market from June 12, 2000, to September 12, 2008	Johansen cointegration, VECM, and EGRACH	Bidirectional relationship between the Nifty spot and Nifty futures market prices in India
Iyer and Pillai	2010	Six commodities copper, gold, silver, chickpeas, rubber, and nickel traded on NCDEX	Threshold vector autoregression (TVAR)	Price discovery process occurs in the futures market in five out of six commodities
Shihabudheen and Padhi	2010	Six Indian commodity markets, namely, gold, silver, crude oil, castor seed, jeera, and sugar	VECM TGARCH	Futures price acts as an efficient price discovery vehicle, except in the case of sugar

Many of the studies reviewed above had used a very high-frequency data even up to 15 min; however, due to the limitation of the availability of data for such a short time frame in Indian commodity markets, daily data has been used in the present study. In addition some of the studies had also used GARCH and ARCH framework, but these tools are used only when the analysis is of univariate in nature and the variable is lagged upon its own value. However, the present study is bivariate in nature as the researcher intends to study the relationship not only between a futures series and its lagged value but also on the lagged value of spot series and vice versa. Therefore, instead of the GARCH framework, Engle–Granger cointegration and VECM framework have been used in the study.

2   Methodology and Empirical Analysis

Engle–Granger (EG) cointegration method and VECM were employed to examine the lead–lag relationship between spot and futures market prices of selected oil and gas industry stocks in India. As a preliminary investigation, augmented Dickey–Fuller (ADF) (David et al. 1979) was employed to verify the stationarity of the data series. After identifying a cointegration vector between spot and futures prices, the VECM was employed to examine the long-run relationship. The data for the study consists of daily closing prices of four commodity futures indices and its corresponding underlying spot indices of MCX, Mumbai. The four indices are MCXAGRI, MCXENERGY, MCXMETAL, and MCXCOMDEX. The sample span for the study is daily data from June 6, 2005, to October 30, 2013. All the required data information for the study has been retrieved from the website of MCX,[1] Mumbai.

Table 4.1 presents the results of summary statistics of spot and futures market returns of different commodity classes. The table shows that although in the long run all the series are trending upward, mean returns of spot and futures markets of all commodities are found to be negative. The standard deviation of both spot and futures returns series of the selected commodity indices ranges between 0.78 for Spot MCXAGRI and 2.99 for Spot MCXENERGY. This indicates that energy stocks are more volatile as compared to agriculture stock in spot market. Further, the table also reveals that the skewness statistics of selected indices are significantly different from zero for both the spot and futures series, i.e., they are skewed either to the right or to the left. Also, the kurtosis values of spot and futures index returns series of selected stocks show that they are fat tailed or leptokurtic compared to the normal distribution. In addition, the Jarque–Bera test statistics indicate that the null hypothesis of normality of spot and futures returns series of selected oil and gas industry stocks had been rejected at 1 % significance level. Hence, it can be concluded that both the spot and futures markets returns series of selected indices significantly depart from normality.

---

[1] http://www.mcxindia.com/SitePages/indexhistory.aspx

Table 4.1 Descriptive statistics of futures and spot returns

	SCOMDEX	SMETAL	SENERGY	SAGRI	FCOMDEX	FMETAL	FENERGY	FAGRI
Mean	−0.0477	−0.06278	−0.06639	−0.04839	−0.04776	−0.06568	−0.05405	−0.03304
Median	0	0	0	0	−0.06709	−0.1067	−0.06241	−0.01151
Maximum	6.182551	12.67459	47.82274	16.9586	26.52668	12.86407	40.51325	19.32902
Minimum	−8.10219	−7.07466	−92.7921	−15.8525	−34.1366	−14.5269	−62.6507	−22.7596
Std. dev.	1.092865	1.22092	2.999173	0.788639	1.380748	1.283743	2.616729	1.238477
Skewness	0.097205	0.812392	−11.3052	0.857128	−3.33188	0.873394	−6.73614	0.129186
Kurtosis	7.981664	13.18854	436.1914	172.4669	227.6406	23.27682	252.2441	123.9731
Jarque–Bera	2,338.42	10,014.82	17,703,289	2,702,260	4,751,944	38,969.39	5,861,781	1,376,868
Probability	0	0	0	0	0	0	0	0
Coeff of var	−22.9136	−19.4488	−45.1771	−16.2992	−28.9107	−19.5457	−48.414	−37.4876
Sum	−107.694	−141.748	−149.902	−109.252	−107.839	−148.303	−122.043	−74.597
Sum sq. dev.	2,695.655	3,364.39	20,301.8	1,403.746	4,302.895	3,719.526	15,454.28	3,461.846
Observations	2,258	2,258	2,258	2,258	2,258	2,258	2,258	2,258

As all the data involved in the present study is time series in nature, so the visual plot of the data sets is usually the first step in the analysis.

All the time series exhibit a phenomenon known as random walk phenomenon. However, empirical work based on time series data assumes that the underlying time series is stationary. Therefore, it is very crucial at the initial stage to test the series for the stationarity. If the series under study are found to be non-stationary, then it has to be converted to stationary series first, and then the further analysis will be performed. There are basically three kinds of tests that can be performed to check the stationarity of the series. These are graphical analysis, correlogram-based analysis, and augmented Dickey–Fuller (ADF) test which is the formal test. All the three tests had been performed in the study and shown later in the paper.

The first impression that is emerging from the graph of data sets is that all the series are trending upward (Fig. 4.1). Another important thing to consider is that futures and spot series of a particular class, be it agriculture, metal, or energy, are showing similar patterns of movements in the graph. The futures and spot series of agriculture and metal show only one trend of upward movement. However, the graph of MCXCOMDEX and MCXENERGY shows three trends, initially moving upward, then trending downward, and then reverting back upward. The presence of trends in the above series gives an indication that the series might have a time-varying mean and variance and are non-stationary in nature. However, in order to
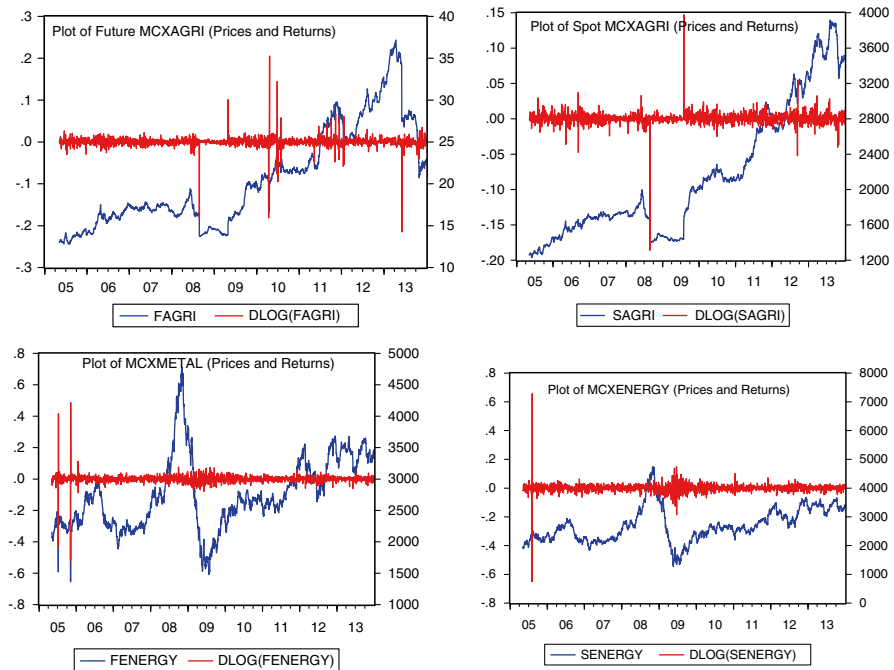
Fig. 4.1 Graph of individual data series
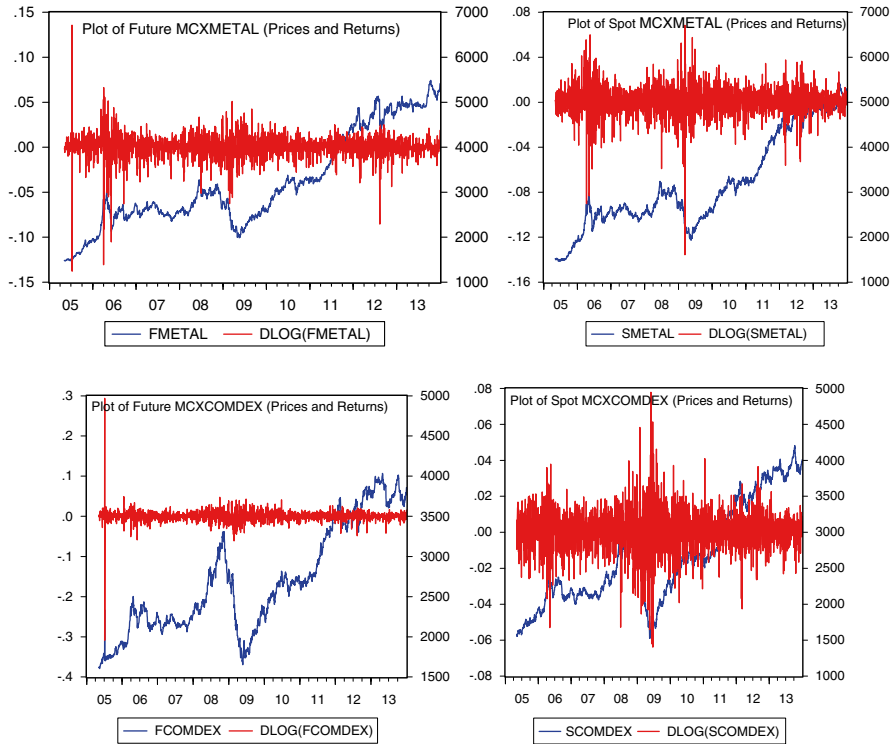
Fig. 4.1 (continued)

study the lead–lag relation between the spot and futures series, it is desired that the series must be stationary in nature. The importance of stationary series lies in the fact that if a time series is non-stationary, it will have a time-varying mean and variance, and then we can study its behavior only for the time frame under consideration. As a consequence it is not possible to generalize it to other time periods.

3 Correlogram Analysis

The correlogram of all the series at levels has been given in the appendices. The most striking feature of all the correlogram is that the autocorrelation coefficients for all the index series are high even at very high lag length. Even if we consider the lags up to 36 days, the autocorrelation functions are quite high and the coefficients are also high, which is the typical property of the correlogram of a non-stationary series. Thus, it seems that all the index series are non-stationary in nature. In addition another important thing to note is that partial autocorrelation function for all the

series except for energy declines very rapidly just after one lag. The PAC for energy series declines after two lags. This kind of behavior gives a hint that most of the series are integrated of order 1 (or they become stationary after first differencing).

4 Augmented Dickey–Fuller Test

Augmented Dickey–Fuller test (ADF) is a formal test for a unit root in a time series sample. It is an augmented version of the Dickey–Fuller test for a larger and more complicated set of time series models. As a random walk process may have no drift, or it may have drift, or it may have both deterministic and stochastic trends, the Dickey–Fuller test is estimated in three forms:

$$\text{Random Walk} \quad \Delta Y_t = \alpha Y_{t-1} + u_t$$

$$\text{Random Walk with Drift} \quad \Delta Y_t = \beta_1 + \alpha Y_{t-1} + u_t$$

$$\begin{array}{l} \text{Random Walk with Drift} \quad \Delta Y_t = \beta_1 + \beta_2 + \alpha Y_{t-1} + u_t \\ \text{around a Stochastic trend} \end{array}$$

Augmented Dickey–Fuller test is conducted by "augmenting" the above three equations by adding the lagged values of the dependent variable ΔY_t. It consists of estimating the following regression equation:

$$\Delta Y_t = \beta_1 + \beta_2 + \alpha Y_{t-1} + \mu \sum \Delta Y_{t-1} + \varepsilon_t$$

where ε_t is a pure white noise error term and where $\Delta Y_{t-1} = (Y_{t-1} - Y_{t-2})$, $\Delta Y_{t-2} = (Y_{t-2} - Y_{t-3})$, etc.

5 Result of Unit Root Test (Table 4.2)

Result of ADF: The result of augmented Dickey–Fuller test indicates the presence of unit root in the series at the levels for the indices. This indicates that all the series are non-stationary in nature. However, at the first difference level, none of the series possess unit root and are found to be stationary in nature. The above analysis confirmed that the series are difference stationary in nature.

Table 4.2 Result of augmented Dickey–Fuller test

Name of the index	Market	ADF test statistics at levels	ADF (t-statistics at 1 %)	Prob (ADF t-statistic)	ADF test statistics at first difference (DLog)	ADF (t-statistics at 1 %)	Prob (ADF t-statistic)
MCXAGRI	Log spot	−1.541945	−3.962112	0.815	−45.37076[a]	−3.96211	0.00
	Log futures	−1.83699	−3.962112	0.6865	−46.09462[a]	−3.96211	0.00
MCXENERGY	Log spot	−2.5581	−3.962115	0.2999	−41.27462[a]	−3.96212	0.00
	Log futures	−2.452301	−3.962115	0.3522	−40.59979[a]	−3.96212	0.00
MCXMETAL	Log spot	−2.3663	−3.962112	0.3973	−49.70362[a]	−3.96211	0.00
	Log futures	−2.340782	−3.962114	0.411	−53.60772[a]	−3.96211	0.00
COMDEX	Log spot	−2.066321	−3.962112	0.5638	−46.4034[a]	−3.96211	0.00
	Log futures	−2.233567	−3.962114	0.47	−59.46117[a]	−3.96211	0.00

[a]denotes the significance at 1 % level

6   Cointegration Test

Two variables (or series) are said to be integrated if they have a long-term equilibrium relationship between them. A number of methods have been proposed in literature for checking the cointegration; in this study we have used the Engle–Granger test for checking cointegration. The basic regression used for the model is

$$F_t = \beta_1 + \beta_2\, S_t + u_t$$

or

$$u_t = F_t - \beta_1 - \beta_2\, S_t$$

where F_t stands for the futures indices and S_t represents the spot indices. "u_t" is the residual of regression result of two non-stationary series. Now "u_t" has been subjected to unit root test analysis and checked whether it is stationary or non-stationary. If the residuals are found to be stationary, then the two series are said to be cointegrated. This means that if the two ivndividual series are $I(1)$ – i.e., integrated of order 1 which means they have stochastic trends – their linear combination is $I(0)$. This signifies that the linear combination cancels out the stochastic trends in the two series and the series are cointegrated in the long run. But before applying the formal tests, we have plotted the pairs of futures and spot of a particular index together in order to get an idea of the co-movement of the series with respect to each other (Fig. 4.2).

The idea behind plotting the futures and spot prices together is that it will give us a fair idea of whether the two series are moving together. If the two series are moving together, they are said to be cointegrated. The information in one market gets transmitted very rapidly to another market. The futures and spot series in case of metal moves so closely that one series is almost hidden behind the other and only traces are visible at points. The futures and spot series in context of MCXAGRI commodities shows the deviation from each other at a number of points. The spikes of futures prices are visible in starting and mid of 2010. In addition from mid-2012 to 2013, the direction becomes completely reverse, and the spot series is moving upward, while the futures series is moving downward. This will give rise to a clear arbitrage opportunity. The speculators will start short selling today, and this practice continues until both the markets are back in equilibrium. In addition since the series after mid-2012 are moving apart, the researcher might have to reduce the data set of MCXAGRI till June 2012 in order to test the cointegration. In MCXENERGY also, there are some downward spikes of futures series in the mid of 2005, but after that the two series are moving together as one should expect.
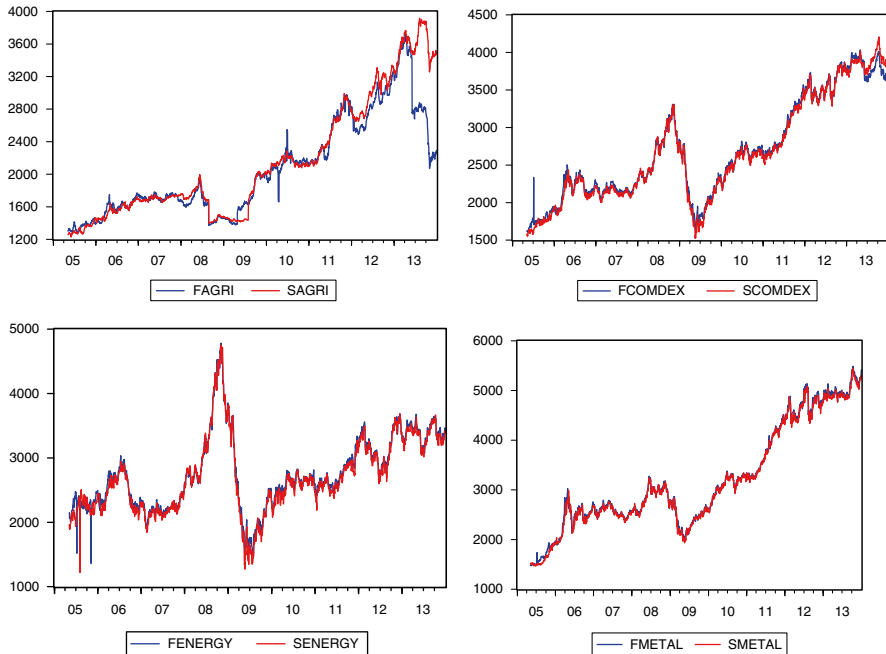
Fig. 4.2 Graph of paired (spot and futures) data sets

7   Result of Cointegration Analysis

Table 4.3 provides results of residual-based cointegration test. Majority of the studies done in the context of price discovery had used Johansen cointegration test for checking cointegration. This test is usually used when the empirical analysis involves more than two series. Therefore, in the present study, Engle–Granger cointegration test has been employed.

The result shows that except for MCXAGRI, the residuals from cointegration regression are stationary and are also integrated of order zero, indicating that there is a long-run relationship between spot and near futures prices. It confirms the existence of long-run relationship between the spot and futures prices except for MCXAGRI, and we can proceed further for the VECM for all rest indices.

From the above graph of MCXAGRI, it was indicated that the series are cointegrated up to year 2012 and something had happened in 2012 due to which the series start moving apart from each other and a breach had been created between the two series. If the residuals are also found to be non-stationary, then we cannot proceed further for VECM. Therefore, in case of MCXAGRI, data had been dropped after 2012, and residual test had been performed again on the data up to 2012. The residuals were found to be stationary for MCXAGRI also after the

Table 4.3 Result of Engle–Granger cointegration test

Residual of regression	ADF t-statistic	ADF t-statistic at 1 % level	ADF t-statistic at 5 % level	ADF t-statistic at 10 % level	Prob. (ADF t-statistic)
Log agri	−2.621746	−3.962114	−3.4118	−3.127788	0.27
Log agri (data up to June 2012)	−5.502970[a]	−3.962660	−3.412068	−3.127947	0.0000
Log energy	−14.42997[a]	−3.962117	−3.411802	−3.127789	0.0000
Log metal	−12.98805[a]	−3.962115	−3.411801	−3.127789	0.0000
Log COMDEX	−8.147247[a]	−3.962119	−3.411803	−3.12779	0.0000

[a]denotes the significance at 1 % level

reduction of data set. For VECM also the data of MCXAGRI was taken up to June 2012 only and up to 2013 for all the other series.

8 Vector Error Correction Model

If the two series were found to be cointegrated, it is an indication of a long-term relationship between the two, or there exists an equilibrium relation between the two. However, in the short run, there may be disequilibrium which is random and is reflected in the white noise residual term, and this residual error term can be used to tie the short-run behavior of the series with its long-run relationship. Engle and Granger gives a theorem called Granger representation theorem based on this error correction mechanism which states that if two variables/series are cointegrated, then the relationship between the two can be represented as error correction model:

$$\Delta F_t = \alpha_0 + \alpha_1 \Delta S_t + \alpha_2 u_{t-1} + \varepsilon_\tau$$

where Δ denotes the first difference operator, ε_τ is a random error term, and $u_{t-1} = (F_{t-1} - \beta_1 - \beta_2\ YS_{t-1})$, that is, the one period lagged value of the error from the cointegrating regression.

As the futures price today could depend upon the futures price or spot price prevailing in the previous week so for all the series the empirical analysis was started with up to six days lags (Table 4.4). However, for MCXENERGY, all the futures and spot values up to six lags were found to be significant. As a result of which the lag length was increased for MCXENERGY and further the futures and spot values were coming out to be insignificant at tenth lag, so for energy series, the analysis was done up to nine lags. In addition the data for MCXAGRI was taken up to June 30, 2012, for VECM analysis as the residual term beyond that was coming out non-stationary in nature.

In case of futures MCXAGRI, the error correction term was found to be significant indicating the presence of short-run equilibrium between futures and spot

Table 4.4 Result of vector error correction analysis

	MCXAGRI		MCXENERGY		MCXMETAL		MCXCOMDEX	
	DLog (Ft)	DLog (St)	DLog (Ft)	DLog (St)	DLog (Ft)	DLog (St)	DLog (Ft)	DLog (St)
ECT	−0.032437[a] (−4.55580) [0.0000]	0.022090[a] (4.717230) [0.0000]	−0.131260[a] (−5.68124) [0.0000]	0.201922[a] (8.869609) [0.0000]	−0.095248[a] (−5.770989) [0.0000]	0.181248[a] (12.83994) [0.0000]	−0.097732[a] (−7.008398) [0.0000]	0.079904[a] (6.981123) [0.0000]
DLog (St)	0.225690[a] (6.88594) [0.0000]	−	0.285664[a] (14.70088) [0.0000]	−	0.381685[a] (16.53650) [0.0000]	−	0.458556[a] (19.84447) [0.0000]	−
DLog (Ft)	−	0.094282[a] (6.508002) [0.0000]	−	0.307251[a] (14.60903) [0.0000]	−	0.282435[a] (16.52841) [0.0000]	−	0.323254[a] (19.79419) [0.0000]
DLog (Ft−1)		0.172172[a] (11.70362) [0.0000]	−0.343227[a] (−11.6850) [0.0000]	0.287446[a] (9.757539) [0.0000]	−0.186857[a] (−7.570230) [0.0000]	0.221137[a] (10.17659) [0.0000]	−0.400183[a] (−17.00972) [0.0000]	0.251064[a] (12.91499) [0.0000]
DLog (St−1)	0.091839[a] (2.717052) [0.0066]	−	0.161089[a] (5.886296) [0.0000]	−0.335517[a] (−12.5642) [0.0000]	0.121978[a] (5.094443) [0.0000]	−0.156332[a] (−7.3612) [0.0000]	0.361192[a] (13.56871) [0.0000]	−0.136358[a] (−6.06456) [0.0000]
DLog (Ft−2)	−0.061630[a] (−2.68028) [0.0074]	−	−0.184063[a] (−6.116028) [0.0000]	0.284581[a] (9.659488) [0.0000]	−0.054755[a] (−2.403619) [0.0167]	0.153684[a] (7.260422) [0.0000]	−0.211276[a] (−8.579128) [0.0000]	0.128784[a] (6.899395) [0.0000]
DLog (St−2)	−	−	0.114514[a] (4.212494) [0.0000]	−0.187914[a] (−7.00920) [0.0000]	−	−0.099456[a] (−4.91538) [0.0000]	0.206465[a] (7.531058) [0.0000]	−0.111577[a] (−5.07310) [0.0000]
DLog (Ft−3)	−	−	−0.130735[a] (−4.387644) [0.0000]	0.173379[a] (5.933376) [0.0000]	0.038908[b] (1.886405) [0.0594]	0.067475[a] (3.539816) [0.0004]	−0.105117[a] (−4.386662) [0.0000]	0.035710[b] (2.184973) [0.0290]

(continued)

Table 4.4 (continued)

	MCXAGRI		MCXENERGY		MCXMETAL		MCXCOMDEX	
	DLog (Ft)	DLog (St)	DLog (Ft)	DLog (St)	DLog (Ft)	DLog (St)	DLog (Ft)	DLog (St)
DLog (St−3)	0.077911[a] (2.398658) [0.0165]	–	0.099723[a] (3.729164) [0.0002]	−0.090461[a] (−3.457521) [0.0000]	–	–	0.113537[a] (4.236355) [0.0000]	–
DLog (Ft−4)	–	–	−0.107832[a] (−3.689828) [0.0002]	0.123195[a] (4.341286) [0.0000]	–	–	−0.058745[a] (−2.786952) [0.0054]	–
DLog (St−4)	–	–	0.104066[a] (3.961582) [0.0001]	−0.024915 (−0.991038) [0.3218]	–	–	0.081532[a] (3.250194) [0.0012]	–
DLog (Ft−5)	−0.117502[a] (−5.34422) [0.0000]	0.026511[b] (1.829974) [0.0674]	−0.093243 (−3.262431) [0.0011]	0.090976[a] (3.373952) [0.0008]	0.038694[b] (1.946340) [0.0517]	−0.03955[b] (−2.29489) [0.0218]	–	–
DLog (St−5)	–	–	0.098396[a] (3.836465) [0.0001]	−0.045770[b] (−1.968923) [0.0491]	–	–	–	–
DLog (Ft−6)	–	0.033396[b] (2.287924) [0.0222]	−0.095718[a] (−3.446851) [0.0006]	0.038522[c] (1.627382) [0.1038]	–	0.059904[a] (3.477156) [0.0005]	–	–
DLog (St−6)	–	0.042760[b] (1.993691) [0.0463]	0.084279[a] (3.374041) [0.0008]	−0.021990 (−1.039427) [0.2987]	–	–	0.052154[b] (2.312553) [0.0208]	–

DLog (Ft–7)	–	–	–0.072964[a] (–2.71373) [0.0067]	–	–	–	–	–
DLog (St–7)	–	–	0.073778[a] (3.078948) [0.00021]	–0.057781[a] (–2.893965) [0.0038]	–	–	–	–
DLog (Ft–8)	–	–	–0.065265[a] (–2.55452) [0.0107]	–	–	–	–	–
DLog (St–8)	–	–	0.053507[a] (2.427045) [0.0153]	–0.070291[a] (–3.583690) [0.0003]	–	–	–	–
DLog (Ft–9)	–	–	–0.044522[b] (–1.9862) [0.0471]	–	–	–	–	–
DLog (St–9)	–	–	0.034633[c] (1.806638) [0.0710]	–0.059912[a] (–3.190035) [0.0014]	–	–	–	–

D stands for first difference

( ) represents t-statistics

[ ] represents p-values

[a]indicates significance at 99 % confidence level

[b]Indicates significance at 95 % confidence level

[c]Indicates significance at 90 % confidence level

prices. In addition the changes in futures prices were found to depend upon first and third lag values of the spot prices. It also depends upon its own lagged values at two and five lags.

The result for Spot MCXAGRI indicates that error correction term was significant. The change in spot depends upon the first lag value of futures prices. However, spot and futures prices at fifth and sixth lag were also significant. This suggests the presence of weekly effect in spot prices and futures prices in case of MCXAGRI. The result above does not give any clear indication of whether spot price leads the futures price or vice versa.

For MCXENERGY the error correction term was found to be significant for both the futures and spot price changes indicating the presence of short-run equilibrium in both spot and futures series. The changes in spot prices were found to depend upon the changes in futures prices up to five lags. Spot prices also depend significantly upon its own lagged value up to nine lags. The change in futures price depends upon spot prices as well as its own lagged value up to nine lags. Since the futures price depends upon spot prices up to greater lag length, it indicates that spot price leads the futures prices in the context of MCXENERGY.

In case of MCXMETAL, also the error correction term was found significant for both futures and spot series suggesting the correction of short-run disequilibrium. The change in futures prices depends upon change in spot price only up to one lag indicating that futures price of today will depend on yesterday's spot price only. However, it was also found to depend significantly on its own lagged value up to five lags. The change in spot prices depends significantly upon change in futures price up to five lags except for fourth lag. It depends on its lagged value up to two lags. Since both the futures and spot series were found to depend more on lagged futures values, it can be concluded that in case of MCXMETAL, futures price leads the spot prices and price discovery takes place from futures to spot market.

COMDEX which is the weighted average of all the above three indices gives the overall picture of the commodity markets. While individual series gives information pertaining to that commodity class only, COMDEX represents the entire commodity market as a whole.

For COMDEX also the error correction term for spot as well as futures prices was found to be significant, thereby indicating the presence of equilibrium in the entire commodity market. The changes in the price of futures COMDEX series were found to depend upon both futures and spot series up to four lags. In addition the spot prices at six lags were also found to be significant in causing the change in futures prices. This indicates the presence of significant cyclic effect in commodity market also. The change in spot COMDEX series was found to depend on its own lagged value only up to two lags; however, it depends significantly on the futures COMDEX prices up to three lags. However, as the change in futures prices itself also depends upon the change in spot price at six lags, it can be concluded that in the commodity market as a whole, the spot prices lead the futures prices.

9   Conclusion

The study investigates the price discovery and information spillover between futures and spot commodity markets by using Engle–Granger cointegration test and vector error correction model. The study discovers the existence of long-run relationship in all the cases except for MCXAGRI. However, after the reduction of data set of MCXAGRI up to June 2012, the long-run equilibrium was found to be significant. In the context of price discovery, the present study provides mixed result. For MCXAGRI, there was no clear indication of the direction of the flow of information, and bidirectional information spillover has been found. In case of MCXENERGY and MCXMETAL, the results are quite contradictory, and the price discovery took place from futures to spot markets in MCXMETAL and the reverse in case of MCXENERGY. For MCXCOMDEX which represents the commodity market as a whole, the information flow was found to be significant from spot to futures markets. The findings of this study would definitely attract investors and portfolio managers whose main interest is to develop trading strategies and would also help the regulators in implementing control measures in order to ensure stability in the Indian commodity markets. The results of this study were found to be in contradiction with the studies done in developed countries to a certain extent. These studies found that the information is reflected first in spot prices and then it got transferred to futures prices in commodity market as a whole. However, the consensus on spillover effect for all the commodities could not be reached in the study.

10   Limitation of the Study

The major limitation of the study is that daily data has been used for analysis due to non-availability of high-frequency data. In the present scenario where the markets are integrated on a real-time basis, daily data is of less relevance due to the fact that closing prices represent average fluctuations in the last 30 min only. In addition for MCXAGRI, the study got restricted only up to June 2012, and what happened to the two series has not been examined in the present study due to the changes in policy environment. Lastly the study provides mixed results in the context of price discovery, and an unambiguous decision on whether futures leads spot or vice versa cannot be arrived.

Appendices

MCXAGRI Regression Residual Test

Null hypothesis: $R1$ has a unit root
Exogenous: constant
Lag length: 2 (automatic based on SIC, MAXLAG = 26)

		t-statistic	Prob.*
Augmented Dickey–Fuller test statistic		−15.541407	0.0125
Test critical values	1 % level	−3.433054	
	5 % level	−2.862620	
	10 % level	−2.567391	

*MacKinnon (1996) one-sided *p*-values

MCXMETAL Regression Residual Test

Null hypothesis: $R2$ has a unit root
Exogenous: constant
Lag length: 2 (automatic based on SIC, MAXLAG = 26)

		t-statistic	Prob.*
Augmented Dickey–Fuller test statistic		−14.86098	0.0000
Test critical values	1 % level	−3.433054	
	5 % level	−2.862620	
	10 % level	−2.567391	

*MacKinnon (1996) one-sided *p*-values

MCXENERGY Regression Residual Test

Null hypothesis: $R3$ has a unit root
Exogenous: constant
Lag length: 3 (automatic based on SIC,
MAXLAG = 26)

		t-statistic	Prob.*
Augmented Dickey–Fuller test statistic		−13.67923	0.0000
Test critical values	1 % level	−3.433055	
	5 % level	−2.862621	
	10 % level	−2.567391	

*MacKinnon (1996) one-sided *p*-values

MCXCOMDEX Regression Residual Test

Null hypothesis: $R4$ has a unit root
Exogenous: constant
Lag length: 4 (automatic based on SIC, MAXLAG = 26)

		t-statistic	Prob.*
Augmented Dickey–Fuller test statistic		−6.093264	0.0000
Test critical values	1 % level	−3.433056	
	5 % level	−2.862622	
	10 % level	−2.567391	

*MacKinnon (1996) one-sided p-values

References

Abhyankar A (1995) Return and volatility dynamics in the FTSE 100 stock index and stock index futures markets. J Futur Mark 15(4):457–488

Badrinath HR, Apte PG (2013) Volatility spillovers across stock call money and foreign exchange markets. Working paper, National Stock Exchange, India. Retrieved from: http://www.nse-india.com/content/research/comppaper109.pdf. 20 Oct 2013

Booth GG, Martikainen T, Tse Y (1997) Price and volatility spillovers in Scandinavian markets. J Bank Financ 21(6):811–823

Chan K, Chan KC, Karolyi GA (1991) Intraday volatility in the stock index and stock index futures markets. Rev Financ Stud 4(4):657–684

Cheung YW, Ng LK (1990) The dynamics of S&P 500 index and S&P 500 futures intraday price volatilities. Rev Futur Mark 9(2):458–486

Dickey DA, Fuller WA (1979) Distribution of the estimators for autoregressive time series with a unit root. J Am Stat Assoc 74(366a):427–431

Easwaran R, Ramasundaram P (2008) Whether commodity future market in agriculture is efficient in price discovery?-An econometric analysis. Agric Econ Res Rev 21:337–344

Fu LQ, Qing ZJ (2006) Price discovery and volatility spillovers: evidence from Chinese spot-futures markets. China World Econ 14(2):79–92

Gerard G (2004) Simultaneous volatility transmissions and spillover effects: US and Hong Kong stock and futures markets. Working paper, School of Accounting, Economics and Finance, Deakin University, Melbourne, Australia, pp 1–23

Grossman SJ, Miller MH (1988) Liquidity and market structure. J Financ 43:617–633

Harris L (1989) The October 1987 S&P 500 stock-futures basis. J Financ 44:77–99

Iyer V, Pillai A (2010) Price discovery and convergence in the Indian commodities market. Indian Growth Dev Rev 3(1):53–61

Karolyi GA, Stulz RM (1996) Why do markets move together? An investigation of U.S.-Japan stock return comovements. J Financ 51:951–986

Kawaller IP, Koch P, Koch T (1987) The temporal price relationship between S&P 500 futures and S&P 500 index. J Financ 42(5):1309–1329

Koutmos G, Tucker M (1996) Temporal relationships and dynamic interactions between spot and futures stock markets. J Futur Mark 16(1):55–69

Moosa IA (2002) Price discovery and risk transfer in the crude oil futures market: some structural time series evidence. Econ Notes 31:155–165

Park J (2001) Information flows between non-deliverable forwards (NDF) and spot markets: evidence from Korean currency. Pac Basin Financ J 9(4):363–377

Raju MT, Karande K (2003) Price discovery and volatility of NSE futures market. SEBI Bull 1(3):5–15

Raymond WS, Tse Y (2004) Price discovery in the Hang Seng index markets: index, futures, and the tracker fund. J Futur Mark 24(9):887–907

Shihabudheen MT, Padhi P (2010) Price discovery and volatility spillover effect in Indian commodity market. Indian J Agric Econ 65(1):101–117

Srinivasan P (2009) An empirical analysis of price discovery in the NSE spot and future markets of India. IUP J Appl Financ 15(11):24–36

Stoll HR, Whaley RE (1990) The dynamics of stock index and stock index futures returns. J Financ Quant Anal 25(4):441–468

Theissen E (2005) Price discovery in spot and futures market: a reconsideration. Working paper, University of Bonn, Bonn, Germany, pp 1–21

Thenmozhi M, Thomas SM (2007) Price discovery and volatility spillover in spot and futures market: evidence from India. Indian J Cap Mark 4(2):1–28

Turkington J, Walsh D (1999) Price discovery and causality in the Australian share price index futures market. Aust J Manag 24(2):97–113

Wahab M, Lashgari M (1993) Price dynamics and error correction in stock index and stock index futures markets: a cointegration approach. J Future Mark 13:711–742

Zapata H, Fortenbery TR, Armstrong D (2005) Price discovery in the world sugar futures and cash markets: implications for the Dominican republic. Staff paper no. 469, Department of Agricultural and Applied Economics, University of Wisconsin-Madison, Madison

Zhong M, Darrat AF, Otero R (2004) Price discovery and volatility spillovers in index futures markets: some evidence from Mexico. J Bank Financ 28(12):3037–3054

Chapter 5
An Empirical Study on Factors Affecting Faculty Retention in Indian Business Schools

Prabjot Kaur

Abstract Today, the biggest challenge being faced by the academic leaders is retaining the talented and competitive faculty members. On the one hand, higher education is facing the unwanted heat of faculty voluntary turnover, and on the other hand, technical education institutions are dealing with the acute shortage of talented faculty that is directly hampering the quality of the education system of an economy. Keeping the same concern pertaining to the quality and development of management education, the study is conducted to identify the relationship between the factors influencing the faculty members of the business schools of India towards retention which will help in designing faculty retention strategies. The sample size for the exploratory research is 300 faculty members from the accredited business schools of northern India using the questionnaire as research instrument for data collection undergoing a non-probability technique of sampling for the study. Factor analysis is adopted for analyzing data using SPSS. *Career planning and development, FDPs and training programs, job enrichment, cooperation from the work teams, and job security* like other factors are found to be the most possible variables influencing faculty members towards retention. The study can help business schools in the formulation of effective HR policies that will help in retaining their employees. The study will help in designing the *faculty retention* model in higher education.

Keywords Faculty retention • Faculty voluntary turnover • Shortage of talented faculty • Quality of education • Faculty retention strategies • HR policies • Business schools of India

P. Kaur (✉)
Academic Associate (OB & HR), Indian Institute of Management, Kashipur, India

Research Scholar (Management), Uttarakhand Technical University, Dehradun, India
e-mail: prabjotmba@gmail.com

1 Introduction

The faculty plays a prominent role in shaping the future and image of an institution or a university. It is the efforts of the faculty that makes an institution or a university internationally recognized with all his or her teaching excellence and research orientation. The contribution of faculty in terms of research-related activities and higher academic achievement brings stars to the affiliated institute/university. Academic leaders also acknowledge the valuable contribution of productive faculty and thereby do understand the linkage between the academic achievements of a faculty and the image of an institution/university to which the talented faculty is associated with. In spite of knowing the crucial role of faculty, retaining talented and productive faculty is the biggest challenge academic leaders are facing today in their institutions. Higher educational institutions especially technical education private colleges/universities are today facing the continuous heat of faculty voluntary turnover at their institutions which is directly hampering the quality education, sound functioning of the organization, and future of the students. Supporting the statement (Hensel 1991), the president of the University of Maine at Presque Isle also stated, "The well being and smooth functioning of the university depends upon its ability to recruit and retain a talented professoriate." In the study, Hensel found that the institutions who fail to retain talented faculty have a difficult time in establishing quality programs. In spite of knowing the fact, academic leaders and management are unable to design effective retention strategies for the talented faculty members. It feels so pitiful that management colleges imparting degrees in management education and specializing students in effective human resources management strategies are unable to manage the HR issues of their own teaching associates. Future business school affluence hence depends on a principal area of attention within the HR management function. The academic leaders are facing 'war for talent' in the academic labor market of management education. It has become very difficult for the institutions to hold the productive faculty for a longer duration because as the faculty develops, undergoing academic achievements, the faculty also wishes to develop his or her career and thereby look ahead to the working institute to meet his or her expectations in return for the quality services and achievements. Such type of cases exists in every institute, but no efforts are taken by employer to meet the expectations of the faculty, and some or other day, the faculty decides to leave. In such situations, institutions need to be the "brand employer"— employer of choice— and design effective strategies to retain and attract talents in the academic labor market.

2 Literature Review

Faculty retention refers to the policies and procedures organizations use to prevent talented and competent faculties from leaving their job. It involves taking measures and designing strategies to remain in the institution for a period of time. Retention is a voluntary move by an organization to create an environment which engages

employees for a long term (Chaminade 2007). Hiring knowledgeable people for the job is essential for an employer. But retention is more important than hiring. In the recent decades, the Indian industry has changed its employment scenario. Factors like skill sets and job satisfaction drive the employment, not only the money part. The employer is facing the unwanted heat of employee turnover. Continuous efforts are made by the organizations to control the employee turnover rate as it directly affects the performance and goodwill of the organization as many key people leave the organizations for varied crucial reasons. This turnover is normally referred to as attrition. Many researches have been conducted on this very subject. Teacher attrition has been a topic of discussion in the education literature for many years. It has been claimed that teacher attrition is a major problem in the schools, and between 20 % and 50 % of beginning teachers decide to leave the profession in the first 3–5 years (Ewing 2001; Ewing and Smith 2002). There seems to be little variations in these figures internationally (Macdonald 1999). For example, a 2003 Victorian Department of Education and Training Report stated that in the United States, a third of teachers leave the profession within 3 years and almost half within 5 years. In Britain, a 2003 survey by the University of Buckingham found that around 30 % of British teachers who left teaching that year had been in the profession for less than 5 years. The benchmark study of faculty mobility was conducted by Caplow and McGee in 1958 as *The Academic Marketplace* which was replicated by Burke (1988), producing *The New Academic Marketplace*. Burke in his study found that the market for professors had become radically different over the last three decades. In the 1950s, as higher education was expanding rapidly, there was a large and increasing demand for faculty members and, on the other hand, a short supply of Ph.Ds. which created a big demand – supply gap in the academic labor market pertaining to higher education. This gap existed due to the incapability of the academic leaders to retain talented and productive faculty members in their institutions. A number of scholars had tried to identify the factors affecting faculty attrition and retention, but still there had been no little consistency in the findings of the same. A number of studies had reflected the relation between job satisfaction and employee retention. And when the question turns to academia, teacher job satisfaction is very essential for the smooth functioning of any institution. One of the studies conducted by Eskildsen and Nussler (2000) states that the employees who are happy and satisfied with their jobs are more creative, productive, and more likely to be retained by the organization. In the context of academics, carrying ahead the same thought, Perie et al. (1997) in their study state that the faculty who are highly satisfied as compared to dissatisfied tends to remain more for a longer duration in the same working institution. Employers today need to take care of their employee's personal feelings towards the job and satisfaction levels from their working conditions, peers, and superiors, as these are the keys to ensure employee retention. Other studies also indicated that employees will be retained in their organization if he or she has a good relationship with the people he or she is working with; therefore, the social working environment plays a major role in retaining the employee (Clarke 2001). The same thought is also reflected in the study conducted by Johns et al. (2001) suggesting organizations to provide team-building opportunities and liberty to work in their

own way, where discussions and interactions can be carried out not only within working hours but also outside working hours. Human capital theorists believe that personal endowments such as ability, competence, and schooling translate into returns in the marketplace. An individual's attributes, competence, and background generate the educational, occupational, and economic attainment at different points in the course of life (Becker 1964; Mincer 1971; Rees and Schultz 1970). The academicians who all are equipped with stronger credentials, such as better institutional origins and higher research/teaching productivity, have more job opportunities which leads to the war for talent in the academic labor market. The faculty who leaves voluntarily tends to be characterized by a high achievement orientation (Barnhart and Bechhofer 1995). Those who are not competing for rank or tenure may have the greatest staying power for long because they are free from the wanderlust afflicting competitive academics as they do not have more job opportunities in the marketplace because of their very low achievements in the course of time with the profession. Palmer and Patton (1981) in his study reported that those who published less and rated themselves as less successful were more likely than other faculty members to have seriously considered leaving the academia permanently. To this statement, many researchers argue by saying that career outcomes are more than a matter of personal choices or achievements. They firmly believe that the academic labor market is multiple and overlapping. The academic labor market is divided by factors such as subject matter specialty, religion, sex, race, and academic rank of the individuals and by institutional region, status, size, control, degree level, and governance (Brown 1967; Smelser and Content 1980; Youn and Zelterman 1988). Academic workers seem to work in a segmented labor market that offers different working conditions, different opportunities, and different institutional norms to govern incentives (Youn 1988, p. 15). This confines the mobility within the academia. There had been some disagreement found in the literature concerning faculty loyalty to their employing institutions. Supporting the fact, Nienhuis (1994) describes faculty as mobile, loyal to the discipline rather than the institution. Boyer (1990) puts his argument that the faculty is more likely than in previous years to report their school and department as important to them, thereby discouraging mobility. In either case, the increased opportunities for nonacademic work have led to a greater ease of mobility than in the past. One model holds that turnover is predicted on (a) the desirability of leaving the organization and (b) the ease of movement from the organization (Mowday et al. 1982). Considering the indications of an upward swing in both components, it is safe to assume that faculty turnover is causing greater problems for many administrators.

3 Methodology

3.1 Objectives of the Study

- To explore the factors that influence the faculty retention practices in business schools

3.2   Hypotheses

- There is a relationship among the factors that influence the faculty members towards retention.

3.3   The Study

The study was exploratory in nature with survey being used as a method to complete the study.

3.4   Sampling Design

- Population: Faculty members of accredited business schools of northern India
- Sample size: 300 faculty members
- Sample element: Individual respondents of various accredited business schools of northern India
- Sampling technique: Nonprobability sampling

3.5   Tools Used for Data Collection

- A self-designed questionnaire was used to solicit response from the respondents.

3.6   Tools Used for Data Analysis

In order to identify the underlying variables or factors and their relationship with the retention of faculty members of accredited business schools, factor analysis was applied.

3.7   Methodology

Cronbach's alpha is a measure of internal consistency, that is, how closely related a set of items are as a group. An investigation has been made with the reliability of data using a reliability test to see whether the random error causing inconsistency

Table 5.1 Reliability statistics	Cronbach's alpha	No. of items
	0.831	22

and in turn lower reliability is at the managerial level or not. The point to be noted is that a reliability coefficient of **0.70** or higher is considered "acceptable" in social science research. A high value of alpha is often considered as evidence that the items measure an underlying (or latent) construct. As is depicted from the table, the value of alpha coefficient for the 22 items is **0.831**, suggesting that the items have relatively high internal consistency (Table 5.1).

3.7.1 Factor Analysis

Hypotheses: There exist significant relationships among the factors that influence the employee retention.

In the research study, efforts are done to analyze the perception of faculty members working in the NBA (AICTE)-accredited b-schools of northern India towards the factors affecting faculty retention in the accredited business schools of northern India. The 22 variables representing the various dimensions of the work style of the b-schools including the behavioral approach, policies, and concern of the management of the business schools towards the growth and development of the faculty members working there with the concern of faculty members to be retained with the business schools are included. The exploratory factor analysis is applied on the responses in order to identify the latent factors which influence the faculty members to stay and continue working in the business schools. This will not only help in knowing the major factors affecting faculty retention but, on the other hand, will also help in designing strategies and models for faculty retention.

Exploratory factor analysis is a method of data reduction. It does this by seeking underlying unobservable (latent) variables (factors) that are reflected in the observed variables (measured variables). There are various methods that can be used to conduct exploratory factor analysis (such as principal axis factor, maximum likelihood, generalized least squares, unweighted least squares). In addition to this, there are also different methods of rotations that can be applied after the initial extraction of factors, including orthogonal rotations, such as varimax and equimax, which impose the restriction that the factors cannot be correlated, and oblique rotations, such as promax, which allow the factors to be correlated with one another. Factor analysis is a technique that requires a large sample size. Factor analysis is based on the correlation matrix of the variables involved, and correlations usually need a large sample size before they stabilize. The results of exploratory factor analysis are shown in the table below. The Kaiser–Meyer–Olkin measure of sampling adequacy statistic (0.775) indicates that the sample size is adequate to apply factor analysis on the data collected in the research study. The probability (p) value of Bartlett's test of sphericity statistic (0.000) indicates that the correlation matrix of the variables considered in the research study is not an identity matrix. This indicates that the factor analysis can be done on the data collected from the faculty members (Table 5.2).

Table 5.2 KMO and Bartlett's test

KMO and Bartlett's test		
Kaiser–Meyer–Olkin measure of sampling adequacy		0.775
Bartlett's test of sphericity	Approx. chi-square	661.515
	Sig.	0.000

KMO measure of sampling adequacy is an index to examine the appropriateness of factor analysis. High values 0.5 and 1.0 indicate factor analysis is appropriate. Values below 0.5 imply that factor analysis may not be appropriate. From the above table, it is seen that the Kaiser–Mayer–Olkin measure of sampling adequacy index is 0.775, and hence, the factor analysis is appropriate for the given data set. Bartlett's test of sphericity chi-square statistics is 661.515, which shows the 22 statements are correlated, and hence, as inferred in KMO, factor analysis is appropriate for the given data set (Table 5.3).

Eigenvalue represents the total variance explained by each factor. The percentage of the total variance attributed to each factor. One of the most popular methods used in exploratory factor analysis is principal component analysis, where the total variance in the data is considered to determine the minimum number of factors that will account for maximum variance of data. With principal factor axis method, the initial values on the diagonal of the correlation matrix are determined by the squared multiple correlation of the variable with the other variables. The values in the *Extraction* column indicate the proportion of each variable's variance that can be explained by the retained factors. Variables with high values are well represented in the common factor space, while variables with low values are not well represented. The initial number of factors is the same as the number of variables used in the factor analysis. However, not all 22 factors will be retained. In the study, only the first three factors are retained. The eigenvalues are the variances of the factors. Because factor analysis is conducted on the correlation matrix, the variables are standardized, which means that the each variable has a variance of 1, and the total variance is equal to the number of variables used in the analysis. The "Total" column contains the eigenvalues. The first factor will always account for the most variance (and hence have the highest eigenvalue), and the next factor will account for as much of the leftover variance as it can and so on. Hence, each successive factor will account for less and less variance. The *Percentage of Variance* column contains the percent of total variance accounted for by each factor. The *Cumulative %* column contains the cumulative percentage of variance accounted for by the current and all preceding factors. The results indicate that the three factors together account for 44.64 % of the total variance. The number of rows in the "Extraction Sums of Squared Loadings" panel of the table corresponds to the number of factors retained. The values in the "Rotation Sums of Squared Loadings" panel of the table represent the distribution of the variance after the varimax rotation. Varimax rotation tries to maximize the variance of each of the factors, so the total amount of variance accounted for is redistributed over the three extracted factors (Table 5.4).

Table 5.3 Total variance explained

Component	Initial eigenvalues			Extraction sums of squared loadings			Rotation sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	6.339	28.813	28.813	6.339	28.813	28.813	4.923	22.379	22.379
2	1.895	8.612	37.425	1.895	8.612	37.425	3.179	14.449	36.828
3	1.587	7.212	44.637	1.587	7.212	44.637	1.718	7.810	44.637
4	1.252	5.692	50.329						
5	1.149	5.221	55.550						
6	1.124	5.110	60.660						
7	1.035	4.705	65.365						
8	0.931	4.230	69.595						
9	0.845	3.842	73.437						
10	0.761	3.459	76.896						
11	0.724	3.291	80.187						
12	0.649	2.951	83.138						
13	0.614	2.791	85.929						
14	0.602	2.734	88.663						
15	0.474	2.155	90.818						
16	0.438	1.990	92.808						
17	0.368	1.674	94.482						
18	0.320	1.456	95.938						
19	0.299	1.361	97.299						
20	0.229	1.042	98.341						
21	0.206	0.938	99.279						
22	0.159	0.721	100.000						

Extraction method: principal component analysis

Table 5.4 Rotated component matrix

Rotated component matrix[a]			
	Component		
	1	2	3
Salary and incentives	0.404		
Recognition, rewards, and designations	0.545		
Quality of employer's leadership	0.577		
Role clarity	−0.106		
FDPs and training programs		0.740	
Employee benefits		0.592	
Financial assistance to research and project work			0.223
Career planning and development		0.765	
Organizational climate and culture	0.570		
Work life balance	0.559		
Satisfaction with the current profile	0.546		
Cooperation from work teams	0.719		
Job security	0.715		
Job enrichment	0.736		
Performance appraisal and performance management		0.544	
Proximity with your own residence	0.213		
Physical working facilities/infrastructure	0.626		
Social environment in the organization	0.700		
Opportunity to grow and develop		0.531	
Flexible working schedules	0.485		
Goodwill/brand of the institute			0.539
Difficulty in family relocation		0.152	

Extraction method: principal component analysis
Rotation method: varimax with Kaiser normalization
[a]Rotation converged in five iterations

Rotated Method: Varimax with Kaiser Normalization

The interpretation of factors is facilitated by identifying the statements that have large loadings in the same factor. The factor can be interpreted in terms of the statement that loads high on it.

The factors of a study on faculty retention programs comprises of 22 individual statements. Out of 22 factors, the top 10 individual factors contribute more towards faculty retention strategies:

- Career planning and development
- FDPs and training programs
- Job enrichment
- Cooperation from the work teams
- Job security
- Social environment in the institution

- Physical working facilities/infrastructure
- Employee benefits
- Quality of employer's leadership
- Organization climate and culture

4 Scope for Future Work

The study has made a focus on developing quality higher education with special emphasis to accredited business schools of northern India identifying the factors affecting faculty retention. The findings of the study can help academic leaders to formulate effective retention strategies as faculty plays a dominant role in making up the goodwill of an institute. The programs that aim to improve satisfaction level and retention among faculty can in turn improve the health and vitality of an institution (Hensel 1991). Academic leaders and program administrators can use the findings and methods employed in this study to gather data on faculty retention in order to increase the quality of higher education especially management education, to reduce the unwanted heat of faculty turnover, and to retain the desirable talented faculty. The study can extend to the designing of faculty retention model.

5 Conclusion

The study aimed to explore the factors influencing the retention practices of faculty members in accredited management education colleges. The hypotheses of the study get accepted showing the significant relationship among the factors influencing faculty towards retention. The findings of the study concludes that career planning and development, FDPs and training programs, job enrichment, cooperation from the work teams, job security, social environment, working facilities, quality of employer's leadership, and organizational climate and culture are found to be the most possible factors. Thus, it becomes imperative importance for deans/directors of business schools to develop faculty retention plans and models.

References

Barnhart BT, Bechhofer S (1995) New faculty departure at five institutions. Presented at the annual meeting of the American Educational Research Association, San Francisco, CA, 18–22 April 1995

Becker S (1964) Human capital. Columbia University Press, New York

Boyer E (1990) Scholarship reconsidered. Princeton University Press, Princeton

Brown DG (1967) The mobile professors. American Council on Education, Washington, DC

Burke DL (1988) The new academic marketplace. Greenwood Press, New York

Chaminade B (2007) A retention checklist: how do you rate? www.humanresourcesmagazine.co.au. Accessed 28 Nov 2007

Clarke KF (2001) What businesses are doing to attract and retain employee – becoming an employer of choice. Empl Benefits J 26(1):34–37

Eskildsen JK, Nussler ML (2000) The managerial drivers of employee satisfaction and loyalty. Total Qual Manag 11(4 & 5):s581–s588

Ewing R (2001) Keeping beginning teachers in the profession. Indep Educ 31(3):30–32

Ewing R, Smith D (2002) Retaining beginning teachers in the profession. Paper presented to the European Educational Research Association Conference, Lisbon, Portugal, 11–14 Sept 2002

Hensel N (1991) Realizing gender equity in higher education: the need to integrate work/faculty issues. Eric Clearinghouse on Higher Educations. George Washington University, Washington, DC

Johns GH, Gutmann ME, Dewald JP, Nunn ME (2001) Career retention in the dental hygiene workforce in Texas. Int J Dent Hyg 75(2):135–143

Macdonald D (1999) Teacher attrition: a review of the literature. Teach Teach Educ 15:835–48

Mincer J (1971) Schooling, age, and earnings. National Bureau of Economic Research, New York

Mowday R, Porter L, Steers R (1982) Employee–organisation linkages: the psychology of commitment, absenteeism, and turnover. Academic, New York

Nienhuis RW (1994) Satisfied faculty and involved chairpersons: key to faculty retention. Presented at the 19th meeting of the Association for the study of higher Education, Tucson, AZ, 10–13 Nov 1994

Palmer D, Patton C (1981) Mid-career change options in academic experience and possibilities. J High Educ 52:378–398

Perie M, BakerDP, Whiterner S (1997) Job satisfaction among America's teachers: effects of workplace conditions, background characteristics, and teacher compensation. U.S. Department of Education, Washington, DC

Rees A, Shultz G (1970) Workers and wages in an urban labor market. University of Chicago Press, Chicago

Smelster NJ, Content R (1980) The changing academic market: general trends and a Berkeley case study. University of California Press, Berkeley

Youn TIK (1988) Studies in academic markets and careers: an historical review. In: Brenemen DW, Youn TIK (eds) Academic labor markets and careers. Falmer, New York, pp 8–27

Youn TIK, Zelterman D (1988) Institutional career mobility in academia. In: Breneman DW, Youn TIK (eds) Academic labor markets and careers. Falmer, New York, pp 8–27

Chapter 6
An Empirical Study on the Relationship Between Emotional Intelligence and Job Performance Among IT Sector Employees

Pranjali Madhur

Abstract The concept of emotional intelligence has gained popularity in management for the sake of enhancing the capacity of human capital in organizations. The current paper sets out to examine the relationship between emotional intelligence and job performance of employees of the IT sector in Pune City considering the important aspects like attitude and behavior.

The result suggests that emotional intelligence is significantly related with individual attitude and behavior and ultimately job performance.

All attitudes can be changed if we want to change them, so all aspects of EI can be developed and improved. Since majority of the concerns in organization involve people in different roles, emotional intelligence must become a determining factor for their effective management.

It is revealed in this research paper that there is a significant relationship between emotional intelligence and job performance of employees of the IT sector in Pune City.

Keywords Emotional intelligence • Attitude • Behavior • Job performance

1   Introduction

In the present scenario of cutthroat competitions in all sectors especially in IT sectors, stretched goals, cultural differences among the diverse workforce and imbalanced work life lead to increasing level of stress in employees, also increase the job dissatisfaction. This satisfaction adversely affects the performance of the employees.

Therefore, by developing our emotional intelligence, we can become more productive and successful at what we do and help others to be more productive and successful too. The process and outcomes of emotional intelligence development also contains many elements known to reduce stress for individuals and organizations,

P. Madhur (✉)
MBA Department, MAEER's Maharashtra Institute of Technology,
Pune, Maharashtra, India
e-mail: pranjalim7@gmail.com; pranjali.madhur@mitpune.edu.in

by decreasing conflicts, improving relationships, and understanding and increasing stability, continuity, and harmony which leads to job satisfaction.

In an era of shifting paradigms, one of the world's fastest-growing emerging economies, such as India, should be able to develop its human resources as a source of competitive advantage.

1.1   What Is Emotional Intelligence?

Emotional intelligence can be described as having four branches: the ability to accurately perceive and express emotion, assimilate emotion into thought, understand emotion, and regulate emotions in the self and others.

Some of the advantages of developing your emotional intelligence are:

– Improved relationships
– Improved communication with others
– Better empathy skills
– Acting with integrity
– Respect from others
– Improved career prospects
– Managing change more confidently
– Fewer power games at work
– Feeling confident and positive
– Reduced stress levels

2   Review of Literature

Emotional intelligence is the ability to acquire and apply knowledge from your emotions and the emotions of others.

Goleman (1998) in his study on "emotional intelligence" compared star performers with average performers in senior leadership position. Goleman found that nearly 90 % of the difference in their performance profiles was attributable to emotional intelligence factors.

According to a mounting body of evidence given by Segal (2000), feeling is the most powerful resource we have. Emotions are life-lines to self-awareness and self-preservation that deeply connect us to ourselves and others, to nature and the customs. Emotions inform us about things that are of utmost importance to us – the people, values, activities and needs that lend us motivation, zeal, self-control, and persistence. Emotional awareness and know-how enable us to recover our lives and our health, preserve our families, build loving and lasting relationships, and succeed in our work.

As per Stein (2009), Attitudes play a fundamental role in our levels of emotional intelligence. We can improve our happiness by taking steps to change our emotions. Now, we don't want to change all our emotions. We simply want to decrease our

negative emotions and maintain or augment our positive emotions. One way to sustain positive emotions is to become more aware of what types of thoughts are associated with those emotions. Looking at our positive emotions as a consequence or outcome, try to figure out which thoughts give rise to these feelings. So, for example, if we feel good each time you think about a problem you're trying to solve or the dinner you're planning to cook, we can increase the amount of time we have these kinds of thoughts during the day. We more likely want to change the negative emotions. Use the starting point, the consequence, as our opportunity to identify which of a wide range of emotions we're experiencing. After we identify the emotion that we want less of, we can change the thoughts that lead up to that emotion. Psychologists call this type of emotional change cognitive reappraisal, which means we are developing a new way of looking at our world.

Many organizations feel that their people can provide a competitive advantage, and therefore their people contribute to the organization's performance. Employees play a pivotal role in organizational success (Collis and Montgomery 1995).

The principal influence on the organization's performance is the quality of the workforce at all levels of the organization. The function that human resources can play in gaining a competitive advantage for an organization is empirically well documented (Brewster, Carey, Dowling, Grobler, Holland and Wärnich, 2003). For organizations to accomplish their goals, they must continually look for better ways to organize and manage their work. There is a growing recognition that the primary source of competitive advantage is derived from a organization's human resources. This was not always the case, as human resources were traditionally seen as a cost.

3 Scope and Significance of the Study

3.1 Why Study Emotional Intelligence and Its Importance in the IT Sector?

- It is very essential to study the intelligence of the IT employees at working place to interpersonal relationships for organizational growth.
- In the IT sector, if emotions are properly managed, then they can and do have successful outcomes. Carefully managed emotions can drive trust, loyalty, and commitment as well as increase productivity, innovation, and accomplishment in the individual, team, and organizational sphere.

4 Research Gap

Most of the studies have used emotional intelligence to job satisfaction and impact on various approaches. This study examines the relationship between emotional intelligence and employee performance among the employees of IT sectors in a developing country like India by considering their attitude and behavior (Fig. 6.1).

SR = Self Regard
RFO = Regard for Others
SA = Self Regard
AFO = Awareness for Others

EI = Emotional Intelligence
IA = Individual Attitude
IB = Individual Behaviour
IP = Individual Performance
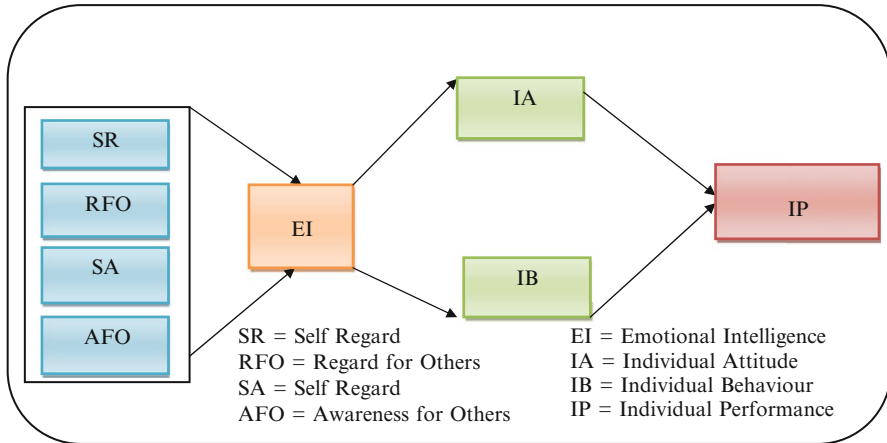
Fig. 6.1 Emotional intelligence and employee performance model

The researcher studied the emotional intelligence of employees of IT sectors who are already under the work pressure, completing the business targets, achieving high positions, and working with different people at the same time across boundaries.

5 Aims and Objectives of the Research Study

Aims and objectives of the present study are as under

- To study the impact of emotional intelligence on ob performance of employees in IT sectors
- To study the relationship between emotional intelligence and an individual's attitude and the behavior of employees in IT sectors
- To study the relationship between emotional intelligence and job performance of employees in IT sectors
- To develop the framework for emotional intelligence and job performance

6 Hypotheses

The main hypotheses of the present study are as under

- There is no impact of emotional intelligence on Job performance of employees in IT sectors.

- There is no significant relationship between emotional intelligence and an individual's attitude and the behavior of employees in IT sectors.
- There is no significant relationship between Emotional Intelligence and Job Performance of employees in IT Sectors.

7 Research Methodology

7.1 Sources of Data

Data sources are classified as being either primary sources or secondary sources. In this study, the researchers have used primary sources to analyze the data gathered. The instrument used is a structured questionnaire that was developed by the researchers based on the literature review on the relevant topics.

7.2 Survey Design

The idea of a research design is to specify methods and procedures for collecting and analyzing required information. It is thus designed in the following ways to increase the validity of the questionnaire and gain more responses.

7.3 Choosing an Appropriate Mode of Response

Questionnaires were administered personally to the respondents at IT sectors of Pune City. This is to enable the researcher to collect all the completed responses within a short period of time. Any doubts that the respondents might have regarding any questions were clarified on the spot. The respondents were permitted to ask the researcher for further clarification if they encountered difficulties in understanding the questions.

The questionnaire was based on the questionnaire used by Wheeless et al. (1983) for measuring the impact of various emotional intelligence factors on employees' performance. The reason for selecting this questionnaire is that it was used to study the impact of the same variables as in the present study and was well tested on reliability and validity scales. The questionnaire that was administered consisted of emotional intelligence factors which are self-regard (08 items), regard for others (08 items), self-awareness (08 items) and awareness for others (08 items), and individual's attitude (07 items), individual's behavior (05 items), and individual performance (03 items).

The questionnaire was well tested by the researcher on internal consistency and other measures. Cronbach's alpha coefficient reliability was conducted to test the reliability of the questionnaire, and the alpha value was found to be 0.845 which is

acceptable. Each dimension of emotional intelligence which was measured with the help of statements and responses to each statement was obtained on a five-point Likert scale, ranging from 1 "strongly disagree" to 5 "strongly agree."

8   Sample Size

A total of 447 questionnaires were distributed; however, 335 were received back, making the response rate 75 %, and a sufficient sample size was collected for the analysis of results. The participants included top-level, middle-level, and lower-level employees from three leading IT companies in Pune City, from a population of 1120 (30 % of 1120 = 335).

9   Scale and Measurement

The survey instrument consisted of two parts. In part B of the questionnaire, survey respondents were asked to state their level of agreement to each statement of emotional intelligence on a five-point scale (1 "strongly disagree" to 5 "strongly agree"; 3 denotes average). According to Cooper (2000), this type of scale is considered to be an interval scale. Therefore, the measurement of central tendency and its dispersion can be made. Demographic and academic backgrounds of respondents will be asked in part A of the questionnaire. Some were assigned to certain categories, and it is mutually exclusive and collectively exhaustive. Thus, it possessed a property of a nominal scale.

9.1   Scale Reliabilities

Reliabilities for the multi-item measures of interest are given in Table 6.1. Coefficient alpha is typically calculated to measure the internal consistency of a multi-item measure. Internal reliability represents the degree to which each of the items of a scale represents the same construct (Burch 2008, p. 77).

Table 6.1 Reliability coefficients of the study variables

Multi-item measure	Mean	Cronbach's alpha
Self-regard (SR)	29.26	0.801
Regard for others (RFO)	32.33	0.777
Self-awareness (SA)	29.38	0.801
Awareness for others (AFO)	26.64	0.809
Individual attitude (IA)	25.76	0.798
Individual behavior (IB)	14.93	0.874
Individual performance (IP)	9.07	0.865

9.2 Statistical Methods

Demographics Frequency Table

Demographics are shown in a demographics frequency table (see Table 6.2).

The demographics are not used in the present study to find out their relationship with employee performance. The objective of Table 6.1 is to show the composition of respondents to have a better understanding about their response and results for the present study. Majority of the respondents are male, i.e., 65.4 %. Majority of the respondents are in the age group of 31–42 years and more than 43 years, i.e., 33.4 and 39.4 %. Most of the employees are working in the middle- and lower-level management, i.e., 31.6 % and 40.3 %, respectively. Majority of the employees are having the length of service in the range of 6–10 years, i.e., 44.2 %. All the parameters of demographics in the present study are important in this paper to consider their attitude and behavior.

9.3 Correlations

A correlation matrix was used to verify the existence of relationship between the independent variables, i.e., self-regard (SR), regard for others (RFO), self-awareness, awareness for others (emotional intelligence), and individual's performance considering their attitude and behavior.

Table 6.2 Demographics frequency table

Demographic factor	Description	Frequency			Percentage (%)
		Company A	Company B	Company C	
Age	25–30 years	47	20	24	27.2
	31–42 years	43	54	15	33.4
	>43 years	95	1	36	39.4
Gender	Male	115	57	47	65.4
	Female	70	18	28	34.6
Employee's designation	Top level	64	15	15	28.1
	Middle level	56	25	25	31.6
	Lower level	65	35	35	40.3
Length of service	<1 year	1	0	1	0.6
	1–2 years	29	18	27	22.1
	3–5 years	39	17	19	22.4
	6–10 years	90	32	26	44.2
	11 years	26	8	2	10.2
Education	Graduate	0	11	35	13.7
	Postgraduate	185	64	40	86.3

9.4   Correlation Matrix

		SR	RFO	SA	AFO	IA	IB	IP
SR	Pearson Correlation	1	.825**	.643**	.588**	.633**	.004	.063
	Sig. (2-tailed)		.000	.000	.000	.000	.935	.250
	N	335	335	335	335	335	335	335
RFO	Pearson Correlation	.825**	1	.775**	.670**	.765**	.058	.070
	Sig. (2-tailed)	.000		.000	.000	.000	.288	.204
	N	335	335	335	335	335	335	335
SA	Pearson Correlation	.643**	.775**	1	.650**	.622**	.047	.030
	Sig. (2-tailed)	.000	.000		.000	.000	.394	.589
	N	335	335	335	335	335	335	335
AFO	Pearson Correlation	.588**	.670**	.650**	1	.683**	.019	−.002
	Sig. (2-tailed)	.000	.000	.000		.000	.732	.971
	N	335	335	335	335	335	335	335
IA	Pearson Correlation	.633**	.765**	.622**	.683**	1	.095	.080
	Sig. (2-tailed)	.000	.000	.000	.000		.083	.142
	N	335	335	335	335	335	335	335
IB	Pearson Correlation	.004	.058	.047	.019	.095	1	.917**
	Sig. (2-tailed)	.935	.288	.394	.732	.083		.000
	N	335	335	335	335	335	335	335
IP	Pearson Correlation	.063	.070	.030	−.002	.080	.917**	1
	Sig. (2-tailed)	.250	.204	.589	.971	.142	.000	
	N	335	335	335	335	335	335	335

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

10   Discussion

In this correlation matrix, it signifies self-regard (SR) is strongly related with regard for others (RFO) {(0.825**), **$p < 0.01$)}, self-awareness (SA) is also significantly correlated with {(0.650**), **$p < 0.01$)}. It is revealed from the analysis that individual attitude (IA) is also more consistently related with self-regard (SR), regard for others (RFO), self-awareness (SA), and awareness for others (AFO) {(0.630**), **$p < 0.01$)}, {(0.765**), **$p < 0.01$)},{(0.622**), **$p < 0.01$)}, {(0.683**), **$p < 0.01$)}, respectively. Individual behavior depends on individual attitude, and if the attitude develops positively, the behavior also gets improved and it ultimately affects individual performance positively. Individual behavior (IB) is strongly correlated with individual performance (IP) {(0.917**), **$p < 0.01$)}.

   Looking at all the study variables, the null hypothesis formulated was rejected. It is quite clear from the above table that all the study variables have been strongly, positively, and significantly correlated with one another. With regard to Employee Performance indicators (EP), it is observed that it has yielded a positive and significant correlation with all the variables of emotional intelligence (EI) reported by the participants of the study. Thus, it indicates that as emotional intelligence improves positively, the individual performance also increases significantly.

10.1   Regression

Variables entered/removed

Model	Variables entered	Variables removed	Method
1	IP, IA, IB[a]	.	Enter

[a]All requested variables entered

Model summary[a]

Model	R	R Square	Adjusted R square	Std. error of the estimate
1	.772[b]	.596	.592	14.73197

[a]Dependent variable: EI
[b]Predictors: (Constant), IP, IA, IB

ANOVA[a]

Model		Sum of squares	df	Mean square	F	Sig.
1	Regression	105,933.899	3	35,311.300	162.702	.000[b]
	Residual	71,837.193	331	217.031		
	Total	177,771.093	334			

[a]Dependent variable: EI
[b]Predictors: (Constant), IP, IA, IB

Coefficients

Model		Unstandardized coefficients		Standardized coefficients		
		B	Std. error	Beta	t	Sig.
1	(Constant)	44.889	4.321		10.389	.000
	IA	2.927	.133	.774	22.049	.000
	IB	−.735	.478	−.135	−1.538	.125
	IP	.915	.740	.109	1.238	.217

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. deviation	N
Predicted value	62.5860	146.3970	117.6179	17.80919	335
Residual	−27.75958	47.24706	.00000	14.66565	335
Std. predicted value	−3.090	1.616	.000	1.000	335
Std. residual	−1.884	3.207	.000	.995	335

[a]Dependent variable: EI

A simultaneous solution was performed in which all independent variables were entered at the same time into the regression equation. This allowed a determination of the relative predictive power of each independent variable among the set of independent variables. In this analysis, the overall multiple regression was significant for the prediction of the individual performance ($F = 162.702$, $P = 0.0000$).

As the table indicates, the emotional intelligence factors are significant predictors of the individual performance of the employees of IT sectors in the study. It is found that 59.6 % of change in individual performance could be predicted by emotional intelligence factors.

Thus, the hypothesis "there is no significant correlation between emotional intelligence factors and individual performance indicators of the IT employees" has been rejected since emotional intelligence factors were found to be a significant predictor of individual performance of the IT employees.

The following figure shows the histogram of the dependent variable emotional intelligence (Fig. 6.2).
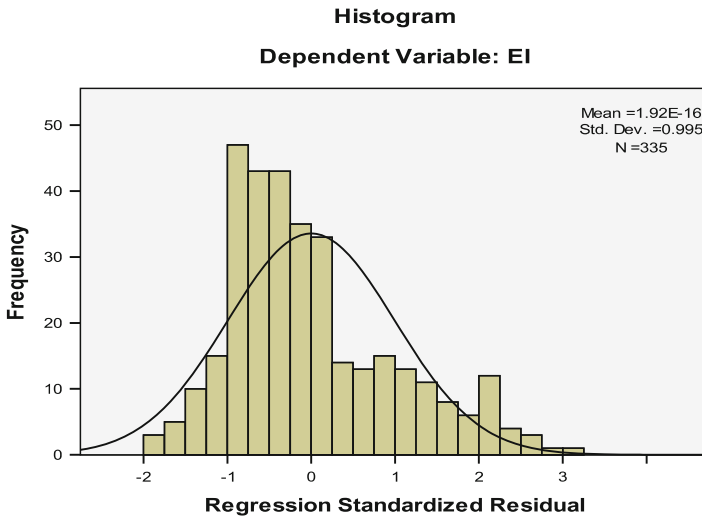
Fig. 6.2 Dependent variable: individual performance indicators (EI)

From the results, it was found that the emotional intelligence factors are significantly correlated with the employee performance indicators. It indicates that self-regard, regard for others, self-awareness, and awareness for others improve emotional intelligence.

11   Conclusions

It is evident from the regression analysis that the emotional intelligence factors are consistently significant predictors of the individual performance among the IT employees in the study. It is found that 59.6 % of change in individual performance could be predicted by the emotional intelligence of IT employees. Therefore, it is suggested that regard for self and for others and awareness for self and others have to be improved by conducting many trainings, counseling sessions, and development programs. It is also recommended that developing EI will take time but will lead to sustainable behavior changes that will improve the way one manages oneself and the way they work with others. To succeed, one requires effective awareness, control and management of self-emotions, and awareness and understanding of other people.

It is also recommended in this study that it would be beneficial for different kinds of personality types to develop their personal power. So the focus here is on changing attitudes and behaviors, not on changing personality.

In this study, it is clearly shown that there is a significant relationship between emotional intelligence and an individual's performance by developing their attitude and behavior.

To conclude, we can state that people high in EI will build real social fabric within an organization and between an organization and those it serves, whereas people low in EI may tend to create problems for the organization through their individual behaviors.

References

Brewster C, Carey L, Dowling P, Grobler P, Holland P, Wärnich S (2003) Contemporary issues in human resource management. Clyson Printers, Cape Town

Collis DJ, Montgomery CA (1995) Competing on resources. Harv Bus Rev 73(4):118–128

Goleman D (1998) Working with emotional intelligence. Ben tarn, New York

Goleman D (2000) Working with emotional intelligence

Robbins SP. Organizational behaviour, 10th edn.

Segal J (2000) Raising your emotional intelligence, a practical guide, a hands-on program for harnessing the power of your instincts and emotions. Magna Publishing Co. Ltd, Mumbai, p 3

Stein SJ (2009) Emotional intelligence for dummies. Wiley, Mississauga, p 58

Chapter 7
An Empirical Study to Determine the Significant Predictors of Trust in Government Hospitals

Amrita Sandhu

Abstract Out-of-pocket expenditure (OOP) on healthcare forms a major barrier to health seeking in India. The per capita public health spending is low in India, being among the five lowest in the world. Yet, India ranks among the top 20 of the world's countries in its private spending. A large part of our population continues to depend on private sector for their healthcare needs even when many of them cannot afford it. Private spending on healthcare pushes millions of vulnerable households into poverty every year. The affected households find it impossible to get out of this vicious cycle of poor health and poverty. This results in huge losses to the country in terms of human resource as it affects the productivity of the population and consequently affects the GDP of the country. Patients' trust in their healthcare providers is necessary for them to accept therapy, to reveal information, and to describe feelings, all prerequisites for effective medical care. Trust in government hospitals in India is an area which is under-researched. The efforts to improve service quality of public hospitals can only produce tangible results in reducing the burden of people of India if it causes a significant change in the intangible construct of trust in public hospitals. Measuring service quality of government hospitals and linking it to trust in government hospitals is an important step to understand where the hospitals are faltering and what aspects of service quality are significant predictors of trust in government hospitals. The purpose of this paper is to find significant predictors of trust in government hospitals from measures of perceived service quality by using multiple regression analyses. It was found that social responsibility, medical service and discharge process in government hospitals are significant predictors of trust in government hospitals.

Keywords Trust • Perceived service quality • Multiple regression • Government hospitals • Healthcare • India

A. Sandhu (✉)
Public Policy and Governance Area, Management Development Institute, Gurgaon, India
e-mail: amrita.sandhu@gmail.com

1 Introduction

Taking cognisance of the important role of public health expenditure, the Eleventh Five-Year Plan (2007–2012) document suggests the necessity of building a responsive public health system with the need for increasing the public spending on health from 0.9 % of GDP to 2–3 % of GDP and stepping up investment on primary care, communicable diseases and HIV/AIDS prevention (Planning Commission 2007). The public health expenditure in the country over the years has been comparatively low, and as a percentage of GDP, it has declined from 1.3 % in 1990 to 0.9 % in 1999, increased marginally to 1.1 % by 2009 (Ministry of Health and Family Welfare 2010). As per the NHA (2004–2005), the total health expenditure in India, from all the sources, constituted 4.25 % of the GDP. Of the total health expenditure, the share of private sector was the highest at 78.05 %, public sector at 19.67 % and external flows contributed 2.28 % (MOHFW 2009). The idea of the state of public health infrastructure can be had from the National Health Policy (2002), which states:

> The existing public health infrastructure is far from satisfactory. For the outdoor medical facilities in existence, funding is generally insufficient, presence of medical and paramedical personnel is often less than that required by prescribed norms, the availability of consumables is frequently negligible, equipment in many public hospitals is often obsolescent and unusable and the buildings are in a dilapidated state. For indoor treatment facilities, the equipment is often obsolescent; the availability of essentials drugs is minimal; the capacity facilities is grossly inadequate, which leads to overcrowding, and consequently to a steep deterioration in the quality of services. As a result of such inadequate public health facilities, it has been estimated that less than 20 percent of the patients who seek out patient department services, and less than 45 percent of that who seek indoor treatment, avail of such services in public hospitals. This is despite the fact that most of the patients do not have the means to make out of pocket payments for private health services except at the cost of other essential expenditures for items such as basic nutrition.

Thus, it is abundantly clear that there is a need for serious efforts to improve service quality in public hospitals.

The per capita public health spending is low in India, being among the five lowest in the world. Yet, India ranks among the top 20 of the world's countries in its private spending. Employers pay for 9 % of spending on private care, health insurance 5–10 % and 82 % is from personal funds. As a result, more than 40 % of all patients admitted to hospital have to borrow money or sell assets, including inherited property and farmland, to cover expenses, and 25 % of farmers are driven below the poverty line by the costs of their medical care (World Bank 2001). An out-of-pocket payment for healthcare is considered to be the most inefficient and inequitable means of financing a health system and one of the most regressive forms of healthcare financing (World Health Organisation 2000; World Bank 2005). There is growing evidence globally that healthcare costs can plunge households into poverty (WHO 2005). When people have to pay fees or copayments for healthcare, the amount can be so high in relation to income that it results in 'financial catastrophe' for the individual or the household (Xu et al. 2003). Direct out-of-pocket payments could push 2.2 % of all healthcare users and one-fourth of all hospitalized patients into poverty in a year. Although these percentages may seem small, they translate

into substantial numbers considering our huge population (Peters et al. 2002). Out-of-pocket expenditure (OOP) on healthcare forms a major barrier to health seeking in India. According to the National Sample Survey Organization, the year 2004 saw 28 % of ailments in rural areas go untreated due to financial reasons—up from 15 % in 1995–1996. Similarly, in urban areas, 20 % of ailments were untreated due to financial reasons—up from 10 % in 1995–1996 (MOHFW 2010).

These figures make it clear that majority of our population should rely on public hospitals managed by government which provides relatively cheaper services. Yet, the reality is that a large part of our population continues to depend on private sector for their healthcare needs even when many of them cannot afford it. This is especially true in case of serious ailments. According to the findings of a white paper on state of health in Mumbai, published by Praja, a nongovernment organization (NGO), dependency on nongovernment healthcare facilities is the highest for ailments like cancer and diabetes with 78 % cancer and 71 % diabetes patients choosing private or charitable hospitals (Indian Express 2013).

One of the major reasons people choose private hospitals over public hospitals is trusting the former to offer superior healthcare. Trust is most important where there is risk and uncertainty. Thus, medical care is an area where trust plays an important role. Patients' trust in their healthcare providers is necessary for them to accept therapy, to reveal information, and to describe feelings; all prerequisites for effective medical care (Zhang 2005).

This lack of trust in government hospitals needs to be studied. The efforts to improve service quality of public hospitals can only produce tangible results in reducing burden of people of India if it causes a significant change in the intangible construct of trust in public hospitals. Measuring service quality of government hospitals and linking it to trust in government hospitals is an important step to understand where the hospitals are faltering and what aspects of service quality are significant predictors of trust in government hospitals.

The present study was planned to find significant predictors of trust in government hospitals.

2 Literature Review

2.1 Trust in Hospitals

Research on public trust in health care is relatively scarce. However, measurement of public trust in health care might be important for governments. It could provide them with information on the performance of the health care system from a users' perspective (Goudge and Gilson 2005). In the field of health care trust is commonly understood as 'the optimistic acceptance of a vulnerable situation in which the truster believes the trustee will care for the truster's interests' (Hall et al. 2001). Public trust is trust placed by a group or a person in a societal institution or system. It can also be described as 'being confident that you will be adequately treated when you are in

need of health care' (Straten et al. 2002). Public trust is in part influenced by people's experiences in contacts with representatives of institutions or systems and in part influenced by media images (Mechanic and Schlesinger 1996). Public trust in its turn influences how people enter contacts with health care providers and institutions.

2.2   Perceived Service Quality

Ensuring quality in health care services ought to be a priority for any health care system. The notion of quality in health services has emerged more strongly because of the rising costs of treatments, constrained resources and evidence of variations in clinical practice (Campbell et al. 2000). Assessment of quality usually focuses on technical concerns as well as the process through which care is delivered. This assessment becomes more authentic and legitimate if based on the application of professional standards integrating the patients' views, experiences and perceptions (Haddad et al. 2001; Aharony and Strasser 1993). Patient assessment of the health services together with the views of staff in improving the level of quality is in fact respecting the consumer sovereignty (Grol 2001). The World Health Organization (Wilkinson et al. 2004) defined quality of health care through benchmarks of efficiency, cost effectiveness and social acceptability. It is seldom seen that researchers have looked for evaluation of health care services from a consumer perspective. Parasuraman et al. (1988) defined service quality as the gap between customers' expectations of service and their perception of the service experience. They proposed SERVQUAL framework to assess perceived service quality for a variety of sectors. There is growing evidence to suggest that this perceived quality is the single most important variable influencing consumers' perceptions of value and that this, in turn, affects their intention to purchase products or services (Bolton and Drew 1988; Zeithaml et al. 1996). Majority of the studies have been done in the developed country context, which cannot be generalized to the Indian context. It has been contended that constructs of service quality that are developed in one culture might not be applicable in another culture (Kettinger et al. 1995; Karatepe et al. 2005; Ladhari 2008). The majority section of population will rely on public hospitals managed by government which provides relatively cheaper services. Hence, the need to focus on management aspects of hospitals has become more relevant than before. Measuring service quality as perceived by patients is one step to improve management of public hospitals.

3   Problem Statement

The problem we are trying to address in this study is to find significant predictors of trust in government hospitals. This research aims to answer the following main question:

> What are the significant predictors of trust in government hospitals among factors measuring perceived service quality in government hospitals?

4 Research Model and Hypotheses

The main aim of this research is to find factors having a significant impact on trust in government hospitals. The research model is shown in Fig. 7.1. To achieve this aim, the following hypotheses were proposed:

H1: The admission process in government hospitals has a significant positive impact on trust in government hospitals.

H2: The medical care in government hospitals has a significant positive impact on trust in government hospitals.

H3: The overall service in government hospitals has a significant positive impact on trust in government hospitals.

H4: The discharge process in government hospitals has a significant positive impact on trust in government hospitals.

H5: The social responsibility of government hospitals has a significant positive impact on trust in government hospitals.

5 Research Design and Methodology

To measure the perceived service quality of government hospitals which is made up of five dimensions: admission, medical care, overall service, discharge and social responsibility, 24-item scale was used (Table 7.1). These items were taken from a scale developed specifically to measure perceived service quality for public hospitals from the user's perspective and dubbed PubHosQual by its authors (Aagja and Garg 2010). The scale was selected for the present study as its validity and reliability was established by its authors. All items were measured on a five-point Likert scale
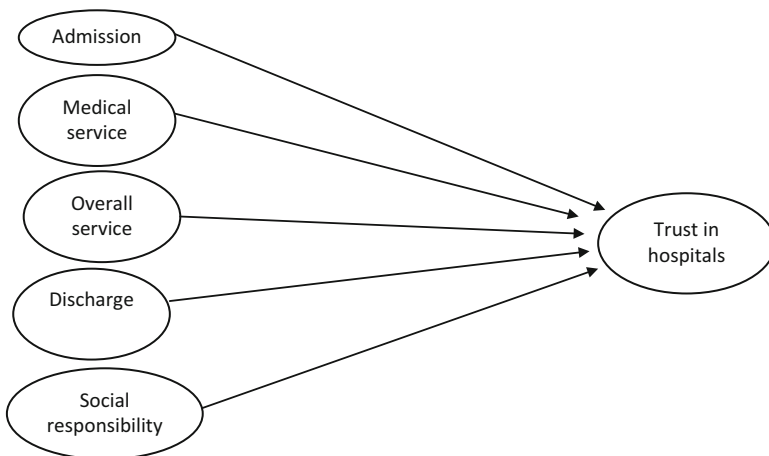
Fig. 7.1 Research model

Table 7.1 Scale description

Construct	Items	Description
Admission	Adm1	Prompt admission
	Adm2	Polite employees
	Adm3	Handles emergency well
	Adm4	Good ambulance services
Medical service	Med1	Knowledgeable doctors
	Med2	Knowledgeable nurses
	Med3	Knowledgeable staff
	Med4	Prevent hospital acquired disease
Overall service	Over1	Visually appealing pamphlets
	Over2	Visually attractive and comfortable facilities
	Over3	Clean rooms without foul smell
	Over4	Sincere interest
	Over5	Dependable
	Over6	Prompt service
	Over7	Willing to help patients
	Over8	Respond to patient's request
	Over9	Patient's best interest at heart
Discharge	Disc1	Prompt discharge
	Disc2	Explain the discharge process
	Disc3	Know needs of patient
	Disc4	Explain precautions after discharge
Social responsibility	Socres1	Equal treatment to all
	Socres2	Good service at reasonable cost
	Socres3	Sense of responsibility

having extreme anchors, strongly disagree and strongly agree (where 1 = strongly disagree, 2 = disagree, 3 = neutral (neither agree nor disagree), 4 = agree, 5 = strongly agree). The 24 items measured five constructs of perceived service quality which are admission (four questions), medical care (four questions), overall service (nine questions), discharge (four questions) and social responsibility (three questions).

Trust in government hospitals was measured with a 12-item scale adapted from a questionnaire measuring public trust in healthcare (Schee et al. 2006).

5.1 Sampling

An online survey was floated based on the convenience sampling method, and responses were recorded on the 36 items which are a part of the scales measuring service quality and trust along with demographic data. A total of 105 individuals participated in the study. The procedure employed was convenience sampling as it is considered the best way of getting some basic information quickly and efficiently (Sekaran 2006). Data was then analyzed using SPSS version 18.0 for windows.

6 Results

The sample consisted of 105 respondents of which 81 were male and 24 were female. The age range of the sample was 22–50 years with the mean age being 28.8 years with a standard deviation of 6.96 years. The descriptive statistics for all the individual constructs are given in Table 7.2.

Reliability analysis was done on the perceived service quality scale and the Cronbach's alpha value was 0.90 for the scale. The Cronbach's alpha value for the scale measuring trust was also found to be 0.90. The Cronbach's alpha value for the scales measuring the constructs of admission, medical service, overall service, discharge and social responsibility is 0.71, 0.75, 0.82, 0.70 and 0.70, respectively, which is greater than or equal to Cronbach's alpha value 0.7 (Nunnally 1978). Hence, reliability of the scales was established.

To analyze multicollinearity, three types of measurements are used: Durbin Watson, Variance Inflation Factor (VIF) and tolerance. The VIF measures the extent to which the variance of the estimated regression coefficients is inflated as a result of being related to other independent variables and tolerance is the amount of variability of the selected independent variables not explained by other independent variables. Results showed that VIF for all independent variables ranged from 1.64 to 2.66 which is less than 5 and hence acceptable. Tolerance ranged from 0.37 to 0.60 which is greater than 0.2, and hence, it can be said that there was no high correlation among the independent variables. Durbin Watson value was 1.798 which again falls in the acceptable limits. Hence, based on these three measurements, it can be said that multicollinearity is not present among the independent variables.

Multiple regression is an extension of bivariate correlation. The result of regression is an equation that represents the best prediction of a dependent variable from several independent variables. Stepwise multiple regression was done to find the cause effect relationship between the five independent variables (admission, medical service, overall service, discharge and social responsibility) and trust in government hospitals.

From Table 7.3, it can be seen that only three independent variables , i.e. social responsibility, medical service and discharge, have entered the regression equation.

These three variables together explain 63.4 % of the variability in trust in government hospitals. Social responsibility on its own contributes to 47.7 % of the

Table 7.2 Descriptive statistics

	N	Minimum	Maximum	Mean	Std. deviation
Adm	105	1.00	3.75	2.1595	0.64406
Med	105	1.25	4.50	3.0143	0.77042
Over	105	1.00	4.00	2.0646	0.57689
Disc	105	1.00	4.25	2.8048	0.70454
Socres	105	1.00	4.67	2.4540	0.84873
Trust	105	1.17	4.00	2.8302	0.68367
Valid N (listwise)	105				

Table 7.3 Variables entered/removed[a]

Model		Variables entered	Variables removed	Method
Dimension0	1	Socres		Stepwise (criteria: probability-of-F-to-enter ≤ 0.050, probability-of-F-to-remove ≥ 0.100)
	2	Med		Stepwise (criteria: probability-of-F-to-enter ≤0.050, probability-of-F-to-remove ≥0.100)
	3	Disc		Stepwise (criteria: probability-of-F-to-enter ≤0.050, probability-of-F-to-remove ≥0.100)

[a]Dependent variable: trust

variance in trust in government hospitals (Table 7.4). These three variables are significant predictors of trust in government hospitals, as indicated by the F value and level of significance associated with it in Table 7.5. An examination of the t-values in Table 7.6 indicates that social responsibility, medical service and discharge in government hospitals contribute significantly to the prediction of trust in government hospitals. It can be seen in Table 7.7 that two independent variables—overall service and admission—failed to meet the selection criteria of stepwise regression, as indicated by nonsignificant t-values ($p > 0.05$). From the scatterplot of residuals against predicted values (Fig. 7.2), it can be seen that there is no clear relationship between the residuals and the predicted values, consistent with the assumption of linearity. The normal plot of regression standardized residuals for the dependent variable (Fig. 7.3) and also indicates a relatively normal distribution.

7 Discussion

The research findings indicate that trust in government hospitals can be significantly predicted by social responsibility, medical service and discharge in government hospitals. In light of the research objectives and the hypothesis testing, the researcher has revealed the following overall conclusions.

7.1 Admission

Admission process was not a significant predictor of trust; hence, H1 is rejected. Admission process is an important dimension of service quality of hospitals (Carman 1990; Rust and Oliver 1994); hence, it was included as a variable to predict trust, but in this study, it was not found to have a significant effect on trust.

Table 7.4 Model summary[a]

Model		R	R square	Adjusted R square	Std. error of the estimate	Change statistics				
						R square change	F change	df1	df2	Sig. F change
Dimension0	1	0.691[b]	0.477	0.472	0.49681	0.477	93.947	1	103	0.000
	2	0.786[c]	0.617	0.610	0.42720	0.140	37.299	1	102	0.000
	3	0.796[d]	0.634	0.623	0.41978	0.017	4.641	1	101	0.034

[a]Dependent variable: trust
[b]Predictors: (constant), Socres
[c]Predictors: (constant), Socres, med
[d]Predictors: (constant), Socres, med, disc

Table 7.5 ANOVA[a]

Model		Sum of squares	df	Mean square	F	Sig.
1	Regression	23.188	1	23.188	93.947	0.000[b]
	Residual	25.422	103	0.247		
	Total	48.610	104			
2	Regression	29.995	2	14.997	82.177	0.000[c]
	Residual	18.615	102	0.183		
	Total	48.610	104			
3	Regression	30.813	3	10.271	58.287	0.000[d]
	Residual	17.797	101	0.176		
	Total	48.610	104			

[a]Dependent variable: trust
[b]Predictors: (constant), Socres
[c]Predictors: (constant), Socres, med
[d]Predictors: (constant), Socres, med, disc

Table 7.6 Coefficients[a]

Model		Unstandardized coefficients		Standardized coefficients		
		B	Std. error	Beta	t	Sig.
1	(Constant)	1.465	0.149		9.834	0.000
	Socres	0.556	0.057	0.691	9.693	0.000
2	(Constant)	0.713	0.178		4.010	0.000
	Socres	0.409	0.055	0.507	7.438	0.000
	Med	0.370	0.061	0.417	6.107	0.000
3	(Constant)	0.523	0.195		2.677	0.009
	Socres	0.380	0.056	0.471	6.823	0.000
	Med	0.318	0.064	0.359	4.965	0.000
	Disc	0.148	0.069	0.153	2.154	0.034

[a]Dependent variable: trust

7.2 Medical Service

Medical service was found to be a significant predictor of trust; hence, H2 is accepted. The literature on trust supports this hypothesis too. One definition of interpersonal physician trust that has been proposed is a patient's optimistic acceptance of their vulnerable situation, based on the belief or expectation that the physician will act in the patient's best interests (Hall et al. 2001). The primary reason people go to the hospitals is to avail of its medical services.

Table 7.7 Excluded variables

Model		Beta in	t	Sig.	Partial correlation	Collinearity statistics Tolerance
1	Adm	0.263[a]	3.398	0.001	0.319	0.766
	Med	0.417[a]	6.107	0.000	0.517	0.807
	Over	0.303[a]	3.542	0.001	0.331	0.624
	Disc	0.284[a]	3.888	0.000	0.359	0.838
2	Adm	0.101[b]	1.316	0.191	0.130	0.630
	Over	0.141[b]	1.698	0.093	0.167	0.531
	Disc	0.153[b]	2.154	0.034	0.210	0.721
3	Adm	0.075[c]	0.967	0.336	0.096	0.610
	Over	0.084[c]	0.930	0.355	0.093	0.447

[a]Predictors in the model: (constant), Socres
[b]Predictors in the model: (constant), Socres, med
[c]Predictors in the model: (constant), Socres, med, disc
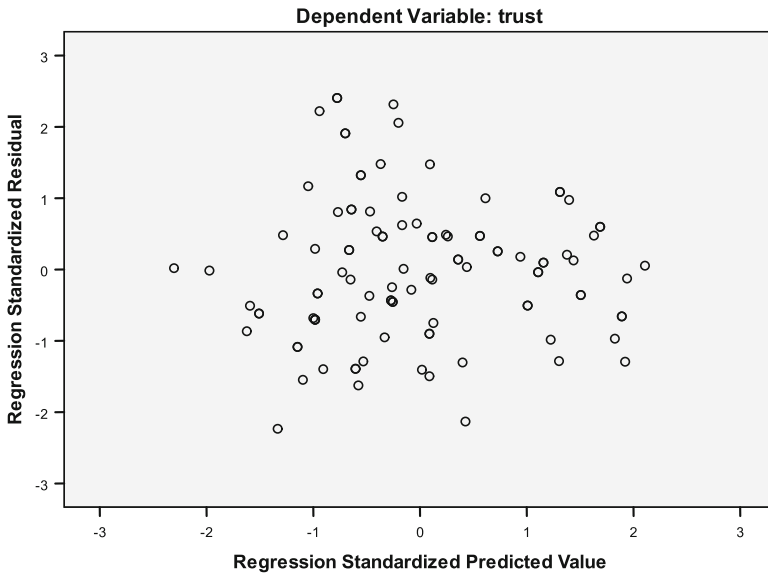
Fig. 7.2 Scatterplot

7.3   *Overall Service*

Overall service did not have a significant impact on trust; hence, H3 is rejected. The construct overall service is composed of items like visual appeal, cleanliness, prompt service and comfort. We are conditioned not to expect government hospitals
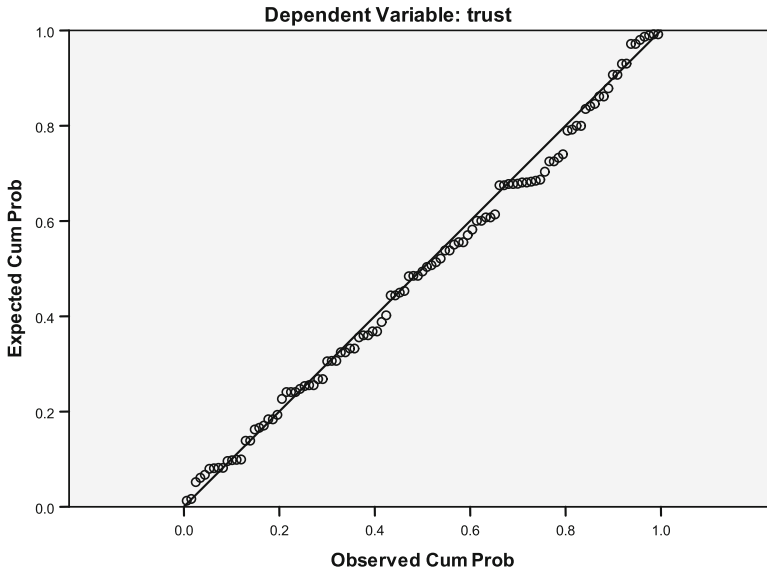
Fig. 7.3 Normal *P*-plot of standardized residual dependent variable: trust

to be visually appealing and comfortable, given the shortage of healthcare facilities for our vast population. As of January, 2013, there was one government hospital bed for every 879 people (Indian Express 2013). This might explain the cause of overall service not having a causal relation with trust in government hospitals.

7.4 Discharge

Discharge was found to be a significant predictor of trust in government hospitals in this study. Hence, the hypothesis, H4, is accepted. When discharges are expedited without adequate, synchronized planning, vulnerable people may suffer adverse consequences (Glasby 2003). Discharge from hospitals can seriously affect the postdischarge care of the patients and subsequent rehospitalisation. For example, problematic discharges can result in prolonged hospital stays (Naylor et al. 1994; Shepperd et al. 2003).

7.5 Social Responsibility

Social responsibility on its own contributes to 47.7 % of the variance in trust in government hospitals and is the single largest predictor of trust in government hospitals in our study. Social responsibility was found to be a significant predictor of

trust in government hospitals, and hence, H5 is accepted. The dimension of social responsibility is relevant as a part of the GDP (during the last 5 years, the average spending in health was 0.86 % of the GDP) and is allocated by the government on public healthcare; informal payments are a part and parcel of the delivery system; the government health subsidy does not reach the actual beneficiaries; there is lack of accountability; and 70 % of the urban households and 63 % of the rural households resort to the private sector as the chief source of healthcare (National Family Health Surveys 2005–2006).

8 Conclusions

The aim of this study was to find significant predictors of trust in government hospitals. Social responsibility of hospitals, medical service of hospitals and discharge process of hospitals were found to be having a significant impact on government hospitals. Admission process and overall service of hospitals were not found to be significant predictors of trust in government hospitals. Social responsibility which was comprised of three items measuring equal treatment to all, good quality service at reasonable cost and sense of responsibility in government hospitals emerged to have the most significant impact on trust; therefore, efforts to increase trust in government hospitals by improving service quality should focus on this aspect of quality of hospitals which is generally not studied or assessed when service quality of hospitals is being measured.

8.1 Research Limitations

The present study was done with a sample size of 105 respondents. The proportion of females in the sample was a mere 23 %. This study needs to be undertaken with a larger sample size to improve its generalizability. The method of sampling was convenience sampling; in future research, sampling should be done with probability sampling techniques. The perceived service quality of hospitals was measured using a scale called PubHosQual (Aagja and Garg 2010). Confirmatory factor analysis using AMOS software should have been done in the present study.

References

Aagja JP, Garg R (2010) Measuring perceived service quality for public hospitals (PubHosQual) in the Indian context. Int J Pharm Healthc Mark 4(1):60–83

Aharony L, Strasser S (1993) Patient satisfaction: what we know about and what we still need to explore. Med Care Res Rev 50:49–79

Bolton RN, Drew JH (1988) A model of perceived service value. In: Frazier G, Ingene C, Aaker D, Ghosh A, Kinnear T, Levy S, Staelin R, Summers J (eds) Efficiency and effectiveness in marketing: AMA educator's proceedings, vol 54, American marketing association series. American Marketing Association, Chicago, p 213

Campbell SM, Roland MO, Buetow SA (2000) Defining quality of care. Soc Sci Med 51:1611–1625

Carman JM (1990) Consumer perceptions of service quality: an assessment of the SERVQUAL dimensions. J Retail 66(1):33–35

Glasby J (2003) Hospital discharge: integrating health and social care. Radcliffe Medical Press, Oxford

Goudge J, Gilson L (2005) How can trust be investigated? Drawing lessons from past experience. Soc Sci Med 61:1439–1451

Grol R (2001) Improving the quality of medical care: building bridges among professional pride, payer profit and patient satisfaction. J Am Med Assoc 286:2578–2585

Haddad S, Potvin L, Roberge D, Pineault R, Remondin M (2001) Patient perception of quality following a visit to a doctor in a primary care unit. Fam Pract 17:21–29

Hall M, Dugan E, Zheng B, Mishra A (2001) Trust in physicians and medical institutions: what is it, can it be measured, and does it matter? Millbank Q 79(4):613–639

Health, Nutrition, Population Sector Unit India South Asia Region (2001) Raising the sights: better health systems for India's poor. World Bank, Washington, DC

Indian Express (2013) Poor being pushed out of public healthcare: study. Indian Express (online), July 30. Retrieved 1 Sept 2013, from website: http://www.indianexpress.com/news/poor-being-pushed-out-of-public-healthcare-study/1148435/

Karatepe OM, Yavas U, Babakus E (2005) Measuring service quality of banks: scale development and validation. J Retail Consum Serv 12(5):373–383

Kettinger WL, Lee CC, Lee S (1995) Global measures of information service quality: a cross-national study. Decis Sci 26(5):569–588

Ladhari R (2008) Alternative measures of service quality: a review. Manag Serv Qual 18(1):65–86

Mechanic D, Schlesinger M (1996) The impact of managed care on patients' trust in medical care and their physicians. J Am Med Assoc 275(21):1693–1697

Ministry of Health and Family Welfare (2002) National health policy (2002) Retrieved 22 Aug 2013, from MOHFW website: http://mohfw.nic.in/np2002.htm

Ministry of Health and Family Welfare (2009) National health accounts. Retrieved 15 Sept, 2013, from MOHFW website: http://mohfw.nic.in/WriteReadData/l892s/9457038092AnnualReport health.pdf

Ministry of Health and Family Welfare (2010) Annual report to the people on health. Retrieved 15 Sept 2013, from MOHFW website: http://mohfw.nic.in/WriteReadData/l892s/9457038092An nualReporthealth.pdf

Naylor M, Brooten D, Jones R, Lavizzo-Mourey R, Mezey M, Pauly M (1994) Comprehensive discharge planning for the hospitalized elderly: a randomized clinical trial. Ann Intern Med 120:999–1006

Nunnally JC (1978) Psychometric theory. McGraw-Hill, New York

Parasuraman A, Zeithaml VA, Berry LL (1988) SERVQUAL: a multiple item scale for measuring consumer perception of service quality. J Retail 64(1):12–37

Peters DH, Yazbeck AS, Sharma RR, Ramana GNV, Pritchett LH, Wagstaff A (2002) Better health systems for India's poor: findings, analysis and options. Human Development Network, Health, nutrition, and population series. World Bank, Washington, DC, pp 1–376

Planning Commission, Government of India (2007) Eleventh Five Year Plan (2007–2012). Retrieved 2 Sept 2013, from Planning Commission Website: http://planningcommission.nic.in/plans/planrel/11thf.htm

Rust RT, Oliver RL (1994) Service quality: insights and implications from the frontier service quality. In: Rust RT, Oliver RL (eds) New directions in theory and practice. Sage, Thousand Oaks

Schee EV, Groenewegen PP, Friele RD (2006) Public trust in health care: a performance indicator? J Health Organ Manag 20(5):468–476

Sekaran U (2006) Research methods for business: a skill building approach, 4th edn. Wiley, New Delhi

Shepperd S, Parkes J, McClaran J, Phillips C (2003) Discharge planning from hospital to home. Cochrane Database Syst Rev 3

Straten GF, Friele RD, Groenewegen PP (2002) Public trust in Dutch health care. Soc Sci Med 55(2):227–234

The World Health Report (2000) Health systems: improving performance. World Health Organization, Geneva

The World Health Report (2005) Make every mother and child count. World Health Organization, Geneva

Wilkinson J, Rushmer R, Davies H (2004) Clinical governance and the learning organization. J Nurs Manag 12:105–113

World Bank Report (2005) Equity and development: levelling the economic and political playing fields. World Bank, Washington, DC, pp 1–145

Xu K, Evans DB, Kawabata K, Zeramdini R, Klavus J, Murray CJ (2003) Household catastrophic health expenditure: a multicountry analysis. Lancet 362:111–117

Zeithaml VA, Berry LL, Parasuraman A (1996) The behavioral consequences of service quality. J Mark 60:31–46

Zhang W (2005) Hospital quality and patient trust in care for colorectal cancer. (Order no. 3174086, Harvard University). ProQuest dissertations and theses. Retrieved from http://search.proquest.com/docview/305010165

Chapter 8
An Exploration into the Nature of Comments on Facebook (Page of Large Indian Organizations)

Rajan Yadav

> *Conventional marketing wisdom long held that a dissatisfied customer tells ten people. But…in the new age of social media, he or she has the tools to tell ten million.*
>
> (Paul Gillin)

Abstract Computer-mediated communication (CMC) has redefined the art of communicating with a customer. The Internet, especially social networking sites (SNSs), has disrupted the traditional mass media business model of approaching to the customer and provides an opportunity to strike a dialogue between customer and marketer on real-time basis. Over the years, SNSs have emerged as a platform to share positive and unsatisfactory product or service experience in the form of writing posts or wall-based conversation among a large number of community members. Marketers worldwide are using SNSs as a means of managing their recovery from a crisis. The aim of this study is to analyze the extent of participation by Indian customers and organizations on such conversation on virtual communities. The information was collected from the official Facebook page of 25 different companies selected across five major sectors of the Indian economy from the ET-500 ranking for 2012. The study observed that large Indian organizations do not consider such comment as a feedback and an opportunity to improve their image and public relation. The study is the first of its kind that provides some empirical evidences to marketers, researchers, customers, and others on such an emerging paradigm of consumer phenomenon in India.

Keywords Social networking sites • Customer expression • Communication technology • Facebook

R. Yadav (✉)
Delhi School of Management, Delhi Technological University, New Delhi 110042, India
e-mail: raj_yadav1974@yahoo.co.in

1   Introduction

In the last couple of years, the Internet has emerged as one of the most powerful techno-
logical advancements which has deep influence on the consumer behavior of the people.
There is hardly any business domain which has not integrated information and commu-
nication technology in improving the value chain system of the organization. It has rede-
fined the art of communicating with customer, engaging them in persistent and
meaningful dialogue and tap customer information and knowledge in strategy formula-
tion (Van Bruggen et al. 2010). Social networking sites like Facebook, Orkut, Twitter,
and Myspace are increasingly used by marketing organizations to make an interactive
dialogue with the customers. It provides the ability to marketers to share the latest infor-
mation about their brands, sales promotion, new launches, and consumer contests with
a very large number of fans/members who join such network of communities online.

Information exchanged through online discussion forums, electronic bulletin
boards, blogs, newsgroup, and product-service review sites, including SNSs, put
more interactive, trustworthy, and credible impact on consumer buying behavior
(Bickart and Schindler 2001; Goldsmith and Horowitz 2006; Liao and Cheung
2006; Blackshaw 2008; Chang and Zhu 2011). Unlike traditional mass media like
television and radio, SNSs are considered as a highly interactive media where peo-
ple can transmit content, pictures, and music in their social communities without
any cost (Boyd and Ellison 2007). The ability to develop social capital and the
interactive nature of SNSs acts as a magnet to attract and retain visitors. Although,
SNSs are unable to develop a distinct and solid business model, but the impact that
they create in spreading information in a democratic manner, offering creative
learning engagement, and making behavioral changes is deeply traversed. It can be
observed from growing profile creation by corporates and individuals, time-spending
patterns on these profiles, and nature of information exchange which benefits both
consumers and marketers extensively.

In an effort to reach a large number of existing and potential customers, improve the
visibility and brand equity, and find a cost-effective solution to highly expensive tradi-
tional mass media, marketers are now unlocking the value through such structured set
of social relationships (Sawhney and Verona 2005; Muniz and O'Guinn 2006; Ulusu
2010; Carola 2011). Social networking sites offer a business that no other form of public
interface does: the ability to monitor public perception of their brand and services in
real time (Merril et al. 2011). In recent years, SNSs are also used by marketers to create
a mediating effect between the customers and the society. SNSs like Facebook are now
looking beyond the *like* only business to more meaningful associations that include
trying to light up villages, reduce corruption, quit smoking, and generally make the
world a better place to live in (Bapna 2013). Some of the these campaigns have created
a strong synergy between the digital world, the company, and the stakeholders in order
to educate the customer against social evils and creating a brand's presence felt among
a large number of virtual community members worldwide.

However, such social platforms also pose the risk of sharing negative comments
by an upset customer among the community members instantly. On one hand, it

provides a democratic opportunity to the customer to share her dissatisfied experience with the corporate leadership, product, or service. At the same time, such negative word of mouth also provides an opportunity to the marketers to tackle them by offering solutions to such negative comments on their community pages. The digital platforms open gates to people to criticize any undesirable experience with a product or service delivered to them. It has also been observed that such platforms have become so strong in recent years that a brand which does not have any official presence on Facebook or Twitter may also get such perceived threat of talking in the form of advocates or haters through writing on walls or liking on the individual person's Facebook page. The growing adoption of SNSs has given rise to the concept of "Citizen Journalist" through which even the opinion of the common citizen can be published easily using SNSs (James 2011; Ansari 2013).

So far, no major studies have been conducted to analyze and monitor the extent of the involvement of the customer and organizations on SNSs as a medium to exchange meaningful and valuable information especially in India where a significant percent of marketers still believe in transactional marketing only. The insight from this study can serve as a roadmap for marketers, SNSs, policy makers, and others who can develop a mechanism to provide a real sense of consumer democracy in which consumer mandate and voice can be used effectively for collaborative learning and mutual benefits.

2   Objectives of the Study

- To analyze the integration of large Indian organizations over Facebook
- To monitor and understand the extent to which consumers are using such networks to express their feeling about that organization

3   Literature Review

Social networks have achieved phenomenal success in terms of profile creation in developed markets during the last couple of years. As a result, they have attracted the attention of academia, practitioners, and marketers to convert this proposition into specific business opportunities. Most of the investigation which have been carried out in this direction so far attempted to explain the historical development of social networks (Donath and Boyd 2004; Boyd and Ellison 2007), identity and privacy issues, enhancement of social capital (Ellison et al. 2006; Mudambi and Schuff 2006; Hanna et al. 2011), and customer engagement (Ulusu 2010; Gummerus et al. 2012). In addition to that, the majority of such studies conducted so far are more relevant to developed and mature markets which are characterized with a high degree of computer literacy and broadband penetration. There is a dearth of literature

that investigates the level of customer involvement to share their offline experiences online and marketers' intent to take such feedback as an opportunity to listen to customer voice.

Among various SNSs, Facebook has emerged as one of the fastest growing virtual network communities in terms of profile creation among individuals as well as marketers. No modern marketing plan targeting users online is complete without a social network marketing component (Ulusu 2010). The term Facebook is derived from publications, issued by many American colleges, that display the names and photographs of students attending the institution for the purpose of promoting social interaction among the student community (Dekay 2012). Initially, the founder Mark Zuckerberg restricted this community to college students by requiring users to register with a valid e-mail address associated with their institution (Ulusu 2010). The community enjoyed high patronage and adoption among college students at par with iPods and text message in America. The restriction to "college students only" was relaxed in 2006 and high school students over 13 years of age with a valid e-mail address were also invited to join the Facebook community. The decision helped Facebook to penetrate among American youngsters deeply. Eventually, corporate and other segments were also invited to join the Facebook community.

Since 2004, Facebook developers took a series of measures to enhance the interactive ability of the site by promoting photographs and videos and creating and writing on the wall, live chat, and numerous other avenues for user engagements. In the first phase, Facebook permitted the so-called elite club of ten companies including Amazon.com, Apple, and Electronic Arts to open their profiles on Facebook. Virtually, over the years, it permitted the marketers worldwide to connect to a large number of people, customer, and prospect by making a Facebook profile of their respective organizations.

In today's competitive environment where connecting with customers has become a necessity, organizations worldwide are using Facebook extensively to understand customers' perception about their brands by using Facebook analytics. Marketers also use this platform by using newsfeed or paid advertising on Facebook (Gather 2011). A corporate presence on such virtual networking communities allows to spread increased positive word of mouth communication which enjoys high degree of credibility and co-creation in comparison to other means of communicating with the customer (Shankar and Smith 2003; Prahalad and Ramaswamy 2004).

There is no doubt that a positive WoM on community brings immense dividend in terms of improving brand equity and amplifies it within the consumer and larger communities on a real-time basis (Lester et al. 2012). However, the opposite is also true. Any undesirable corporate act, unsatisfactory service experience, or public gaffes that originate offline migrate into the social media sphere like Facebook within minutes in the form of angry posts, wall-based conversation, and activist-orchestrated attacks (Champoux et al. 2012). There is an inherent tension for marketers as SNSs offer more power to the consumers, and such freedom may sometimes prove very precarious when consumers use such platform to vent their anger (Thomas et al. 2012).

There is virtually an absence of empirical investigation which examines how Indian customers and marketers are connecting through social networking platforms to make a bidirectional communication for the benefit of each other. Thus, the contribution of this paper lies in understanding and analyzing the extent to which Indian consumers and marketers are using these platforms as a medium of communication exchange and unpacking certain possible solutions to deal with such user-generated content on their profile page.

4 Methodology

The study used multistage sampling. In the first stage, five major sectors were selected. These sectors were consumer nondurables (FMCG), banking, and telecommunication, automobile, and real estate. In the second stage, five top organizations from each sector were identified and selected as sample of the study on the basis of their ranking in Economic Times (ET) 500 survey carried out for 2012. In totality, data from 25 corporations are collected.

The data was collected between November 25, 2013 and December 10, 2013 from the official Facebook page of the respective organization. The study considered only those Facebook pages which have been officially sponsored by corporations, and mere use of the logo or brand name of a corporation did not qualify them as a unit of study. In cases where a firm has a different Facebook profile for individual brands, the Facebook profile of one of the biggest brands has been taken as sample unit for analysis.

The Facebook page of individual marketers was observed during the data collection period, and the nature of the comments posted on each profile was observed. The comments were analyzed and subsequently divided into two categories: negative and positive. Negative comments were defined as those comments that were precarious, sarcastic, and unfavorable; evince criticism; or have certain input of disagreement, negativity, or unfavorable feedback about products, practices, communication, and societal orientation of the firm. Positive comments were defined as those remarks having certain content of favorable input and not necessarily appreciative or praising in nature. Each comment or posting on the Facebook page of the sampled organization was monitored and tabulated accordingly.

5 Findings

The study observed that 96 % of the sampled organizations have a Facebook profile of either of their individual brands or corporate brand. Mahanagar Telephone Nigam Ltd. was the only organization in the sample not communicating with their customers and other stakeholders on social media like Facebook. A summary of the survey result is given in Table 8.1 below. The study analyzed around 2,500 comments of the

Table 8.1 Facebook comments monitoring data of large Indian organizations

ET 500 companies list 2012	Company name	Official Facebook page (Y/N)	Total no. of comments	No. of positive comments	No. of negative comments	% positive comments	% negative comments	% negative comments with responses
FMCG								
1	ITC Ltd.	Y	160	150	10	93.75	6.25	50
2	Hindustan Unilever Ltd.	Y	2,262	2,242	20	99.11	0.88	10
3	Nestle India Ltd.	Y	60	55	5	91.66	8.33	20
4	Godrej Industries Ltd.	Y	40	35	87.5	12.5	50	0
5	Britannia Industries Ltd.	Y	30	27	3	90	10	0
Banking								
1	State Bank of India	Y	30	15	15	50	50	1
2	ICICI Bank Ltd.	Y	115	110	5	95.65	4.3	2
3	Punjab National Bank	Y	3	3	0	100	0	3
4	Bank of Baroda	Y	2	2	0	100	0	4
5	Canara Bank	Y	5	5	0	100	0	5
Telecom								
1	Bharti Airtel Ltd.	Y	9	8	1	88.88	11.11	100
2	Reliance Communications Ltd.	Y	17	2	15	11.76	88.23	0

3	Idea Cellular Ltd.	y	126	76	50	60.31	39.68	20
4	Tata Communications Ltd.	Y	4	0	4	0	100	25
5	Mahanagar Telephone Nigam Ltd.	N	0	0	0	0	0	0
Automobile								
1	Maruti Suzuki India Ltd.	Y	247	217	30	87.85	13.82	0
2	Hero MotoCorp Ltd.	Y	30	29	1	96.66	3.33	0
3	Bajaj Auto Ltd.	Y	114	114	0	100	0	0
4	Ashok Leyland Ltd.	Y	3	3	0	100	0	0
5	Escorts Ltd.	Y	0	0	0	0	0	0
Real Estate								
1	Jaiprakash Associates Ltd.	Y	1	1	0	100	0	0
2	Punj Lloyd Ltd.	Y	0	0	0	0	0	0
3	DLF Ltd.	Y	0	0	0	0	0	0
4	Hindustan Construction Company Ltd.	Y	0	0	0	0	0	0
5	NCC Ltd.	Y	0	0	0	0	0	0

sampled companies. The inter-sectoral monitoring of the data reveals that the FMCG sector got the maximum Facebook participation in terms of both negative and positive comments. However, intra-sectoral analysis of the FMCG sector displays high degree of variation among the companies. Due to a very strong consumer base and product portfolio, HUL has got the maximum Facebook traffic among the sampled organizations. The real estate sector displays the least Facebook comments during this period. The FMCG sector is followed by automobile, telecom, and banking sector in terms of total comments. The reason for the low comments in the real estate sector for low participation on Facebook page may be attributed in terms of the real estate sector's high level of reported dissatisfaction and the nature of segment it serves.

The data analysis reveals that it is again the FMCG sector which attributes the maximum percent of the positive comments on its Facebook page. It may be due to the large number of customer base that these organizations are serving. Similarly, the nature of positive comments also related with the integration of various communication tools in digital platforms that sampled FMCG organizations are using to connect with the customers through various engagements practices on social media. Such online engagement practices are also very high among automobile companies selected in the sample. HUL and Nestle observed more than 90 % comments as "positive" on their respective Facebook page. Interindustry comparison revealed that Reliance Communication got the lowest percentage of positive comments on its Facebook wall during the survey period. The low percentage of positive comment may be considered as an indicator of low level of customer satisfaction in such organizations.

The percentage of comment with negative input painted a different picture of customer complaint behavior on the Facebook page among selected organizations. The FMCG sector has performed better than other sectors. However, on this parameter, telecom and banking sectors have failed miserably in comparison to other sectors. Reliance Communications and State Bank of India got 88.23 and 50 % negative comments on their respective Facebook page during the survey period. In the automobile sector, Maruti Suzuki Ltd. also got around 14 % negative comments during this period. The microanalysis of the negative comments ranges from sector to sector. In case of banking sector, negative comments range from nondelivery of credit cards to misbehavior of dealing frontline staff at the time of availing the service.

A competitive and competent organization is expected to take such negative wall as an opportunity to listen and understand the customer's perception about the organization. The advocates of the social media theory of communication also profess to respond and communicate to an angry or otherwise upset customer. In communication platforms where an organization has the least control over the content of the message, ignoring to respond to dissatisfied customers who have used such platform may prove fatal. However, such proposition did not seem to be followed by firms in almost all the sampled organizations. Two outliers have also been observed in this case. Bharti Airtel and State Bank of India responded with 100 % of the negative comments which have been posted on the wall during the survey period. Even FMCG firms like Hindustan Unilever Ltd. which performed better in other two

parameters responded to approximately 10 % of the negative comments. The problem was observed quite seriously with ITC Ltd. which responded only half of the negative comments posted on the wall during survey period. Reliance Communication was observed with almost zero percent response to 12 % negative comments posted on its wall. The poor rate of response to various negative comments displayed the unresponsive and unwilling nature of a significant percent of sampled organizations to listen to customer anxiety on the virtual platform. When businesses are unresponsive and slow to respond to customer communication, they are perceived as aloof, uncaring, or guilty of the complaints for which they are accused (Howell et al. 2012). Not responding or ignoring such an opportunity makes an organization vulnerable and offers a more risky proposition for a firm looking for sustainable competitive advantages in modern times.

6 Implications for Future Research

Customer participation in terms of writing positive and negative comments on virtual community sites like Facebook provides a rich resource for marketing analytics to understand and listen to the customer's voice. Such writings basically provide broad dimensions of opinion and attitude that customers may have about a particular product and service. These responses may vary from appreciation to profane and sarcastic remarks to pronouncements. An analysis of such walls requires a careful and identifiable analysis of their tone, nature, and pattern used in such postings. The present study divided wall postings into two categories only. There is a scope to have more than two categories for analyzing wall postings in other such research. Future research on this subject is also required to understand and analyze the impact of these postings on the larger community's attitude and buying behavior. In addition, the tendency of the majority of the firms to ignore and nonresponse to consumer complaints on Facebook requires further investigation.

The findings of this research can also be tested by conducting such studies with different population and unit of analysis. For example, a study on small- and medium-size enterprises can be conducted to compare the findings with large organizations as used in this study. The currency of this research can further be tested by improving the sample size and analyzing empirically what discourages these organizations from responding to communicate with their customers for all kinds of comments that customers write on their social community pages.

References

Ansari H (2013) Meet the angry young Indians. Hindustan Times, Dec 22, p. 13
Bapna A (2013) When social goes social. Brand Equity The Economic Times,Apr 24, p. 1
Bickart B, Schindler RM (2001) Internet forums as influential sources of consumer information. J Interact Mark 15:31–40

Blackshaw P (2008) Satisfied customers tell three friends, angry customers tell 3,000: running a business in today's consumer driven world. Doubleday Publishing, New York, pp 4–6

Boyd D, Ellison N (2007) Social networks sites: definition, benefits and scholarships. J Comput Mediat Commun, 13(4):210–230

Carola G (2011) Customer engagement on social media; How a firm can benefit from Facebook profile. Ph.D. thesis, Maastricht School of Business and Administration, pp 15–17

Champoux V, Durgee J, McGlynn L (2012) Corporate facebook pages: when "fans" attack. J Bus Strategy 33(2):22–30

Chang YP, Zhu DH (2011) Understanding social networking sites adoption in China: a comparison of pre-adoption and post-adoption. Comput Hum Behav 27:1840–1848

DeKay SH (2012) How large companies react to negative facebook comments. Corp Commun 17(3):289–299

Donath J, Boyd D (2004) Public display of connection. BT Technol J 22(4):21–82

Edison research on social media consumption habit. http://www.convinceandconvert.com/the-social-habit/42-percent-of-consumers-complaining-in-social-media-expect-60-minute-response-time/

Ellison NB, Stenfield C, Lampe C (2006) Spatially bounded online social networks and the social capital: the role of Facebook. In Proceedings of annual conference of International System Sciences, Germany. www.msu.edu

Gather C (2011) Customer engagements in social media: how a firm can get benefit from Facebook profile. Maastricht University School of Business and Economics, Maastricht

Goldsmith RE, Horowitz D (2006) Measuring motivations for online opinion seeking. J Interact Advert 6:1–16

Gummerus J, Liljander V, Weman E, Philstrom M (2012) Customer engagement in a Facebook brand community. Manag Res Rev 35(9):857–877

Hanna R, Rohan A, Crittenden VL (2011) We are all connected: the power of the social media ecosystem. Bus Horiz 54(3):265–273

Harvard Business Review Report by Analytics Services (2010) The new conversation: taking social media from talk to action

Howell E, Peters C, Thomas J, Robbins K (2012) Social media and negative word of mouth: dealing with unexpected comments. Atl J Mark 1(2):5–9

James G (2011) Double edge sword of communication with social media. Key Issues Risk Manag: 660–667

Lester DR, Keith T, Dolly DL, Tyra M (2012) Marketing Mavens' fusion with social media. Atl Mark J 1(1):6

Liao Z, Cheung MT (2006) Internet based e-shopping and consumer attitude: an empirical study. Inf Manag 38(5):299–306

Merril T, Lathem K, Santalesa R, Navetta D (2011) Social media: the business benefits may be enormous but the risk, reputation be mitigated. By Information Law Group, 3. Available at http://www.acegroup.com/us-en/assets/ace-progress-report-social-media.pdf

Mudambi SM, Schuff D (2006) What makes a helpful online review? A study of customer review on Amazon.com. MIS Q 34(1):185–200

Muniz M, O'Guinn CT (2006) Brand community. J Consum Res 27:412–436

Prahalad CK, Ramaswamy V (2004) Co-creating unique value with customers. Strateg Leadersh 32(3):4–9

Sawhney M, Verona G (2005) Collaborating to create: the Internet as a platform for customer engagement in product innovation. J Interact Mark 19(4):4–17

Shankar V, Smith AK (2003) Customer satisfaction and loyalty in online and offline environments. Int J Res Mark 20(2):153

Thomas JB, Peters CO, Howell EG, Robbins K (2012) Social media and negative word of mouth: strategies for handing unexpected comments. Atl Mark J 1(2):87–108

Ulusu Y (2010) Determinant factors of time spent on Facebook; brand community engagement and usage types. J Yasar Univ 18(5):2949–2957

Van Bruggen GH, Antia KD, Sandy DJ, Werna JR, Florian P (2010) Managing marketing channel multiplicity. J Serv Res 13(3):331–340

Chapter 9
Analysis of Perception of Customers of Bata India Limited Products

N.P. Singh, S.K. Sharma, D. Singh, and S. Kalra

Abstract India is the second largest global producer of footwear after China, accounting for 13 % of global footwear production of 16 billion pairs during 2012–2013 but mainly to meet domestic needs. Bata India is not only one of the leading manufacturers of footwear in India but a household name. This paper presents the analysis of perception of consumers about Bata products, relationship of perception with expenditure per year on Bata products, frequency of buying Bata products, repeat purchases, and recommendation of Bata products to others. In addition research paper presents the analysis of differences in perceptions with respect to various categories of demographics. Perception data was subjected to reliability analysis, exploratory data analysis, factor analysis, dependency analysis, and regression analysis. It is concluded that Bata products are accepted by all segments of the responds with almost same perception and Bata needs to improve collection for ladies.

Keywords Bata India • Perception • Footwear • Factor analysis • Reliability coefficient • KMO

1 Introduction

According to PRNewswire (2012), the global footwear market was worth USD 185.2 billion in 2011. It is expected to reach US$ 195 billion by 2015 BusinessVibes (2013). It is expected to reach USD 211.5 billion in 2018. It will grow at a compound annual growth rate (CAGR) of 1.9 % from 2011 to 2018. Asia Pacific is expected to maintain its lead position in terms of revenue till 2018. Asia Pacific is expected to enjoy 30.1 % of the global footwear market revenue share in 2018 followed by Europe PRNewswire (2012). The major contribution will come from China and India. As per RNCOS (2013), India is the second largest global producer of footwear after China, accounting for 13 % of global footwear production. As per Assocham

N.P. Singh (✉) • S.K. Sharma • D. Singh • S. Kalra
Information Management, Management Development Institute,
Mehrauli Road, Sukhrali, Gurgaon 12207, Haryana, India
e-mail: knpsingh@mdi.ac.in; suniliitian@yahoo.com; devendersingh2801@gmail.com; sumitkalra82@gmail.com

report, February 2012, the Indian footwear industry is growing at a compound annual growth rate (CAGR) of about 15 % and is likely to reach approximately INR 38,700 crore by 2015 from the current level of around INR 23,600 crore (Amarnath 2012). During 2012–2013, India produces 2,065 million pairs of different categories of footwear (leather footwear, 909 million pairs; leather shoe uppers, 100 million pairs; and non-leather footwear, 1,056 million pairs). India exports were about 115 million pairs. Thus, nearly 95 % of its production goes to meet its own domestic demand (http://www.leatherindia.org/products/footwear-23-4-13.asp).

The major production centers in India are Chennai, Ranipet, Ambur in Tamil Nadu, Mumbai in Maharashtra, Kanpur in UP, Jalandhar in Punjab, Agra, Delhi, Karnal, Ludhiana, Sonepat, Faridabad, Pune, Kolkata, Calicut, and Ernakulam. About 1.10 million are engaged in the footwear manufacturing industry as per the data of export leather council. The Indian footwear market is segmented between organized and unorganized segments. The organized market of footwear in India is dominated by key brands like Bata, Liberty, Clarks, Woodland, Khadims, Metro, Red Tape, The Loft, M&B Footwear, Da Milano, Timberland, Puma, Nike, Adidas, Reebok, Rockport, Provogue, Lee Cooper, Converse, Nine West, Aldo, Relaxo, etc., whereas the organized footwear market is fetched by small unorganized players. Market size of Indian footwear industry was US$ 2,684.6 million during 2012 in comparison to US$ 2,442.8 million during 2011 (Source: http://advantage.marketline.com/Product?pid=MLIP0948-0015). It is reported by the experts that contribution of organized market is 20–40 % (Mahesh 2012; Garg 2011). However, most of the reports are suggesting that it is about 20 %.

New policy change by the Government of India has now de-licensed and de-reserved the footwear sector, paving the way for expansion of capacities on modern lines with state-of-the-art machinery. It will give a big boost to the industry. Another policy change done by the government is permission of 100 % Foreign Direct Investment through the automatic route for the footwear sector.

Footwear Imports Global Trend The major importers of footwear (leather and non-leather) are the USA, Germany, France, UK, Italy, Hong Kong, Japan, the Netherlands, Spain, Belgium, and Canada. It is reported that imports by these countries are increasing year after year but Germany had witnessed a sharp increase in comparison to other European importers from 2007 to 2011. During 2011, Germany recorded imports of 8,527.62 million US$ in comparison to US$ 5,966.99 during 2007. On the other hand, Russian Federation imports have almost doubled during 2007 (US$ 2,067.82 million)–2011 (US$ 3,935.95 million). However, the USA remains the biggest importer of footwear during the same period with a substantial growth. Indian manufacturers may target these markets for export of footwear (Source: http://www.leatherindia.org/products/footwear-23-4-13.asp).

Footwear Exports Global Trends The major exporting countries of footwear are China, Italy, Hong Kong, Germany, Belgium, Indonesia, the Netherlands, Spain, France, Portugal, UK, and Romania. China is the number one exporter of footwear in the global market. China exported footwear of US$ 39,374.18 million in comparison to US$ 1,421 million from India during 2011. Though India is the second largest producer and supplies footwear to a large number of countries across the

globe, its share in export share is at par with Romania (US\$ 1,393.71 million) (Source: http://www.leatherindia.org/products/footwear-23-4-13.asp).

Trend in Share of Exports of India in the Global Market The global import of footwear (both leather footwear and non-leather footwear) has increased from US\$ 81.47 billion in 2007 to US\$ 103.38 billion in 2011, growing at a CAGR of 6.13 %. During 2011, the India's share in the global import was 2.01 %. However, it has grown from 1.82 % in 2007 (Source: ITC, Geneva & DGCI &S, Kolkata).

Research Objectives Keeping in view the importance of the footwear industry for Indian economy and Bata Company being very important manufacturer of footwear, the present study is taken up with following research objectives:

(a) To study the perception of consumers with respect comfort, price, appearance, and availability of Bata products
(b) To study variations in the perception with respect to demographics of the customers
(c) To study the relations of perception with expenditure, frequency of buying, repeat purchase, and recommendations of Bata products to others

The research paper is organized into four sections. The paper starts with introduction of footwear industry followed by a brief discussion about Bata India Limited in Sect. 2. Section 3 presents the research methodology. Analysis and results are presented in Sect. 4 followed by a section of conclusions and limitations.

1.1 Bata India Limited

Bata India Limited (Bata) is the largest retailer and leading manufacturer of footwear in India. Bata has presence in 70 countries across five continents. Bata India Limited (Bata) is a 52 % subsidiary of the Netherlands-based Bata BV. It sells a wide range of canvas, rubber, leather, and plastic footwear. The company has a licensed capacity of 628 lakh pairs per annum spread across its five manufacturing units at Batanagar (Kolkata), Faridabad (Haryana), Bataganj (Bihar), Peenya (near Bangalore), and Hosur (Tamil Nadu). The company has one tannery at Mokama Ghat (Bihar). It serves more than 150,000 customers daily through 1,250 retail stores. The company has employed more than 7,000 people. Its competitors in India are Reebok, Nike, and Adidas but they target higher income group of population.

During the year 2012 Bata has achieved 19,017 million indian rupee (INR) revenue from sales and other sources as compared to 16,960 million INR in 2011, reflecting a growth of approximately 12 % on year-on-year. The company has been growing at the rate of 13 % CAGR from 2004 to 2012 year-on-year. Bata has negative net profit in 2004 but after that it is consistently growing till 2011. Net profit has been dip by 24 % in 2012. Bata's return on equity has been more than 20 % since 2007. The company has also given good return to shareholders. The EPS has been positive since 2005 and growing at an annual CAGR of 24 %. This reflects the strong financial stability of Bata in the market. Share of Bata in Indian market is 7.23 % during 2012. However, during the same year, its share was 10.08 % in the organized footwear market in India.

1.2 SWOT Analysis of Bata

SWOT is a tool that identifies the **s**trengths, **w**eaknesses, **o**pportunities, and **t**hreats of an organization. Specifically, SWOT is a basic, straightforward model that assesses what an organization can and cannot do as well as its potential opportunities and threats. The method of SWOT analysis is to take the information from an environmental analysis and separate it into internal (strengths and weaknesses) and external (opportunities and threats) issues. Once this is completed, SWOT analysis determines what may assist the firm in accomplishing its objectives and what obstacles must be overcome or minimized to achieve the desired results.

SWOT matrix for Bata	Strength	Weakness
	(a) Presence of Bata in tier 2/3/4 cities through its large distribution network	(a) Lack of fashion/trendy collection
	(b) Conceived as value for money product for its quality and durability	(b) No product differentiation
	(c) Establish brand in India	(c) Not focus on innovative products
	(d) Largest market share in organized footwear market	(d) Conceived as low-rated brand in metropolitan city
	(e) Diverse footwear collection for the entire family	(e) Not much focused on promotion of brand
		(f) No major footprint in international market
		(g) Less number of company-owned stores
Opportunities	SO strategies	WO strategies
(a) Price gap between Bata product and global brand	(a) Expand rural reach	(a) International expansion in value for money categories with focus on product quality, reliability, and durability
(b) E-commerce business is growing	(b) Special product suitable to villagers' need in harsh usage	
(c) There is demand for fashionable apparels	(c) Focus on value for money product	
(d) Per capita footwear consumption in India is growing	(d) Strengthen brand image in rural and tier 2/3 cities	
(e) Increasing middle-class income	(e) Fashion product for tier 1 cities	

Threat	ST strategies	WT strategies
(a) Share of unorganized footwear market is 80 %	(a) Promotional scheme for rural area	(a) Lowest price for rural area
(b) Intense competition	(b) Special incentive for distributor located in tier 2/3 cities	(b) Highly durable product to meet need of villagers
(c) Entry of big brand in affordable segment		(c) Extended sole warranty for product sold to villagers
(d) High inflation rate pushing up the cost of raw materials		

2   Research Methodology

1. *Methodology*: The research methodology adopted in the present research paper is exploratory and descriptive in nature. It is exploratory in two ways. First, the sample size is not very large. Second, only few dimensions are considered while collecting data. It is descriptive because we have used its methodology and with these empirical evidences, authors have tested a large number of hypotheses.

2. *Sampling Framework*: Sampling framework includes two approaches of data collection. These approaches are collecting data directly from the respondents in person and collecting data from the respondents online. In both cases same structured questionnaire as given in annexure was used. As a part of the first approach, data was collected from retail stores located in Gurgaon and Delhi which attracts maximum footwear customers with different demographics. The objective was to get a good mix of customer perception on various variables.

   For data collection from retail stores, questionnaires were handed over to customers while they were in Bata retail store with a request for filling at the spot. Due care was taken to reduce biases by providing clarification to customers to their queries. In addition to this, a thorough analysis was done for each filled-in questionnaire to see the consistency of data provided by customers. In such cases many incomplete questionnaires were found by the authors. Such questionnaires were not considered worthy for analysis and were rejected.

   On the other hand, online collection of data was done from a more homogeneous group. The group consists of part-time PGPM students of Management Development Institute, Gurgaon. These respondents are in the age group of 24–35 years. This segment of population was selected due to their adoption of online buying pattern of various needs and they are more Internet savvy.

   For the purpose of data collection in the second approach, questionnaire was circulated to the group using group email ID of part-time PGPM students. All the

respondents were requested to provide their responses during class break to insure the increase in response. In this case also responses were taken from the students who are customers of Bata products.

3. *Design of Questionnaire*: The questionnaire was design with four dimensions. These dimensions are (i) demographics of the respondent such as gender, marital status, age, qualification, and personal income, (ii) perception of respondents towards Bata product related to footwear collections only, and (iii) target variables such as buying frequency, repeat buying, footwear recommendation to others, and customer expenditure pattern.

4. *Sample Size*: A sample of 150 respondents with Z as 95 %, error as 8 %. Proportion (response distribution) as 50 % was taken for the purpose of primary data collection by designing a structured questionnaire. The target population was Bata customer of national capital region (NCR).

5. *Selection of Bata Retail Outlets*: Two retail outlets of Bata have been selected for data collection. One of the outlets is located in Connaught Place, Delhi, and the other one is located in Sukhrali, Gurgaon. Apart from this, data has also been collected online from part-time PGPM students.

6. *Methods of Data Analysis*: Data were subject to statistical analysis such as descriptive, statistical analysis, frequency distribution, and factor analysis. For scaled data, reliability analysis is applied before subjecting the data for testing mean difference using *t*-test and carrying out factor analysis. The reliability test was done with a view to identify inconsistencies in the data set.

7. *Null Hypotheses* (H_o): Null hypotheses tested as part of this research work are listed in the following:

   (a) H_o = Gender has no relation with parameters such as (i) buying Bata products, (ii) recommendation of the Bata products to others, and (iii) repeat buying of Bata products.

   (b) H_o = Age has no relation with parameters such as (i) buying Bata products, (ii) recommendation of the Bata products to others, and (iii) repeat buying of Bata products.

   (c) H_o = Marital status has no relation with parameters such as (i) buying Bata products, (ii) recommendation of the Bata products to others, and (iii) repeat buying of Bata products.

   (d) H_o = Qualification has no relation with parameters such as (i) buying Bata products, (ii) recommendation of the Bata products to others, and (iii) repeat buying of Bata products.

   (e) H_o = Income has no relation with parameters such as (i) buying Bata products, (ii) recommendation of the Bata products to others, and (iii) repeat buying of Bata products.

   (f) Perception of Bata product is independent of (i) expenditure on buying Bata products, (ii) frequency of buying Bata products, (iii) repeat purchase, and (iv) recommendations of Bata products to others.

3 Result and Discussion

This section presents the analysis of data with respect to frequency distribution of demographics of the respondents and frequency analysis of data with respect to expenditure and frequency of buying during the year. It is followed by frequency analysis of buying Bata products (first time or regular basis), recommendation of Bata products to others, and repeat buying by the same consumer/respondent including the dependency with demographics.

3.1 Demographic Data of the Respondents

As mentioned in the section of research methodology, data was collected with respect to five demographics of the respondents. These demographics are (i) gender, (ii) marital status, (iii) age, (iv) educational qualifications, and (v) income. It can be seen from the data given in Tables 9.1 and 9.2 that the majority of the respondents are male (64 %), single (60 %), between 18 and 30 years of age (61 %), graduate (45 %), and having income between 5 and 10 lakhs (34 %).

3.2 Data with Respect to Expenditure, Buying Frequency, Usage of Footwear

This section presents the analysis of data of consumer's expenditure on footwear and buying frequency of footwear in general. The section also presents usage of Bata products by its buyers/consumers and companion at the time of buying. It is worth to mention here that all the respondents were selected from the buyers of Bata products. The data was collected from them while they were making purchases. The answers with respect to the usage are multiusage type. This is the reason why the total of the frequency is more than 150 and percentages are not calculated. The data

Table 9.1 Frequency distribution of the sampled buyers of Bata products based on gender, marital status, and age

	Gender		Marital status		Age (in years)			
	Male	Female	Married	Single	Below 18	18–30	31–40	Above 40
Frequency	96	54	59	91	10	95	45	4
%age	64 %	36 %	40 %	60 %	7 %	61 %	30 %	2 %

Table 9.2 Frequency distribution of the sampled buyers of Bata products based on qualification and income

	Qualification				Income				
	<Graduate	Graduate	Postgraduate	Professional degrees	0–5 lakhs	5–10 lakhs	10–15 lakhs	15–20 lakhs	20+lakhs
Frequency	17	67	35	31	43	51	29	22	5
%age	11 %	45 %	23 %	21 %	29 %	34 %	19 %	15 %	3 %

Table 9.3 Frequency distribution of expenditure, buying frequency of footwear, and usage of Bata footwear

Expenditure of footwear		Buying frequencies		Usage of Bata footwear		Companion	
Annual expenditure	Frequency (%age)	Numbers/month	Frequency (%age)	Category	Frequency (%age)	Category	Frequency (%age)
<1,000	7 (4.6)	0–1	56 (37.3)	Casual	88	Friends	21 (14.0)
1,001–2,500	9 (6.0)	2–3	53 (35.3)	Office	84	Family	85 (56.7)
2,501–4,000	30 (20.0)	3–5	36 (24.0)	In-house	67	Only wife	29 (19.3)
4,001–5,000	39 (26.0)	5+	5 (3.33)	School	37	Alone	15 (10.0)
5,000+	65 (56.7)			Party	22		
	150 (100)		150 (100)	Sports	19		150 (100)

on these four parameters is complied in Table 9.3. It can be seen from Table 9.3 that more than 56.7 % respondents buy footwear of more than Rs. 5,000 per year. More than 62 % respondents buy footwear more than once in a year. The maximum usage of Bata footwear as reported by the respondents is for office and casuals. The least responses were for sports followed by party.

3.3   Data with Respect to Repeat Buy and Recommendations

This section presents the analysis of data with respect to three parameters in relation to Bata products. These parameters are (i) buying Bata products, (ii) recommending Bata products to others, and (iii) repeat buying of Bata products. Each parameter answer has two options as mentioned in the questionnaire. The data so analyzed is presented in Tables 9.4, 9.5, and 9.6. It can be inferred from Table 9.4 that the majority of respondents were regular buyers of the Bata products, are willing to recommend Bata products to others (77.3 %), and are repeat buyers (78.0 %).

Having analyzed the data for percentage, an attempt is made to test the hypotheses that these three parameters are dependent on demographics. Analysis was done with the help of chi-square test and complied in Table 9.5. It can be seen from Table 9.5 that none of the three parameters is dependent on gender as evident from the p-values of the corresponding chi-squares. It means Bata products have acceptability among male and female.

Similar analysis is conducted with respect to the other four demographics. Only p-values of the chi-square are given in Table 9.6. Contingency tables are not given for these parameters due to paucity of the space. It can be inferred from the p-values given in Table 9.6 that there is dependency between recommendations of the Bata products and buying Bata products on regular basis or first-time buy at 10 % level of significance. Similarly, dependency is seen between age and first-time/regular buy at 10 % level of significance. In the rest of cases, four demographics under

Table 9.4 Frequency distribution of buying, repeat buying, and recommendation of Bata products

Buying Bata products			Recommending Bata products			Repeat buying		
	Frequency	%age		Frequency	%age		Frequency	%age
First time	31	20.7	Yes	116	77.3	Yes	117	78.0
Regular	119	79.3	No	34	22.7	No	33	22.0
	150	100 %		150	100 %		150	100 %

Table 9.5 Dependency analysis of type of buyers, recommendation, and repeat buying with gender

	Buying Bata products			Recommending Bata products			Repeat buying		
Demographics	First time	Regular	Total	Yes	No	Total	Yes	No	Total
Male	22	74	96	74	22	96	72	24	96
Female	09	45	54	42	12	54	45	09	54
Total	31	119	150	116	34	150	117	33	150
Chi-square test p-values	0.364			0.922			0.364		

Table 9.6 Chi-square p-values with demographics of the respondents

	Buying Bata products	Recommending Bata products	Repeat buying
Demographic	p-value		
Marital status	0.105	0.052	0.052
Age	0.076	0.645	0.2667
Qualification	0.141	0.476	0.785
Income	0.243	0.073	0.962

reference have no dependency with repeat buying, recommendation of the Bata products to others, and buying Bata products on first-time or regular basis.

The results in three tables (Tables 9.4, 9.5, and 9.6) indicate that Bata products have acceptability across demographics barring few specific cases.

3.4   Analysis of Perception Data

This section presents data with respect to eight statements which were used to collect data on five-point Likert-type scale. This data is analyzed using following statistical methods: (i) descriptive statistics analysis, (ii) hypothesis testing in relation to demographics, (iii) reliability testing, (iv) factor analysis for data reduction, and (v) linkage of new factors with target variables.

Table 9.7 Descriptive statistics of perception data

SN	Statements/questions/variables/items	Mean ± SE	Median	Mode	Skewness
1	How much value you associate with comfort while buying to Bata products	3.99 ± 0.085	4.00	5.00	−0.964
2	How much value you associate with price while buying to Bata products	3.94 ± 0.074	4.00	4.00	−0.921
3	How much value you associate with appearance while buying to Bata products	3.68 ± 0.084	4.00	4.00	−0.513
4	Do you think Bata has adequate kids collection	3.41 ± 0.093	4.00	4.00	−0.323
5	Do you think Bata has adequate ladies collection	3.32 ± 0.085	3.50	4.00	−0.346
6	Do you think Bata has adequate casual collection	3.36 ± 0.090	4.00	4.00	−0.332
7	Do you think Bata has adequate formal collection	3.79 ± 0.085	4.00	4.00	−0.998
8	Do you think Bata has adequate latest collection	3.41 ± 0.090	4.00	4.00	−0.365

3.4.1 Results of Descriptive Statistics

Results with respect to descriptive statistics are given in Table 9.7. It is evident from the results given in Table 9.3 that respondents have given maximum scores to comfort followed by price and formal collection. Minimum score is given to ladies collection followed by casual collection and kids and latest collection. The values of median are 4.00 for all variables except 3.5 for ladies collection. Mode values are 4.00 except 5.00 for comfort dimension. Distribution of all questions/variables is skewed to the left as indicated by negative values of skewness coefficient.

3.4.2 Hypotheses and *p*-Values

The list of hypotheses tested and corresponding *p*-values are given in Table 9.8. The following can be inferred from the *p*-values given in Table 9.8.

1. There is no evidence against all H_os with respect to gender. It means the perception of men and women respondents is not statistically different with respect to eight items starting with comfort to latest collection as listed in Table 9.4.
2. There is no evidence against seven H_os with respect to marital status, gender, and perception on seven dimensions except one, i.e., formal collection at 5 % level of significance. If we decrease the level of significance to 10 %, then null hypotheses are rejected in four cases (comfort, appearances, kids collection, and formal

Table 9.8 Hypotheses and corresponding p-values

SN	Hypotheses	Test statistics	p-values
(A)	Hypotheses with respect to gender		
H_o 1	Men and women associate same value to comfort while buying Bata products	t-test	0.543
H_o 2	Men and women associate same value to price while buying Bata products	t-test	0.817
H_o 3	Men and women associate same value to appearance while buying Bata products	t-test	0.482
H_o 4	Both men and women think at same level that Bata has adequate kids collection	t-test	0.374
H_o 5	Both men and women think at same level that Bata has adequate kids collection	t-test	0.254
H_o 6	Both men and women think at same level that Bata has adequate kids collection	t-test	0.485
H_o 7	Both men and women think at same level that Bata has adequate kids collection	t-test	0.643
H_o 8	Both men and women think at same level that Bata has adequate kids collection	t-test	0.239
(B) Hypotheses with respect to marital status			
H_o 1	Married and single associate same value to comfort while buying Bata products	t-test	0.070
H_o 2	Married and single associate same value to price while buying Bata products	t-test	0.235
H_o 3	Married and single associate same value to appearance while buying Bata products	t-test	0.072
H_o 4	Both married and single think at same level that Bata has adequate kids collection	t-test	0.077
H_o 5	Both married and single think at same level that Bata has adequate ladies collection	t-test	0.551
H_o 6	Both married and single think at same level that Bata has adequate casual collection	t-test	0.791
H_o 7	Both married and single think at same level that Bata has adequate formal collection	t-test	0.026
H_o 8	Both married and single think at same level that Bata has adequate latest collection	t-test	0.835
(C) Hypotheses with respect to age			
H_o 1	Respondents of all age groups associate same value to comfort while buying Bata products	F-test/ANOVA	0.142
H_o 2	Respondents of all age groups associate same value to price while buying Bata products	F-test/ANOVA	0.335
H_o 3	Respondents of all age groups associate same value to appearance while buying Bata products	F-test/ANOVA	0.274
H_o 4	Respondents of all age groups think at same level that Bata has adequate kids collection	F-test/ANOVA	0.358
H_o 5	Respondents of all age groups think at same level that Bata has adequate ladies collection	F-test/ANOVA	0.778

Table 9.8 (continued)

SN	Hypotheses	Test statistics	p-values
H_o 6	Respondents of all age groups think at same level that Bata has adequate casual collection	F-test/ANOVA	0.615
H_o 7	Respondents of all age groups think at same level that Bata has adequate formal collection	F-test/ANOVA	0.180
H_o 8	Respondents of all age groups think at same level that Bata has adequate latest collection	F-test/ANOVA	0.407
(D) Hypotheses with respect to qualification			
H_o 1	Respondents with all qualifications associate same value to comfort while buying Bata products	F-test/ANOVA	0.173
H_o 2	Respondents with all qualifications associate same value to price while buying Bata products	F-test/ANOVA	0.786
H_o 3	Respondents with all qualifications associate same value to appearance while buying Bata products	F-test/ANOVA	0.104
H_o 4	Respondents with all qualifications think at same level that Bata has adequate kids collection	F-test/ANOVA	0.002
H_o 5	Respondents with all qualifications think at same level that Bata has adequate ladies collection	F-test/ANOVA	0.193
H_o 6	Respondents with all qualifications think at same level that Bata has adequate casual collection	F-test/ANOVA	0.001
H_o 7	Respondents with all qualification think at same level that Bata has adequate formal collection	F-test/ANOVA	0.298
H_o 8	Respondents with all qualification think at same level that Bata has adequate latest collection	F-test/ANOVA	0.015
(E) Hypotheses with respect to income			
H_o 1	Respondents of all income groups associate same value to comfort while buying Bata products	F-test/ANOVA	0.846
H_o 2	Respondents of all income groups associate same value to price while buying Bata products	F-test/ANOVA	0.782
H_o 3	Respondents of all income groups associate same value to appearance while buying Bata products	F-test/ANOVA	0.609
H_o 4	Respondents of all income groups think at same level that Bata has adequate kids collection	F-test/ANOVA	0.236
H_o 5	Respondents of all income groups think at same level that Bata has adequate ladies collection	F-test/ANOVA	0.415
H_o 6	Respondents of all income groups think at same level that Bata has adequate casual collection	F-test/ANOVA	0.082
H_o 7	Respondents of all income groups think at same level that Bata has adequate formal collection	F-test/ANOVA	0.833
H_o 8	Respondents of all income groups think at same level that Bata has adequate latest collection	F-test/ANOVA	0.383

collection). It is worth to mention here that perception scores assigned by singles about Bata are less in comparison to score given by married except in the case of casual collection. It means single and married perception is varying about Bata on certain dimensions.

3. There is no evidence against all H_os with respect to age groups. It means the perception of respondents of different age groups is not statistically different with respect to eight items/variables/dimensions starting with comfort to latest collection as listed in Table 9.4. It means the perception of respondents is at par with respect to eight dimensions taken into in this study.
4. There is no evidence against five null hypotheses with respect to qualifications of respondents. These dimensions are comfort, price, appearance, ladies collections, and formal collections at 5 % level of significance. However, null hypotheses are rejected on three dimensions in relation to qualifications of the respondents. These items/dimensions/variables are kids collections and casual collections. It means respondents with different qualifications perceive these three dimensions differently.
5. There is no evidence against all H_os with respect to income. It means the perception of all income group respondents is not statistically different with respect to eight items starting with comfort to latest collection as listed in Table 9.8. It means consumers of all income groups have almost same perception of Bata products.

3.4.3 Reliability Test, KMO, and Bartlett Test

The value of Cronbach's alpha (reliability coefficient), Kaiser-Meyer-Olkin value (KMO), the measure of sampling adequacy, and chi-square value of Bartlett's test of sphericity are given in Table 9.9. The value of Cronbach's alpha is greater than 0.70. The value of KMO (0.815) suggests that the degree of common variance is middling and the values of Bartlett's test (p-value$=0.000$) are indicative that sample intercorrelation matrix did not come from a population in which intercorrelation matrix is an identity matrix in both cases.

3.4.4 Factor Analysis

Based on the factor analysis, two factors/components emerged to explain variation in the respondent's perception scores. The details of factor loading and variation explained by different factors are presented in Table 9.10. The variation explained by factor 1 (comfort, price, and appearance) is 52.549 % and by factor 2 (collection for kids, collection for ladies, casual collection, formal collection, and latest collection) is 14.731 %. Cumulative variation explained by these two factors is 67.280 %

Table 9.9 Reliability coefficient (Cronbach's alpha), KMO, and Bartlett test

Reliability coefficient	KMO measure of sampling adequacy	Bartlett test of sphericity	Remarks
0.869	0.815	Chi-square = 578.83	Calculate for 8 items and 150 cases
		DF$=28$, p-value$=0.000$	

Table 9.10 Eigenvalues and percent of variance explained by extracted factors

Total variance explained

Statement/questions/variables	Initial eigenvalues			Extraction sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
How much value you associate with comfort while buying to Bata products	4.204	52.549	52.549	4.204	52.549	52.549
How much value you associate with price while buying to Bata products	1.179	14.731	67.280	1.179	14.731	67.280
How much value you associate with appearance while buying to Bata products	0.645	8.061	75.341			
Do you think Bata has adequate kids collection	0.592	7.399	82.740			
Do you think Bata has adequate ladies collection	0.535	6.692	89.432			
Do you think Bata has adequate casual collection	0.386	4.820	94.252			
Do you think Bata has adequate formal collection	0.300	3.750	98.002			
Do you think Bata has adequate latest collection	0.160	1.998	100.000			

Extraction method: principal component analysis

Table 9.11 Factor analysis-rotational component matrix and communality

Component matrix

	Component		
	Factor −1	Factor −2	Commonality
Comfort	0.260	0.909	0.893
Value for money	0.104	0.907	0.834
Looks	0.469	0.635	0.623
Kids collection	0.694	0.118	0.496
Ladies collection	0.807	0.157	0.675
Casual collection	0.732	0.266	0.607
Formal collection	0.645	0.450	0.618
Latest collection	0.768	0.215	0.637

Extraction method: principal component analysis. Rotation method: varimax with Kaiser normalization. Note: rotation converged in 3 iterations

that is not a very high value but still can be considered sufficient for the purpose of data reduction in this case. The loading of the original variables/items on the two factors is given in Table 9.11 along with values of the communalities. It can be seen from the data given in Table 9.11 that all the values of factor loading are positive.

Table 9.12 Extracted factors and their constituents

Core strength	Variety
Comfort	Kids collection
Value for money	Ladies collection
Looks	Casual collection
	Formal collection
	Latest collection
Core Strength = (Comfort + Value for Money + Looks)/3	Variety = (Kids Collection + Ladies Collection + Casual Collection + Formal Collection + Latest Collection)/5

The values of the commonality are high to very high except in the case of kids collection perception.

The suggested names of extracted factors and their constituent are given in Table 9.12.

3.4.5 Linkages/Relations of New Factors with Variables of Interest

The major linkages or relations of interest to Bata could be between to two new factors, i.e., core strength and variety of perception data with (a) expenditure on footwear, (b) frequency of purchase in a year, (c) recommendations of Bata products to others by consumers/respondents, and (d) repeat buying by the consumers/respondents. Data on expenditure is collected in the form of categories. To establish its relation, chi-square test of independence is applied. For this purpose, new variables are also converted into categorical variables. Similar analysis was carried out for analyzing dependency of recommendations of Bata products and repeat buying with perception data (two new factors). For frequency of buying Bata products, regression analysis is carried out to study its relation with perception of two new factors. Based on the results, it is concluded that expenditure, recommendations, and repeat purchase are having dependency with perception variables (core strength and variety), but it could not be proved statistically significant based on chi-square test. Similarly, regression analysis between perception as independent variables and frequency as dependent variables showed a significant regression coefficient for "core strength," but R-squared value was very low. Graph of new factors and frequency indicates the relation between frequency of buying and "core strength" and "variety." It can be summarized that perception impacts these variables but could not established statistically significant.

4 Conclusions

Based on the data and its analysis presented in various sections, the following inferences/conclusions are drawn:

1. Footwear industry in India mainly consists of unorganized sector as evident from the data presented in the section of introduction. For the domestic market demand, it may not be a concern, but for export market it is worrisome. There is an urgent need to increase the growth of organized market.
2. The main usage of Bata products is for casual and office.
3. The consumers often with family members to Bata show room for buying.
4. Analysis for independence between demographics and buying Bata products, recommendation of Bata products to others, and repeat buying of Bata products indicates that respondents of all segments of demographics rate Bata products similar.
5. Descriptive analysis of perception data given in the table reveals that mean perception comfort is highest followed by price and formal collection. The mean perception score is lowest in the case of ladies collection followed by kids collection and latest collection.
6. The results of dependency of "core strength" and "variety" dimension indicate that there is a dependency with (i) expenditure of Bata footwear, (ii) repeat buying, (iii) recommending Bata products to others, and (iv) frequency of buying during the year. However, these relations could not be proved statistically significant.

5   Limitations of the Study

There are mainly two limitations of the study. First one is the sample size. Second one is inclusion of few dimensions with few subdimensions that are included in the study. It needs to be converted into a detailed study such as conducted by Laiwechpittaya and Udomkit (2013).

Annexure: Questionnaires

Demography

Sl no	Parameters	Scale					
1	Gender	①Male	②Female				
2	Marital status	①Single	②Married				
3	Age	①Below 18	②18–30	③30–40	④40–50	⑤Above 60	
4	Accompanied by	①Friends	②Family	③Only wife	④Alone		
5	Qualification	①Below graduate	②Graduate	③Above graduation	④Professional	②Graduate	
6	Income group	①0–5 lakhs	②5–10 lakhs	③10–15 lakhs	④15–20 lakhs	⑤Above 20 lakhs	

Sl no	Parameters	Scale					
7	Please select the usage of Bata product	①Sports	②Office	③Casual	④Party	⑤In-house	⑥School

Variable of Interest

Sl no	Parameters	Scale				
1	Buying Bata products	①First time	②Regular			
2	Would you recommend Bata products to others	①Yes	②No			
3	Would you buy from Bata again	①Yes	②No			

Perception

Sl no	Parameters	Scale					
1	How much value you associate with price while buying Bata products	①	②	③	④	⑤	①
2	Do you think Bata has adequate formal collection	①	②	③	④	⑤	①
3	How much value you associate with appearance while buying Bata products	①	②	③	④	⑤	①
4	Do you think Bata has adequate kids collection	①	②	③	④	⑤	①
5	Do you think Bata has adequate ladies collection	①	②	③	④	⑤	①
6	How much value you associate with comfort while buying Bata products	①	②	③	④	⑤	①
7	Do you think Bata has adequate casual collection	①	②	③	④	⑤	①
8	Do you think Bata has adequate latest collection	①	②	③	④	⑤	①

Variables of Interest (Expenditure and Frequency of Buying)

Sl no	Parameters	Scale				
1	How much you normally spend (in rupees) on footwear in a year	①0–1,000	②1,000–2,500	③2,500–5,000	④Above 5,000	
2	How often you buy footwear in a year	①(0–2)	②(3–5)	③(above 5)		

References

Amarnath N (2012) Rise of luxury shoe brands like Jimmy Choo, Roger Vivier & others in Indian fashion. Retrieved on 11 Feb 2014 from http://articles.economictimes.indiatimes.com/2012-07-29/news/32907684_1_jimmy-choo-shoes-manolos

Business Vibes (2013) Global Footwear Industry overview, Oct 9. Retrieved on 5 Feb 2014 from http://www.businessvibes.com/blog/global-footwear-industry-overview

Garg S (2011). Footwear industry expands, steps into non-metro mkts, business standard, 20 Dec. Retrieved on 11 Feb 2014 from http://www.business-standard.com/article/companies/footwear-industry-expands-steps-into-non-metro-mkts-111122000042_1.html

Laiwechpittaya T, Udomkit N (2013) A matter of shoes: the analysis of desired attributes of shoes and its retail shops from Bangkok consumers' perspectives. Int J Mark Stud 5(2):33–40

Mahesh BG (2012) Market size of shoes in India, some sole searching, 29 July. Retrieved on 10 Feb2014fromhttp://www.mahesh.com/entrepreneurship/marketsize-of-shoes-in-india-some-sole-searching

PRNewswire (2012) Global Footwear Market is expected to reach USD 211.5 Billion in 2018: transparency market research, 18 Sept. Retrieved on 12 Feb 2014 from http://www.prnewswire.com/news-releases/global-footwear-market-is-expected-to-reach-usd-2115-billion-in-2018-transparency-market-research-170231636.html

RNCOS (2013) RNCOS white paper: booming footwear market in India, 09 Dec. Retrieved on Feb 2014 from http://beforeitsnews.com/business/2013/12/rncos-white-paper-booming-footwear-market-in-india-2567820.html

Chapter 10
Applications of Mathematical Programming Models for Product Mix Optimization in World Steel Industry: Challenges and Directions

Shikha Aggarwal and Narain Gupta

Abstract The world steel demand by construction industry, mechanical engineering industry, and metal goods industry is more than 78 %. More than 46 % steel is supplied by China, while India's steel supply share is approximately 5 %. The production of world crude steel increased from 851 megatons (Mt) in 2001 to 1,548 Mt in the year 2012. Also, world average steel use per capita has increased from 150 kg in 2001 to 215 kg in 2011.

Mathematical programming models for product mix optimization have been applied to various industrial sectors to achieve improved performance. Process industry, especially the steel sector, has been home to extensive mathematical programming applications. In this paper we present a survey of more than 20 reported publications in the field of mathematical modeling to determine optimum product mix in an integrated steel plant. It suggests a classification of models based on the functional areas they are applied in. The study is an attempt to review the mathematical programming application in product mix optimization in integrated steel plants. The study summarizes the various applications of genetic algorithm, revenue management, energy modeling, and modeling uncertainty in the model parameters.

The study concludes that there is a growing need of modeling uncertainty in demand and prices of finished goods of steel. The future researchers should also focus on modeling multiple objective mathematical models, genetic algorithm, and revenue management application. The alternative interesting extensions are to explore if the similar applications exist in other metal processing industries, viz., aluminum, copper, etc. The mathematical applications in one industry have significant scope to replicate in other similar process industries. The study states that the current paper has reviewed reported literature from product mix optimization real-world applications. This is an interesting extension of this research to review the reported literature from multiple areas including cutting stock, financial planning, blending, implementation of decision support systems, production and capacity planning, etc.
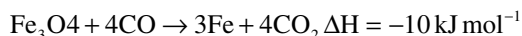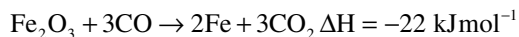
S. Aggarwal (✉) • N. Gupta
Operations Management, Management Development Institute, Gurgaon, Haryana, India
e-mail: 187.shikha@gmail.com; narain.gupta@mdi.ac.in

1 An Overview of Steel Production Process

In a steelmaking plant, the first stage is iron-making stage in which iron ore is converted into molten iron in a blast furnace. This molten iron is then converted into molten steel by any of the methods such as basic oxygen furnace or open-hearth furnace:

$$Fe_2O_3 + 3CO \rightarrow 2Fe + 3CO_2 \, \Delta H = -22 \text{ kJmol}^{-1}$$

$$Fe_3O4 + 4CO \rightarrow 3Fe + 4CO_2 \, \Delta H = -10 \text{ kJ mol}^{-1}$$

The molten steel is then cast in a continuous caster into ingots and rolled into blooms and slabs, which are then rolled into strip bars, sheet bars, or billets. These are converted into ordinary strips by strip mill and shipped to market or a tube making plant.

2 World Steel Industry

The production of world crude steel increased from 851 megatons (Mt) in 2001 to 1,548 Mt in the year 2012 (refer to Fig. 10.1). Also, world average steel use per capita has increased from 150 kg in 2001 to 215 kg in 2011 (World Crude Steel Production 2012).

China is the leading producer of steel in the world (refer to Fig. 10.2). India, Brazil, Turkey, and South Korea have all entered the top ten steel producers list in the past 40 years.
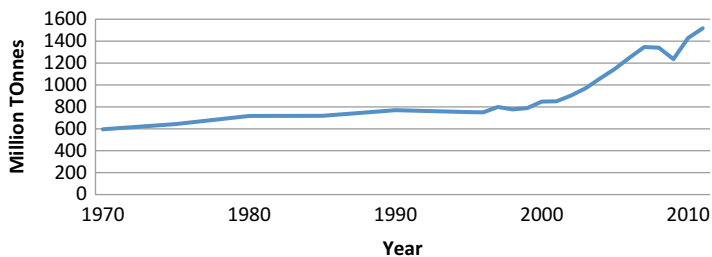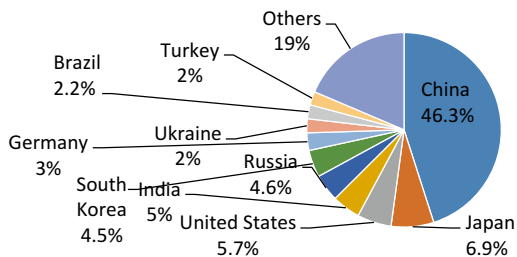

Fig. 10.1 World crude steel production 2012 (Source of Data: World Steel Association)

Fig. 10.2 Major steel producing countries 2012 (Source of Data: World Steel Association)

The use of steel can be seen in almost every aspect of our lives. It has a unique combination of strength, formability, and versatility. Almost 200 billion steel cans for food storage are produced each year, which means cutting down on energy usage refrigeration is not needed anymore then.

Steel used for double-hulled cape size vessels which are used to deliver raw materials, finished goods, and energy must have the highest impact toughness, corrosion resistance, and weldability. Skyscrapers have been made possible only by steel. The housing and construction sector is the largest consumer of steel today, it uses around 50 % of world steel production. Approximately 25 % of an average computer is made of steel. In 2010, more than 320 million PCs were sold. Also, steel surfaces are hygienic and easy to clean; therefore, all surgical and safety equipment and commercial kitchens are made with steel.

3 Product Mix Optimization

In an integrated steel plant, it is very important to determine the optimum production level at various stages of steel production. Profit does not depend solely on the volume of the production but also on product mix produced. Suboptimal solutions are obtained by practitioners by experience. However, the profits generated by implementing these solutions are way less than the potential profit that could have been made using the optimum product mix. The optimum product mix depends on the availability of mill or furnace and demands for the product, and it keeps changing from 1 month to another.

4 Mathematical Programming Applications in Steel Industry

Steel is produced through a continuous production process where it is impossible to decompose the product into its constituents. Also, once the production starts, it is not economical to shut down production. The continuous production process, and therefore, steel production, is highly capital intensive and the production process is very complex. Most steel plants are integrated as a variety of products move through

different series of production units. Finished products are produced in different shapes and sizes. The production process also takes place under high-temperature and high-weight material flow and incorporates complicated technology. The various equipment are designed for a specific capacity. The demands for various types of finished products are different and have to be produced using the same set of equipment. Under such situations, characterized by technological, material, capital, environmental, and energy constraints, it becomes imperative for production managers to utilize the various resources optimally so as to achieve the desired production targets. If wrong decisions are taken, it will result in losses. Therefore, it presents the right situation to use mathematical tools to achieve optimum levels of production while making effective and efficient utilization of various kinds of resources.

5   Linear Optimization

Fabian (1958) presents a cost-minimization linear programming model. It has four sub-models, one for each stage of iron making, steelmaking, and shop loading for the rolling operations and finishing operations. An integrated steel plant generally has a choice to select among different materials and production processes. There are variables on which the economical usage rate of different materials depends, for example, the market price of various grades of the steel scrap. The price keeps fluctuating, and therefore a periodic determination of the economical usage rate is important. In the paper, the models of different stages of production are then connected to form a "master model" in an integrated steel plant. The author has also discussed the detailed formulation of the model at each stage and then the principles of integration. Most of the technical and economic constraints like the material balance, capacity balance, thermal energy balance, and product-dependent yield have been considered.

Fabian (1967) explores an application of linear programming with multiple objectives in blast furnace production planning. The blast furnace production process is described in detail, and in the linear programming problem, the thermo-chemical metallurgical process is stated as a set of constraints.

Bandyopadhyay (1969) proposes a cost-minimization linear programming model for capacity allocation in production planning. In an integrated steel plant where both basic oxygen and open-hearth furnaces are available, it is a general problem of optimal allocation of steel production between the two of them. The model incorporates all the technological and cost constraints.

Tsao and Day (1971) present a process analysis model of steel production in the United States. A technology matrix, which represents recent technology structure in terms of input and output, is estimated by using engineering and metallurgical information. Then this matrix along with the detailed data on cost, sales, revenue figures, and resource capacity is used in a linear programming model to make short-run allocations in the whole of the steel industry. Once the model's solution is obtained, it is compared with actual industry statistics for each year from 1955 to 1968. The

authors claim to have fairly good results; however, Nelson (1971) commented that there was an error in the treatment of the coking coal production. He attempted to correct this problem and developed a correlated matrix for this particular stage of production.

Sharma and Sinha (1991) present an optimization model with the objective of determining the optimal product mix during production planning for the integrated steel plants of Steel Authority of India Limited. In the paper, various issues related to the choice of an optimum product mix in the context of a steelmaking operation are discussed.

Sasidhar and Achary (1991) develop a model in the form of a maximum flow problem during production in a multiple-activity network. The objective is to maximize capacity utilization. The production at a steel plant is generally planned according to the customer orders, so different customers are therefore assigned different priorities. The model deals with these priorities assigned to the customers and the balance of orders. The authors present an algorithm to solve the multiple-activity network formulation with the customer priorities in a steel plant.

The linear programming models developed in the context of steel production are useful for allocation of steel production in different processes, allocation of the key input materials for production, analyzing industry problems such as resource utilization and economies and diseconomies related with selection of input mixes, and optimum utilization of sequence capacities.

6 Advanced Linear Programming Applications

Lawrence and Flowerdew (1963) present a single-cost model for steel production that contained a number of input-output variables, technical relationships between them, their cost and operations, and flow restrictions on them. Then a simplex-type representation is made, and thereafter optimal solution is calculated.

Mohanty et al. (2003) describe a genetic algorithm (GA)-based method of assortment in steel industry to determine the optimum width of the parent stock so that the trim loss is minimized. The study evaluated six selection techniques for the selections of parents and concluded that elitism selection technique gives the best results. The authors suggest that for future research advanced GA operators or other techniques such as dynamic programming can be used for solving the assortment problem.

A column generation algorithm is proposed by Song (2009) to solve the problem of allocation of orders to stock materials in surplus inventory in steel mills. It is called multistage multiple knapsack problem; in the first stage of the problem, slabs are designed using orders with similar properties and in this stage these designed slabs are allocated into the existing meta slabs in the inventory yard. The proposed algorithm solved the real instances in reasonable time, when it was tested in an integrated steel company and has been successfully deployed to other integrated steel mills. It has released human planners from the cumbersome tasks of daily allocation which contains at least a few hundred materials in the stockyard. It is also mentioned that

complex multi-objective function and the design of two-dimensional mother plates explained in the paper are good avenues for future research.

As'ad and Demirli (2011) develop a bilinear programming model and a branch-and-bound-algorithm-based method for production planning in steel rolling mills with a substitutable demand. They address the dynamic capacitated multi-item lot-sizing problem, abbreviated as CMILSP, which is encountered typically in the steel rolling mills. The various end items' lot sizes are determined at the master production schedule level to minimize the total cost. Then the production-inventory problem is formulated as a mixed-integer bilinear program (MIBLP) under various technological constraints. The authors have also used an alternative branch-and-bound algorithm for solving the problem that is benchmarked against the linear optimization techniques.

Kwak et al. (2010) proposed a procedure called Patient Rule Induction Method for optimization of a multistage manufacturing process. It is important to take into consideration the relationship between the stages of a multistage manufacturing process, in order to optimize it. The PRIM can extend the scope of process optimization from single-stage process to multistage process and also use the information captured in relationship between the stages, while maximizing the performance of a stage. It is mentioned that PRIM can be used when a sufficiently large set of operational data is available. It may be interesting to explore that the use of PRIM to optimize the multistage manufacturing process when small data is available is the key issue of future research. Apart from steelmaking, its scope also extends to automotive industry, LCD, semiconductor, etc.

A number of problems such as assortment problems, optimizing multistage manufacturing process, and solving the given test instances within reasonable time have been addressed by advanced linear programming. Such problems are difficult to model as linear systems. Solutions are generated by genetic algorithms, mathematical programming coupled with linear programming, column generation algorithms, etc.

7 Financial Planning Applications

Kendrick et al. (1984) propose three models in all —two static ones for production planning and one dynamic one for investment analysis. The two static models, expressed as linear programming models, are transportation and mixed production problems. The inputs in the model are prices of raw materials, facility capacities, operations and shipments, demands, and input and output coefficients for each productive unit. The outputs are optimal product distributions. On the other hand, the dynamic model is a mixed-integer program that incorporates time factors and also deals with the issues of investment in five time periods— each of 3 years. In both models, the inputs are similar; however, the output in the dynamic model also includes investment decisions.

Bielfield et al. (1986) at a steel company Hoesch Siegerlandwerke AG (HSW) in Germany developed a set of accounting matrices for the purpose of budget planning.

The company main products were hot-dip galvanized, cold-rolled, electrogalvanized, and organic coated sheet steel, and it had a revenue of about one billion Deutsche Marks. The issue of complexity of the company's structure, its operations, and the rapid environmental changes pushed the management at HSW to replace the manual system with a computer-based system for strategic planning with the objective to improve efficiency and perform mass calculations and cost accounting with better efficiency. The authors presented a linear programming model with 3,000 structural variables and 2,500 constraints. It has multiple objectives of maximizing revenue and minimizing total cost.

Another paper by Sashidhar and Achray (1991) discusses the problem of allocation of the major components of the process costs to different quantities of products that are produced in the melting shop of an alloy and in a steel manufacturing unit. The authors have used quadratic programming techniques to estimate the pattern of consumption of important operational materials. However, these patterns cannot be directly assigned to each quality of steel. Here, the quadratic programming helps to arrive at more accurate and costing both route wise and quality wise.

Hintches et al. (2010) presented an application of revenue management (RM) technique to maximize profit in a made-to-order (MTO) scenario by selecting the best orders. In an MTO scenario, it is not the product that perishes but the capacity. Application of RM involves assessment of opportunity cost of an order to determine whether the order needs to be accepted or not. The authors had demonstrated by using a case study of capacity control at ThyssenKrupp VDM using RM techniques, and it was found that there was a substantial difference in profit margin.

Chauhan et al. (2012) aim to find an optimum product mix in cold rolling steel industry (JSW) which is a leading cold rolling and galvanizing house in India. The monthly production of the company is 45,000 mt, and it aims for maximum EBIDTA and for maximum utilization of the whole main line. Thirteen products have been selected for optimization, and the company aims to decide the monthly production in tonnage for each selected product. For this a product-portfolio matrix is formed that shows which products are more convenient to produce considering market attractiveness. A multiobjective linear programming model is applied for getting optimal product mix solution. The results so obtained are then compared with the actual figures of the company, and then the final production figures of all the 13 products are frozen for maximum EBIDTA and for maximum utilization of plant.

The investment decisions in steel plants have to be taken in uncertain environment. The volatility of steel prices and demand variability can alter the economic performance of the projects. In integrated steel plants, the blast furnace has to remain working continuously; therefore, production cannot be lessened or interrupted in between. In this scenario, simulations and modeling of uncertainties are of great value.

A number of attempts have been made by using mathematical modeling techniques to optimize the product mix and generate maximum revenue or EBIDTA or maximum utilization of an integrated steel plant. Future research can be conducted to find methods of updating forecast and resulting re-optimization. The area of dynamic bid prices can be explored.

8   Energy Modeling

Dutta et al. (1994) develop a mathematical model for optimal allocation of electrical energy in a Tata Steel plant in India. There is persistent problem of adequate power supply in India, due to which at times of power shortage, it is important that power be allocated to such nonessential loads that yield higher profitability. The steel plant was modeled with the objective of profit maximization and taking energy as a limiting constraint. Sinha et al. (1995) also developed a mixed-integer linear programming model for Tata Steel to optimize their operations amidst scarce resources. Earlier study by Hunneault and Galiana (1991) that looked into optimal use of power addressed this issue with cost-minimization modeling approach. Some authors have addressed the problem as a profit-maximization linear programming model. The model developed in India is also useful for making short-term operating decisions. It considers all economical, technical, and environmental constraints such as materials, energy, balance of capacity, etc. It is an optimization model with multiple objectives of minimizing cost, maximizing profit, and maximizing production and has about a thousand variables and a thousand constraints. The output obtained is a list of facilities that should be switched off during the energy shortage.

The problem of power shortage is taken care of by energy models that provide solutions to prioritize in case of power crisis, to plan the production target, and to devise a marketing strategy situations that arise due to failure of blast furnaces, oxygen plant, shortage of scrap, etc. These models can be used in other similar industries too because the problem of power shortage runs throughout countries like India.

9   Modeling Uncertainty

Dutta and Fourer (2004) describe a generic multi-period optimization-based decision support system (DSS) that can be used for strategic and operational planning in process industries. The DSS built on the five fundamental elements – materials, activities, time periods, facilities, and storage areas – requires little knowledge of optimization techniques to be used effectively. The results are based on real data from an American integrated steel company and they demonstrate significant potential for improvement in revenues and margins.

Denton and Gupta (2004) had proposed a two-stage stochastic integer programming model for planned inventory deployment that can be used to choose the semifinished products that should be made to stock and their target inventory levels. Thus, strategically placing the semifinished inventory into finished products would help integrated steel manufactures, characterized by high capital expenditures and long cycle time, to reduce the time between receipt of order and dispatch of the order and its variability. Also, they mention that the model is applicable to problems involving the configuration of transportation networks in a scenario of demand–supply uncertainty. In the future, modifications in the model can be made to account for more factors which were not considered in this study,

other factors such as capacity constraints on total production or randomness in second-stage cost coefficients.

Ozorio et al. (2013) used Monte Carlo simulation to calculate the value of a product exchange option in a steel mill that has a blast furnace with a hot roller. Since the demand is uncertain, in steel mills, it is a common practice to invest in steel rolling assets, so that production can be diversified and product exchange options can be generated. In the study it was found that this option can yield a significant increase on the net present value (NPV) of a blast furnace steelmaking projects (exact value of NPV difference can be looked up) and also that it makes a difference as to which type of stochastic process is used to determine the option's value. The authors used two different types of stochastic processes, the regression-to-the-mean reversion movement (MRM) and the geometric Brownian motion (GBM) in their study. The interested readers are encouraged to refer to Ozorio et al. (2013) for the mentioned stochastic processes in detail.

10   Conclusion and Extensions

This paper presents a guide to the optimum product mix in an integrated steel plant and dispatching literature from the late 1950s to present. The mathematical models are classified according to different techniques used, and the functional and chronological order and relationships are shown. We conclude that there is marked progression in the mathematical modeling of product mix optimization that can be seen in the steel industry across the world.

From the survey of different applications in the modeling of the steel plants, we believe that the following can be some potential areas for future work:

1. Developing models in a rolling horizon context to account for uncertainties associated with production capacity and demand
2. Complex multiple objective function to address a number of problems simultaneously
3. A systematic framework to update and re-optimize in a made-to-order network setting
4. Dynamic programming to solve assortment problem
5. Application of advanced genetic algorithm operators solving problems in integrated steel plants

References

As'ad R, Demirli K (2011) A bilinear programming model and a modified branch-and-bound algorithm for production planning in steel rolling mills with substitutable demand. Int J Prod Res 49(12):3731–3749

Bandyopadhyay R (1969) Open-hearth and basic-oxygen furnaces: an allocation model for production planning. IEEE Trans Syst Sci Cybern 12:115–124

Bielfield FW, Walter K, Wartmann R (1986) A computer based strategic planning system for steel production. Interfaces 16(4):41–46

Chauhan Y, Gupta M, Zanwar D (2012) Optimization of product mix in cold rolling steel industry using product portfolio matrix and multi objective goal programming model. Ind Eng Lett 2(6):1–10

Denton B, Gupta D (2004) Strategic inventory deployment in the steel industry. IIE Trans 36(11):1083–1097

Dutta G, Fourer R (2004) An optimization-based decision support system for strategic and operational planning in process industries. Optim Eng 5(3):295–314

Dutta G, Sinha GP, Roy PN, Mitter N (1994) A linear programming model for distribution of electrical energy in a steel plant. Int Trans Oper Res 1(1):119–130

Fabian T (1958) A linear programming model of integrated iron and steel production. Manag Sci 4(4):415–449

Fabian T (1967) Blast furnace production planning—a linear programming example. Manag Sci 14(2):B-1

Hintches T, Spengler TS, Volling T, Wittek K, Priegnitz G (2010) Manufacturing: case study of capacity control at ThyssenKrupp VDM. Bus Res 3(2):173–190

Hunneault M, Galiana FD (1991) A survey of optimal power flow literature. IEEE Trans Power Syst 6:762–767

Kendrick DA, Meeraus A, Alatorre J (1984) The planning of investment programs in the steel industry. John Hopkins University Press, Baltimore

Kwak DS, Kim KJ, Lee MS (2010) Multistage PRIM: patient rule induction method for optimization of a multistage manufacturing process. Int J Prod Res 48(12):3461–3473

Lawrence JR, Flowerdew ADJ (1963) Economic models for production planning. Oper Res Q 14(1):11–29

Major Steel Producing Countries (2012) Retrieved on 1 March 2014 from http://www.worldsteel.org/dms/internetDocumentList/bookshop/WSIF_2012/document/World%20Steel%20in%20Figures%202012.pdf

Mohanty S, Mahanty B, Mohapatra PKJ (2003) Optimization of hot rolled coil widths using a genetic algorithm. Mater Manuf Process 18(3):447–462

Nelson JP (1971) A note on economics of metallurgical coke production. Manag Sci 18:B237–B239

Ozorio L, Bastian-pinto C, Baidya T, Brandlo L (2013) Evaluating product exchange options in integrated steel mills. Braz Bus Rev 10(1):102–126

Sasidhar B, Achary KK (1991) A multiple arc network model of production planning in a steel mill. Int J Prod Econ 22(3):195–202

Sharma A, Sinha SK (1991) Product mix optimization: a case study of integrated steel plants of SAIL. Opsearch 28:188–201

Sinha GP, Chandrasekaran BS, Mitter N, Dutta G, Singh SB, Choudhury AR, Roy PN (1995) Strategic and operational management with optimization at Tata Steel. Interfaces 25(1):6–19

Song SH (2009) A nested column generation algorithm to the meta slab allocation problem in the steel making industry. Int J Prod Res 47(13):3625–3638

Tsao CS, Day RH (1971) A process analysis model for the U.S. steel industry. Manag Sci 17:B588–B608

World Crude Steel Production (2012) Retrieved 1 March 2014 from http://www.worldsteel.org/dms/internetDocumentList/bookshop/WSIF_2012/document/World%20Steel%20in%20Figures%202012.pdf

Chapter 11
Behavioral Finance: A Study of Correlation Between Personality Traits with the Investment Patterns in the Stock Market

Saima Rizvi and Amreen Fatima

Abstract Conventional theories are based on the assumption that investors are rational beings. All their decisions are logical and judgments fair and rational. Based on this assumption, they have derived all their financial models. The capital asset pricing model assumes that investors are rational beings and they have the same expectations. This assumption contradicts behavioral theories, which assume that investors under uncertainty behave in a not-so-rational or irrational manner. The phenomenon of behavioral finance was noticed post-2000, when IT bubble was built up and finally busted. During this time period, investors showed herd mentality, and they preferably invested in companies having ".com" attached to them. The market prices of IT companies rose much above their intrinsic value or fair value. It also happened in the subprime crisis when real estate prices in the USA started rising much above their fair value. After a certain time period, the bubble collapsed leading to the fall of stock prices, wiping off the hard-earned money of investors. The history of irrational behavior can be traced to the sixteenth century in Holland. The tulip bulbs were imported to Holland from Constantinople. These bulbs became very popular with Dutch elite class. Trading of these bulbs started on major stock exchanges in Europe. The prices rose to great heights and people started trading in bulbs in a big way. After a certain time period, people started selling these bulbs and the prices began falling. People started defaulting on their tulip contracts. This bubble finally collapsed leading to huge losses. Therefore, it was realized that there was something which these conventional models were unable to explain. These softer issues were never addressed and recognized by traditional theorist before. It was Kahnman and Smith who for the first time brought insights from behavioral sciences into the field of finance and economics. They stated that under uncertainty

S. Rizvi (✉)
IILM Institute for Business and Management, Gurgaon, Haryana, India
e-mail: saimarizvi2001@yahoo.com; saima.rizvi@iilminstitute.ac.in

A. Fatima
Psychology Department, Lucknow University, Lucknow, Uttar Pradesh, India
e-mail: amreen2008@gmail.com

investors do not behave ideally but rather behave normally. The present paper describes the relationship between personality traits and investment pattern of investors. A survey of about 100 investors, who have invested in the stock market, has been conducted. The investors have been classified into various demographic profiles such as gender, age group, income level, number of dependents, profession, and marital status. The data for the study has been collected from both primary and secondary sources. Convenience sampling method is used to select the sample of 100 investors. The Big Five personality test has been incorporated to assess the personality of investors, and its correlation with their investment behavior is being evaluated in the study using various statistical tools. The paper attempts to rate the personality of investors on parameters such as extraversion, agreeableness, conscientiousness, neuroticism, and openness. The study relates the personality of investors with stock market investment, type, objective, factors influencing the investments, and so on. The findings can be useful for portfolio managers, fund managers, and wealth managers to understand the mindset and behavior of their clients. This will facilitate them to construct a portfolio which may be less than optimal and which can be adhered to by the advisor and the client amicably. This is especially significant in the context of managing portfolios in these recovering markets post-recession which the global economies have witnessed in recent times. The concept of behavioral finance is one such emerging area which if incorporated well in the hard-core finance, based on fundamentals, can yield dividends for portfolio managers and equity analyst and also on the wealth generation of the overall economies emerging in the aftermath of the recession.

Keywords Behavioral finance • Heuristics • Behavioral biases • Big Five personality test • Prospect theory

Traditional finance theorists believe that investors are rational beings and they base their investment decision on various models and information database. The real-life situation, on the contrary, suggests that investors rely on heuristics or rule of thumb when faced with uncertain investment decisions Jay Ritter (2003). People in standard finance are rational, whereas people in behavioral finance are normal (Meir Statman, Ph.D., Santa Clara University) (Victor et al. 2000; Statman 2008). Behavioral finance is one such field which brought insights from psychology into the area of economics and finance. Kahneman and Taversky (1979) in their paper titled *Prospect Theory*: *Decision Making Under Risk* used various cognitive psychological techniques to explain a number of anomalies from rational decision-making (Mills 1999). History of behavioral finance can be traced back to 150 years with Mackay's book titled *Delusions and Madness of Crowds*, which presents a chronological description of various panics and schemes throughout history. Following this, the subject got mentioned in a book by Selden in the year 1912 titled *Psychology of the Stock Market* Selden (1912). This was the first book which applied behavioral concepts in the stock market investments. In a seminal article published in 1951 by

Journal of Finance, Professor Burrell proposed scientific study of impact of psychological factors on investment behavior patterns of investors. During this time period, the finance theory was based on market efficiency and the new capital asset pricing model. With the rise in the anomalies in the late 1980s, the behaviorally oriented financial research gained momentum. Prior to this finance theories were considered to be normative, and these softer issues were never accepted and addressed by conventional theorists.

Professor Shefrin in his book, *Beyond Greed and Fear*: *Understanding Behavioral Finance and Psychology of Investing* (Harvard Business School Press, 2000), analyzed the factors that led to the IT bubble in the year 2000. He observed that excessive optimism and overconfidence led to the collapse of technology bubble. A sixteenth-century example of irrational behavior can be traced back to the trading of tulip bulbs on the Amsterdam exchange, Holland. Investors sold everything to acquire these bulbs. Later on, the bubble busted, prices crashed, and the bulbs lost almost 90 % of their value.

Behavioral finance is based on two building blocks, namely, cognitive psychology and limits to arbitrage. Cognitive psychology studies the thought process of individuals, that is, how they think. It also studies internal mental processes such as problem solving, language, and memory. Limits to arbitrage to predicting in what circumstances arbitrage forces will be effective and when not. Graham (1973) remarks that price is the amount which investors actually pay and intrinsic value is what they actually get. If there are a limited number of arbitrageurs in the market, then the difference between price and intrinsic value will remain.

Keynes explained that

> Human decision affecting the future, whether personal or political or economic, cannot depend on strict mathematical expectations, since the basis for making such calculations does not exist; and it is our innate urge to activity which makes the wheel go round, our rational selves choosing between the alternatives as best as are able, calculating where we can, but often falling back for our motive on whim or sentiment or chance.

According to Statman (Fabozzi 2008), standard finance has four founding blocks:

- Investors are rational being.
- Markets are efficient.
- Investors should construct the portfolios according to the rules of mean variance portfolio.
- Expected return depends on risk only.

Behavioral finance concept is based on different sets of assumptions such as:

- Investors are normal.
- Markets are not efficient.
- Investors design portfolios according to their rules of behavioral portfolio theory rather than the mean variance theory.
- Expected returns follow behavioral asset pricing theory in which risk is not measured by beta and expected returns are determined by more than risk.

Chart 11.1 Branches of
behavioral finance
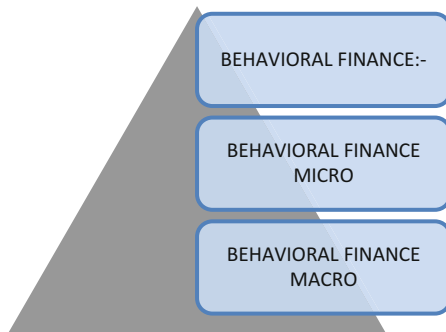
Behavioral finance is further divided into (Chart 11.1):

Behavioral finance micro discusses the biases of individual investors that distinguish them from rational investors. Behavioral finance macro identifies the anomalies in the efficient market hypothesis.

The theory given by Kahneman and Taversky (1979), called the prospect theory, is considered to be the foundation theory in the field of behavioral finance. The theory says that when making decisions people may become irrational. Prospect theory appreciates the asymmetry that investors demonstrate in dealing with gains and losses. The dissatisfaction with losses is greater than the satisfaction with gains. This also leads to disposition effect whereby investors sell their winning investments very early and losing investments are held too long (Shefrin and Statman 1985; Shefrin 2002). Inman and Zeelenberg (2002), Zeelenberg et al. (1996), Zeelenberg and Beattie (1997), and Zeelenberg (1999) found evidences that investors tend to become risk averse and risk lover in the decision-making process. Zuckerman (1979), Miller and Ross (1975), Fiske and Taylor (1991), Duval and Silvia (2002), Stephen Ross (1987), and Ross et al. (2004) found that people tend to attribute success to their own skills and failures to bad luck (Chart 11.2).

According to Ross (1987), the finance field uses framework and models derived mainly from the field of economics, although with a different methodological viewpoint. All social sciences aim to understand the human behavior, which involve the quantitative analysis of behavior data records and also devise ways and means of experimenting upon the behavior (Mills 1999). Behavioral finance attempts to describe and understand the thought process, reasoning patterns, emotional processes, and their impact on the decision-making process. It analyzes psychological and sociological factors that influence the financial decision-making by investors. A number of behavioral biases exist which are responsible for deviating the behavior of investors from the so-called rational behavior and which eventually affect the asset prices. Festinger (1957) stated that people feel internal tension and anxiety when subjected to conflicting beliefs. The phenomenon is known as *Theory of Cognitive Dissonance*. Individuals either try to change their values or beliefs or tend to rationalize or justify their options (Ricciardi and Simon 2000). For investors, this

Chart 11.2 Prospect theory
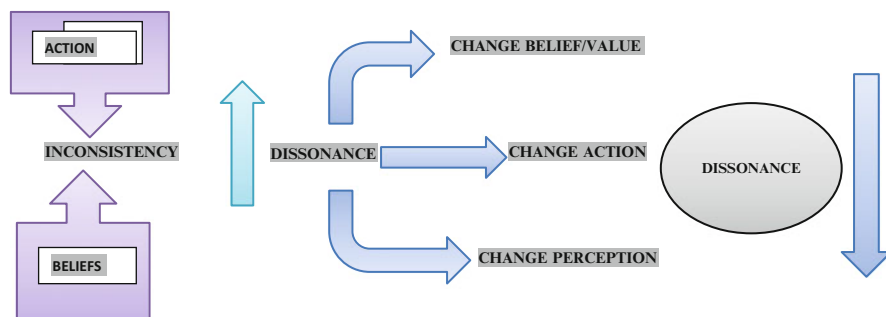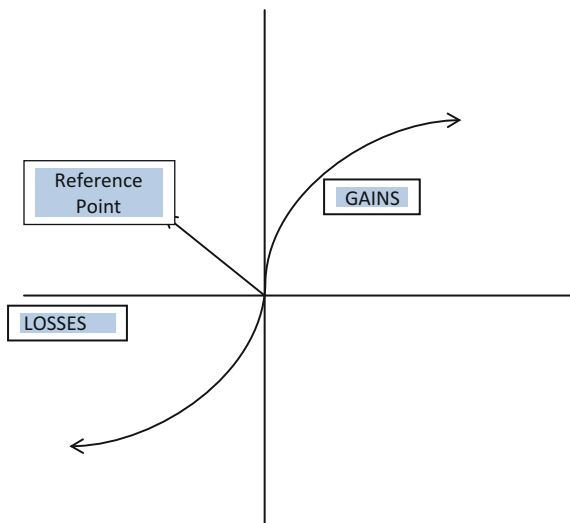
Chart 11.3 The cognitive dissonance theory

situation becomes hazardous as they make cling to a loss making security, which may result in low overall return of the portfolio (Chart 11.3).

Taversky and Kahneman (1974) mentioned that heuristic or rule of thumb is used by people when they are faced with uncertain situations. Heuristic is quite reliable, but it also leads to judgmental errors at times. Individuals use shortcuts or heuristic to take decisions under a complex situation (Fabozzi 2008). Often individuals assume that small samples are representative of the population. Based on that, they make their final decision under uncertainty. This is known as representative bias and more specifically sample size neglect/law of small numbers. It is further classified into base rate neglect. People often have this notion that a sequence will run into the future, but actually the sequence turns out to be of short duration. People often have the notion that initial public offer is a good long-term investment, which may not be always true. A lot of hype surrounds the issue and after the initial bullish run, the

stocks may remain priced at a lower level than the original price. Gambler's fallacy is another such phenomenon where the individual thinks that the luck runs in streaks (Taversky and Kahneman 1974).

Human beings have a tendency to overestimate their skills and potential (Ricciardi and Simon 2000). Overconfidence manifests in a number of ways. One example is too little diversification and investing in familiar stocks in greater proportion. Also men tend to be more overconfident than women (Ritter 2003). Mahajan (1992) describes overconfidence as overestimation of probabilities for various sets of events. There can be prediction overconfidence and certainty overconfidence. Investors may have problems in predicting future course of action. For instance, investors may expect a 10 % gain and decline of a particular stock. But actually the deviation may turn out to be much greater. The investors may underestimate the downside risk in their portfolio. Certainty overconfidence refers to a state where investors become too certain or sure of their judgment. A classic example of certainty overconfidence is the tech boom of the 1990s where investors loaded their portfolio with IT stocks and they suffered huge losses during the meltdown. Barber and Odean (1999, 2001) and in their study highlighted the impact of gender overconfidence on common stock investments. Overconfident investors trade excessively, which often results in poor returns over time. Individuals often keep their portfolio into separate mental accounts. One account may be for downside protection (containing cash and bonds) and another may be for the upside potential (containing stocks, options). Investors often become risk averse with money in their downside protection account and risk seeking in their upside protection account. Friedman and Savage observed that people regularly buy both insurance policies and lottery tickets (Statman 1999).

1 Big Five Factor Theory of Personality

The research conducted during the last few decades have converged on the conclusion that in fact there may be only five core or central dimensions of personality instead of many personality dimensions. Evidence of this theory has been growing over the past 50 years, beginning with the research of Fiske (1949), and later expanded upon by other researchers, Goldberg et al. (1981), McCrae and Costa (1987), Costa et al. (2001, 2001a), and Fiske (1948). There are many theories of personality that suggest number of factors playing influential role in personality. The five traits are also referred to as the "Five Factor Model" or "FFM" given by Costa and McCrae (1985, 1985–1987, 1985–1992, 1988, 1992, 1994), McCrae and Costa (2003), McCrae (1987, 1989), McCrae et al. (1999, 2000, 2001, 2008) and "Big Five Factor Model" by Ewen (1998).

Throughout the past decade, there have been growing consequences that individual differences in personality may be described by a hierarchical system composed of three or seven major traits; among these implications, the Big Five model has gained distinct prominence. The Big Five model is considered one of the most comprehensive, empirical, data-driven research findings in the history of personality psychology.

Over four decades of research, these five broad factors were gradually discovered and defined by several independent sets of researchers (Digman 1990). These researchers began by studying all-known personality traits and then factor-analyzing hundreds of measures of these traits (in self-report and questionnaire data, peer ratings, and objective measures from experimental settings) in order to find the basic underlying factors of personality.

Big Five factors of personality are five broad domains or dimensions of personality, which have been scientifically discovered to define human personality at the highest level of organization (Goldberg 1993). Big Five is the most popular and commonly used term in personality. This describes five fundamental factors. Each of these five factors consists of broad range of traits. Within these traits, there will be latent attributes such as emotions, thought and behavior (McCrae and Costa 1990).

2   Characteristics of Big Five Factor Model

Following are the significant characteristics of Big Five Factor Model:

- The Big Five traits are universal (McCrae and Costa 1997).
- Factors of Big Five are dimensions.
- Factors remain stable until 45 years of age (Soldz and Vailliant 1999).
- These factors have adaptive value in a prehistoric environment (Buss 1996).
- Five Factor traits represent the most significant qualities of our social landscape.
- Knowing one's placement on the factors is useful for insight and improvement through therapy (Costa and McCrae 1992).

Historically, the Big Five arise from the attempts to identify the basic factors in personality. Study of language was one of the sources that had led to the descriptive model of personality traits, whereas the other source was the factor analysis of questionnaires, which led to an explanatory hypothesis. The Big Five factors are extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience, OCEAN or CANOE if rearranged John (1990) and Loehlin (1992) (Chart 11.4).

Extraversion This dimension captures one's comfort level with relationships. Individuals scoring high on this dimension are sociable, active, talkative, gregarious, and assertive, and they like to enjoy being with others. On the contrary, persons low on this dimension are described as introverts. Introverts lack the energy and activity levels of extraverts. They tend to be quiet, low key, deliberate, and less involved in the social world. Their lack of social involvement should not be interpreted as shyness or depression. Introverts need less stimulation than extraverts and more time alone (Shukla and Pradhan 2011).

Agreeableness This dimension refers to an individual's propensity to defer with others. Highly agreeable people are cooperative, warm, compassionate, and trusting. The trait reflects individual differences in general concern for social harmony.

Chart 11.4 Big Five theory

Agreeable individuals value getting along with others. They are generally considerate, friendly, generous, helpful, and willing to compromise their interests with others. Those who score low on this dimension are easily distracted, disorganized, and uncooperative.

Conscientiousness This dimension measures the reliability. A highly conscientious person is responsible, organized, dependable, and persistent. Conscientiousness suggests a preference for planned rather than spontaneous behavior. It influences the way in which we control, regulate, and direct our impulses. Conscientious individuals tend to avoid trouble and achieve high levels of success through purposeful planning. Those who score low on this dimension are easily distracted, disorganized, and unreliable.

Neuroticism This is marked by the tendency to experience negative emotions, such as anger, anxiety, or depression. People high in neuroticism are emotionally reactive and vulnerable to stress. They are more likely to interpret ordinary situations as threatening and minor frustrations as hopelessly difficult. Their negative emotional reactions tend to persist for unusually long periods of time, which means they are often in a bad mood. These problems in emotional regulation can diminish a neurotic's ability to think clearly, make decisions, and cope effectively with stress. At the other side, individuals who score low on neuroticism are less easily upset and are less emotionally reactive.

Openness to Experience This dimension involves appreciation for art, emotion, adventure, imagination, curiosity, and variety of experience (Costa and McCrae 1992). It addresses one's range of interests and fantasies with novelty. Extremely open people are curious, creative, and unconventional. People who are open to experience are appreciative of art and sensitive to beauty. They are more creative and more aware of their feelings. Those at the end of the openness category are conventional, down to earth, narrow hearted, limited, non-curious, and not interested to explore (Pervin and John 1997).

3   Research Methodology

The present research is exploratory in nature. It aims to establish relationship between personality traits and investment pattern of investors. An online survey with the help of questionnaire had been circulated to about 100 investors who had or had not invested in the stock market.

The investors had been classified according to various demographic characteristics such as gender, age group, income level, number of dependents, profession, and marital status. The data has been collected from both primary and secondary sources. Convenience sampling method had been used to collect data from 100 respondents.

The Big Five personality test has been incorporated to assess the personality of investors on parameters such as extraversion, agreeableness, conscientiousness, neuroticism, and openness. The study correlates personality traits with stock market investments, type and objective of investments, factors influencing investment, and so on.

The various statistical tools applied to test the degree of correlation between various variables are ANOVA, regression analysis, and frequency analysis to analyze the data collected through questionnaire.

Hypothesis

$H0_1$: There is no significant relationship between personality traits and investment pattern of investors in the stock market.

$H0_2$: There is no significant relationship between investors who have not invested in the stock market and their personality traits.

4   Findings and Discussion

A sample of 105 investors had been selected for the study. Out the total 105 respondents, 63 % were females and the remaining 37 % were males. The overall profile of the sample population is given in Appendix.

Impact of Age Group on Stock Market Investment The findings suggest that age group has a significant relationship with the stock market investment ($r=0.221$, $p<0.05$). The descriptive analysis also revealed that the age group of 18–28 years has 45 % investment, followed by respondents in the age group of 29–39 years having 44 % investment in the stock market.

Impact of Gender on Stock Market Investment The findings suggest that gender has a significant relationship with stock market investment ($r=0.197$, $p<0.0.05$). Male respondents have invested 63 % as against the female respondents who have invested 37 %.

Impact of Marital Status and Stock Market Investment The findings suggest that there exists no significant relationship between marital status and stock market investment ($r=0.154$, $p=0.117$).

Impact of Profession and Stock Market Investment The findings suggest that there exists no significant relationship between profession of respondents and stock market investment ($r=0.047$, $p=0.631$).

Impact of Number of Dependents on Stock Market Investment The findings suggest that there exists a significant relationship between number of dependents and stock market investment ($r=0.276$, $p<0.01$).

Impact of Income Level on Stock Market Investment There exists a significant relationship between income level and stock market investment ($r=0.235$, $p<0.05$). The descriptive analysis also suggests that the highest income category of investors have invested in greater frequency in the stock market (see Appendix).

Impact of Extraversion Personality Dimension and Stock Market Investment There exists a significant relationship between extraversion personality dimension and stock market investment ($r=0.281$, $p<0.01$).

Impact of Agreeableness Personality Dimension and Stock Market Investment There exists a significant relationship between agreeableness personality dimension and stock market investment ($r=0.289$, $p<0.01$).

Impact of Conscientiousness Personality Dimension and Stock Market Investment There exists a significant relationship between conscientiousness personality dimension and stock market investment ($r=0.295$, $p<0.01$).

Impact of Neuroticism Personality Dimension and Stock Market Investment There exists a significant relationship between neuroticism personality dimension and stock market investment ($r=0.269$, $p<0.01$).

Impact of Neuroticism Personality Dimension and Stock Market Investment There exists a significant relationship between neuroticism personality dimension and stock market investment ($r=0.270$, $p<0.01$).

The study found a significant relationship between demographic profile of the investors and their investment in the stock market. Male investors invest more in the stock market as compared to female investors who are more risk averse. Odean and

Barber's (2001) landmark study, "boys will be boys," states that men are more susceptible to overconfidence, and hence they trade and invest more in the stock market. Researchers found that a single man has traded 67 % more than a single woman. Overconfident males have burned their wealth more as compared to women.

Also, it has been found that apart from the model-based analysis (fundamental analysis), a number of behavioral factors also influence the investors decision to invest in the stock market. Behavioral finance is an area which brings to light a number of behavioral factors impacting the investment decision of investors. Personality dimensions such as extraversion, agreeableness, conscientiousness, neuroticism, and openness, Big Five Model of personality traits, have been found to be significant in the stock market investment. These personality traits do impact the investment in the stock market.

Therefore, it is often said that markets are driven by sentiments. Pompian (2006) in his book, *Behavioral Finance and Wealth Management*, had said that academicians and practitioners from the "standard finance" camp are not convinced that personality traits and human emotion affect the investment behavior of investors.

Behavioral finance adherents, on the contrary, believe that psychological factors play a role in the investment decision of individuals. The present study concludes that both demographic and psychological factors influence an investor's decision to put money in the stock market.

5   Future Research

Many other Behavioral Models such as Bailard, Biehl, and Kaiser Five-Way Model can be used for future research. The model can be used by the researcher to interpret how confident an investor approaches life in general—including money matters—and when negotiating with a wide array of choices, whether he is self-assured or suffers from anxiety. It also tells us about the other characteristics of an investor such as if he is careful, methodical, emotional, intuitive, and impetuous.

References

Bailard B, Kaiser. Personal money management

Barber B, Terrance Odean T (2001) Boys will be boys: gender, overconfidence and common stock investment. Q J Econ 116(1):261–292

Buss DM (1996) Social adaptation and five major factors of personality. In: Wiggens JS (ed) The five factor model of personality, theoretical perspectives. Guilford, New York, pp 108–207

Costa PT, McCrae RR (1985) As cited in John OP, Donahue EM, Kentle RL (1991) The big five inventory – versions 4a and 54, manual, Institute of Personality and Social Research. University of California, Berkeley

Costa PT Jr, McCrae RR (1985–1987) As cited in John OP, Donahue EM, Kentle RL (1991) The big five inventory – versions 4a and 54, manual, Institute of Personality and Social Research, University of California, Berkeley

Costa PT Jr, McCrae RR (1985–1992) As cited in John OP, Donahue EM, Kentle RL (1991) The big five inventory – versions 4a and 54, manual, Institute of Personality and Social Research, University of California, Berkeley

Costa PT Jr, McCrae RR (1988) From catalog to classification: Murray's needs and the five-factor model. J Pers Soc Psychol 55:258–265

Costa PT Jr, McCrae RR (1992) Neo PI-R professional manual 10. Psychological Assessment Recourses, Inc., Odessa

Costa PT Jr, McCrae RR (1994) As cited in John OP, Donahue EM, Kentle RL (1991) The big five inventory – versions 4a and 54, manual, Institute of Personality and Social Research, University of California, Berkeley

Costa PT Jr, Terracciano A, McCrae RR (2001a) Gender differences in personality traits across cultures: robust and surprising findings. J Pers Soc Psychol 81(2):322–331

Costa PT et al (2001) As cited in Zentner M, Rebecca LS (eds) (2012) Handbook of temperament. The Guilford Press. A Division of Guilford Publications, Inc, New York

Digman JR (1990) An alternative description of personality; the big five factor structure. J Pers Soc Psychol 59:1216–1229

Duval TS, Silvia PJ (2002) Self-awareness, probability of improvement, and the self-serving bias. J Pers Soc Psychol 82:49–61

Ewen RB (1998) Personality: a topical approach. Erlbaum, Mahwah

Fabozzi FJ (2008) The handbook of finance, vol 2, Investment management and financial management. Wiley, London

Festinger L (1957) A theory of cognitive dissonance. Stanford University Press, Stanford

Fiske DW (1948) Consistency of the factorial structures of personality ratings from different sources. J Abnorm Soc Psychol 44:329–344

Goldberg, Chock, Comrey, Digman (1981) As cited in John OP, Donahue EM, Kentle RL (1991) The big five inventory – versions 4a and 54, manual, Institute of Personality and Social Research, University of California, Berkeley

Graham B (1973) The intelligent investor. McGraw Hill, New York

Inman JJ, Zeelenberg M (2002) Regret repeat versus switch decisions: the attenuation role of decision justifiability. J Consum Res 29:116–128

Jay R (2003) Behavioral finance. Pac Basin Finan J 11(4):429–437

John OP (1990) The big five factor taxonomy; dimensions of personality in the natural language and in questionnaires. In: Pevlin LA (ed) Handbook of personality theory and research. Guilford, New York, pp 66–100

Kahneman D, Taversky A (1979) Prospect theory: an analysis of decision under Risk. Econometrica 47:263–291

Loehlin JC (1992) Genes and environment in personality development. C.A. Sage, Newberry Park

Mahajan J (1992) The overconfidence effect in marketing management predictions. J Mark Res 29(3):329–342

McCrae R (1987) Creativity, divergent thinking and openness to experience. J Pers Soc Psychol 52:1258–1265

McCrae R (1989) As cited in Shukla P, Pradhan M (2011) Modifying risk taking behaviour to prevent HIV, Ph.D thesis, Department of Psychology, University of Lucknow

McCrae RR, Costa PT Jr (1990) As cited in Shukla P, Pradhan M (2011) Modifying risk taking behaviour to prevent HIV, Ph.D thesis, Department of Psychology, University of Lucknow

McCrae RR, Costa PT Jr (1997) Personality trait structure as a human universal. Am Psychol 52:509–516

McCrae RR, Costa PT Jr (1999) A five-factor theory of personality. As cited in Pervin LA, John OP (eds) Handbook of personality: theory and research. Guilford Press, New York, pp 139–153

McCrae RR, Costa PT Jr (2003) As cited in Shukla P, Pradhan M (2011) Modifying risk taking behaviour to prevent HIV, Ph.D thesis, Department of Psychology, University of Lucknow

McCrae RR, Costa PT Jr, Pedroso de Lima M, Simoes A, Ostendorf F, Angleitner A, Marusic I, Bratko D (1999) Age differences in personality across the adult life span: parallels in five cultures. Dev Psychol 35(2):466–477

McCrae RR et al (2000) As cited in Shukla, Priyanka Pradhan, Madhurima (2011) Modifying risk taking behaviour to prevent HIV, Ph.D. Thesis, Department of Psychology, University of Lucknow

McCrae RR, Jang KL, Livesley WJ, Riemann R, Angleitner A (2001) Sources of structure: genetic environmental, and Arti-factual influences on the Co-variation of personality traits. J Pers 69:511–535

McCrae, R.R., & Costa, P.T. Jr. (2003) As cited in Shukla, Priyanka. & Pradhan, Madhurima. (2011). Modifying Risk Taking Behaviour to Prevent HIV, Ph.D Thesis, Department of Psychology, University of Lucknow.

McCrae RR, Costa PT Jr. (2008) Empirical and theoretical status of the five-factor model of personality traits. In: Boyal GJ, Matthews G, Saklofske DH (eds) The sage handbook of personality theory and assessment: personality theories and models, vol 1. Sage, Thousand Oaks, pp 73–294

Miller D, Ross M (1975) Self-serving biases in the attribution of causality: fact or fiction? Psychol Bull 82:213–225

Mills JA (1999) A history of behavioral psychology. New York University Press, New York

Odean T (1999) Do investors trade too much? Am Econ Rev 89(5):1279–1298

Pervin LA, John OP (1997) Handbook of personality, theory and research. Guilford, New York, pp 66–100

Pompian M (2006) Behavioral finance and wealth management. Wiley

Riccardi V, Simon HK (2000) What is behavioral finance? Bus Educ Technol J (Fall):1–8

Ross SA et al (2004) Corporate finance, 7th edn. McGrawHill Publication, New York

Selden G (1912) Psychology of stock market: human impulses lead to speculative disasters. Ticker Publishing Company, New York

Shefrin H (2002) Beyond greed and fear: understanding behavioral finance and the psychology of investing. Oxford University Press, Oxford

Shefrin H, Statman M (1985) The disposition to sell winners too early and ride losers too long: theory and evidence. J Financ 40:777–790

Shukla P, Pradhan M (2011) Modifying risk taking behaviour to prevent HIV. Ph.D thesis, Department of Psychology, University of Lucknow

Soldz S, Vailliant GE (1999) The big five personality traits and the life course; a 45 year longitudinal study. J Res Personal 33:206–232

Statman M (1999) Behavioral finance: past battles, future engagements. Fin Anal J 55(6):18–27

Statman M (2008) Countries and culture in behavioral finance. CFA Institute Conference Proceedings Quarterly 25(3)

Stephen AR (1987) The interrelations of finance and economics: theoretical perspectives. Am Econ Rev 77(2):29–34

Taversky A, Kahneman D (1974) Judgment under uncertainty: heuristics and biases. Science 185:1124–1131

Victor R, Simon Helen K (2000) What is behavioral finance. Bus Educ Technol J 2(2):1–9

Zeelenberg M et al (1996) Consequences of regret aversion: effects of expected feedback on risky decision making. Organ Behav Hum Decis Process 65:145–158

Zeelenberg M, Beattie J (1997) Consequences of regret aversion 2: additional evidence for effects of feedback on decision making. Organ Behav Hum Decis Processes 67:63–78

Zeelenberg M et al (1998) Emotional reactions to the outcomes of decision: the role of counterfactual thought in the experience of regret. Organ Behav Hum Decis Process 75:117–141

Zuckerman M (1979) Attribution of success and failure revisited, or: the motivational bias is alive and well in attribution theory. J Pers 47:245–287

Chapter 12
Brand Trust and Country of Origin: Pointers for Research in an Emerging Market

Harvinder Singh

Abstract Brand trust and country of origin have been explored deeply in academic research, but there are few researches linking both. The present study is an empirical investigation of the same based on brand trust rankings of India's 100 most trusted brands for four consecutive years. The rankings were done by India's leading market research agency in collaboration with India's leading business newspaper, covering over 8,000 respondents each year from different socioeconomic segments of India. Four data sets corresponding to 4 years were subjected to Mann-Whitney U test and t-test to investigate the relationship. This study indicates that there is no difference in brand trust rankings of Indian and foreign brands, indicating the neutral attitude of Indian consumer towards country of origin in terms of trust in a brand. These results are a good starting point for a series of researches which explores this hypothesis more conclusively in the Indian context.

1   Introduction

Global brands have made their mark in emerging markets though the converse rarely happens. Still the world of marketing is yet to arrive at a definite conclusion as to whether global brands perform better or local. Advocates of "global branding" posit it as a natural consequence of increasingly integrated and globalized markets that tend to get more "homogenized" or "standardized" in their preferences (Levitt 1993). Operationalizing a global branding strategy is easier since the distance has died due to advent of technology and the barriers between the developed and the developing economies have reduced in a "flat" world (Friedman 2005). A rival stream of thought argues that despite globalization,

H. Singh (✉)
Marketing Area, Institute of Management Technology (IMT), Ghaziabad, India
e-mail: singhharvinder1974@gmail.com

technology and convergence markets still retain their individuality making a strong case for "local branding." It has been declared that "It is time to rethink global branding" (Holt et al. 2004).

The information or perception regarding country of origin of a brand (whether global or local) is a vital input that goes into defining the personality of a brand. It is important for marketers because it helps in differentiating similar products (Biel 1993; Wang and Yang 2008). Brands get a competitive advantage due to their personality (Aaker 1996). Brand personality evokes trust for the brand among consumers (Hess et al. 2007; Louis and Lombart 2010). Since brand trust leads to attachment towards commitment and loyalty (Louis and Lombart 2010), it becomes important for marketers to understand what determines or affects brand trust. The present study examines the data already available in the public domain to test relationship between brand trust and country of origin of a brand. Findings of this research would be a pointer to a series of studies to be conducted in the future that establish possible relationship between these two constructs.

2 Research Objective

Feeling of trust among consumers of brands offers a host of advantages to the brand. Brand loyalty is one of these advantages (Lau and Lee 1999). Brand trust also leads to a higher share of the market and better returns of advertising expenditure (Chatterjee and Chaudhuri 2005). It is also an important indicator of brand equity (Ambler 1997). Due to obvious advantages offered by it, firms handle the development of brand trust as a key activity. However, it is imperative to have an insight into what goes into developing trust. Apart from other attributes, personality of the brand also plays a significant role. Consumers tend to seek brands that compliment their personality. Personality of a brand is, in turn, shaped by a number of factors including brand demographics. Country of origin of a brand is a key variable in brand demographics (Thakor and Kohli 1996). Thus, country of origin theoretically contributes to the development of brand trust through a hierarchy of relationships. Objective of this study is to find empirical evidence of this relationship using set of data available in public domain.

The research aims at examining the relationship between the country of origin of a brand and the trust that consumers exhibit in that brand. The null hypothesis for this research is:

H_0 = There is no significant difference between the trust rankings of Indian brands and the foreign brands.
H_1 = There is significant difference between the trust rankings of Indian brands and the foreign brands.

3   Review of Literature

Branding has emerged as a priority for business organizations since it is a valuable intangible asset of the organization. During the past few decades, academic researchers have explored a number of different subthemes in branding (Keller and Lehmann 2006). Country of origin (COO) of a product of brand is a specific subtheme of branding and international marketing. It is also a very well-researched topic with studies relating to COO running into hundreds (Rosenbloom and Haefner 2009). The present study aims to examine the relationship between brand trust and country of origin. The relationship between the two is not well researched in academic literature. Hence, this study fills a significant gap.

3.1   *Brand Trust*

Successful marketing depends on development of a strong bond between a brand and its consumers. Trust in the brand is a prerequisite for this to happen. A number of studies have been carried out globally exploring different aspects of trust. Being of general nature, most of these are from diverse disciplines like sociology, psychology, organizational behavior, ethics, etc. Studies relating to trust in the area of marketing and specifically brand trust are very few.

Trust is a diverse concept and can be studied as an attribute of the individual, an attribute relevant for interpersonal interactions, and also an attribute that is institutional in nature (Lewicki and Bunker 1995). Therefore, trust may be defined in more than one way. Trust is defined as "a generalized expectancy held by an individual or group that a word, promise, verbal or written statement of another individual or group can be relied on" (Rotter 1971). Specifying the "expectancy" clearly, in terms of security against hurt and harm, trust is defined as "the mutual confidence that no party to an exchange will exploit another's vulnerabilities" (Barney and Hansen 1994). Highlighting the positive aspects of trust, Bhattacharrya et al. (1998) define trust as "an expectancy of positive (or nonnegative) outcomes that one can receive based on the expected action of another party in an interaction characterized by uncertainty."

It is important to study trust in the context of brands as development of brand would carry no meaning if these do not evoke trust among the customers. This trust makes a customer believe that the company representing the brand would meet the expectations that he/she (the customer) had set on the basis of his/her past experiences with the brand. This belief is set in the context of a purchase situation characterized by uncertainty, vulnerability, and lack of control and independent-mindedness of the transaction partner (Sichtmann 2007).

Trust has also been studied in the context of relationship marketing. The commitment-trust theory of relationship marketing emphasizes that networks that

are high on commitment and trust produce cooperation resulting in improvement of overall network performance (Morgan and Hunt 1994). Doney and Cannon (1997) discussed trust in a more specific context of buyer-seller relationship. Relationship between brand trust and brand loyalty has been explored by Lau and Lee (1999). Chaudhuri and Holbrook (2001) examined the interaction between brand trust, brand effect, and brand performance as a chain effect. Impact of brand trust on consumer price sensitivity has been explored by Erdem et al. (2002). Studying differences across consumer segments, Garbarino and Johnson (1999) examined the roles of trust (along with satisfaction and commitment) for relational and transactional consumers, whereas a somewhat restricted study about relation exchanges by Sirdeshmukh et al. (2002) studied the relationship between (consumer) trust, value, and loyalty. Concept of trust embodies a situation involving two exchange partners: the organization (sponsoring the brand) and the consumer (Sichtmann 2007).

Touching the measurement part of brand trust, a number of studies have been carried out on brand trust scales. These include work on a multidimensional brand trust scale (Gurviez and Korchia 2003) and its application across product categories (Delgado-Ballester and Munuera-Aleman 2001, 2002). Other works on measurement scales for trust include those of Hess (1995) and Johnson-George and Swap (1982).

3.2 Country of Origin

There are three sets of definitions for "country of origin," depending on the perspective in which the products are observed. First perspective relates to the overall image of country in general; second perspective is the aggregate product-country image as reflected in a typical "made in xyz country" impression cutting across product categories; third perspective is the specific product-country image in which the customer associates a unique product with a unique country (Hsieh 2004). The definitions vary in terms of the object which is to be evaluated in terms of COO. Another research talks about macro and micro country image (Pappu et al. 2006).

Starting from Dichter (1962) who suggested a relationship between country of origin of a product and its success, academic research has explored different perspectives of this concept. From an information theoretic perspective, products carry two types of information cues that customer use for evaluation purpose: intrinsic (taste, design, fit) and extrinsic (price, brand name, warranties) (Bilkey and Ness 1982). Country of origin is an extrinsic cue that influences quality perception of customers Olson and Jacob (1972). A number of studies have established that country of origin does affect product evaluation by the customer (Schooler 1965; Bannister and Saunders 1978; Bilkey and Ness 1982; Hong and Robert 1989; Peterson and Jolibert 1995; Balabanis and Diamantopoulos 2004).

Consumer evaluation depends on the interaction of cognitive, affective, and normative aspects of the country of origin (Verlegh and Steenkamp 1999). A relationship is observed between level of economic development of a country and evaluation of product originating from that country (Schooler 1971). However, products

from all developed countries are not considered at the same level when evaluated by consumers (Nagashima 1970; Bannister and Saunders 1978). Customer's attitude towards a country may change with time resulting in change in evaluation (Nagashima 1977; Dornoff et al. 1974). Consumers tend to place their own country's products at a relatively higher level while making such evaluations (Bannister and Saunders 1978; Botschen and Hemetsberger 1998). This tendency has been researched under the themes "ethnocentrism" and "domestic country bias" (Shimp and Sharma 1987; Balabanis and Diamantopoulos 2004). Consumers coming from different countries may evaluate product coming from a single country in a different manner. Impact of country of origin also depends on the nature of products. It is more pronounced in the case of consumer goods as compared to industrial goods (Verlegh and Steenkamp 1999). Since manufacturing activities of most multinationals are spread across multiple countries, products may be classified either non-hybrid or hybrid in terms of their country of origin. Consumers give different response to hybrid and non-hybrid products (Chao 1993).

However, much of the research on country of origin loses its sheen when we realize that customers either fail to recognize the country of origin of a brand or infer an incorrect one from the brand name (Samiee et al. 2005). Hence, ability of the consumer to recognize the country of origin of the product/brand becomes an important factor.

4   Research Methodology

The present study is a cross-sectional descriptive research based on data available in public domain. The study is based on brand trust rankings for 100 most trusted brands of India as released by The Economic Times, one of the India's leading business newspapers. The survey is conducted by The Nielsen Company, India's leading Market Research Company.

The original survey is based on responses of more than 8,000 consumers from all socioeconomic classifications, age, income, and geographies and is conducted every year. Starting from a list of hundreds of brands, including both consumer products and services, the brands were evaluated on a predefined set of parameters.

The outcome of this survey was a list of 100 brands with their trust ranking ranging from 1 to 100, brands ranked 1 being the most trusted brand and the one ranked 100 meant the least trusted brand in the bunch of 100 brands (ET Bureau 2009, 2010, 2011, 2012).

Information on country of origin for these brands was collected from the company websites and other secondary sources. For the purpose of this, an Indian (local) brand is defined as the one that exists/sold only in India even if it belongs to a multinational firm (Wolfe 1991; Schuiling and Kapferer 2004). In this research a brand is considered Indian even if it was later on sold in other countries. Alternatively a foreign brand is the one that was originally launched in a market other than India though it might have come to India later on.

For the present research, brand trust survey list for four consecutive years (2009, 2010, 2011, and 2012) was taken. Analysis was done at two levels. At the first level, independent analysis of brand trust rankings for the 4 years was done on each of the four samples using a two-independent-sample Mann-Whitney U test. Subsequently average ranking of the Indian and foreign brands for the four samples was tested using a two-independent-sample t-test.

5   Analysis and Results

The analysis results are based on four samples of 100 brands, each relating to the years 2009, 2010, 2011, and 2012. All the brands were classified either as Indian or foreign. Details of brands are as follows (Table 12.1).

A cursory look at the data indicates that there are more foreign brands in the list of 100 most trusted brands, prompting one to believe that foreign brands are trusted more than the Indian brands. Similarly Indian brands have a higher average ranking as compared to the foreign brands leading people to believe that Indian brands are ranked lower by the Indian consumers. However, it needs to be checked whether the difference in numbers is statistically significant. Another issue to factor is the magnitude of ranking as brands, despite being less in number, could be equally or more trusted if they win higher rankings. To answer this one must know whether the medians of the two categories of brands (Indian and foreign brands) are significantly different (Israel 2008). This is done by applying the Mann-Whitney U test.

Results of the test for four consecutive years gave following results (Table 12.2).

Since all the calculated values of Z lie within the tabulated range of +1.96 at 5 % level of significance, H_0 is rejected. The alternative hypothesis which says that there is no difference in brand trust ranking of Indian and foreign brands is therefore accepted.

Table 12.1 Statistical highlights of brand trust rankings

	2009	2010	2011	2012
Indian brands	49	45	45	42
Foreign brands	51	55	55	58
Av. ranking of Indian brands	54.67	55.84	54.68	54.62
Av. ranking of foreign brands	46.49	46.13	47.08	47.52

Table 12.2 Results of Mann-Whitney U test

	2009	2010	2011	2012
Mann-Whitney U	1,045	997	1,049	1,045
Wilcox on W	2,371	2,537	2,589	2,756
Z value	−1.410	−1.666	−1.303	−1.208
Significance	0.159	0.096	0.193	0.227

Table 12.3 Results of *t*-test

	2009	2010	2011	2012
t-statistic with 98 d.f. at 5 % level of significance	1.417	1.686	1.311	1.211
Significance	0.160	0.095	0.193	0.229
F-statistic	0.151	1.218	1.951	1.881
Significance	0.698	0.272	0.166	0.173

To test statistical significance of average rank of the Indian and the foreign brands, *t*-test was applied. Data for the 4 years were subjected to the test and the following results were received (Table 12.3).

A look at the series of F- and t-statistic and their significance level indicates that H_0 is accepted which states that average brand trust ranking of Indian and foreign brands is the same.

6   Discussion on Results

Though more number of foreign brands find a place in India's 100 most trusted brand rankings and their average ranking is also less as compared to the Indian brands, results of the study indicate that the differences are statistically insignificant. These results seem to be in contradiction with the vast body of research on the topic that considers country of origin to be significant. However, a deeper investigation might yield meaningful implications. These results can also be seen in the perspective of an increasingly networked global economy and social systems. As a result of greater interaction between people, the extreme feelings of "ethnocentrism" and preference for brands from developed world are expected to converge into a more homogenized and standard response towards the brands.

7   Pointers for Future Research

The aggregate results obtained from this research indicate that India and foreign brands across a range of products and services are trusted equally by the Indian consumers. It is a good piece of information for the global brands who wish to enter Indian market as the Indian consumer is not ethnocentric in her approach. It is good news for the Indian brands as well since it gives them a level-playing field in terms of country of origin perception of consumers. The study indicates that Indian consumers are not overawed by the international brands and equally trust Indian brands. In the future the market shall get more homogenized and consumers would prefer standard products and brands. In a way, results of this study build a case for investing in development of global brands. However, these results come with a caution that future studies need to address to.

Country of origin is an absolute fact but consumer response to it is a function of consumer's awareness of the fact. Since the survey was a general survey on brand trust, it is safe to presume that students were not specifically informed about the actual country of origin. There could be global brands whom some of the respondents perceive to be local and vice versa. Hence, this study actually explored the perceived country of origin and not the real country of origin. Interesting patterns can emerge if a set of respondents is also asked to identify the country of origin of the brands (in addition to giving the trust rating). Analyzing the responses from the two sets of respondents (the ones who identified COO correctly and otherwise) can provide interesting insights.

Trust for a brand is shaped by a number of factors operating simultaneously and is the net outcome of interaction between them; outcome of this study could be a result of the influence of the other factors that neutralized the impact of country of origin. But as a stand-alone parameter, country of origin does seem to be a neutral parameter. Future studies on can extend the theme by covering a wider range of factors simultaneously and find out the relative significance of each, including the country of origin.

Sample of brands for the present study comprised of brands representing different product categories, all of which have different levels of involvement of consumers. Consumers do not involve themselves with equal intensity while evaluating brands in different product/service categories. Decomposing the available ranking data into rankings for different product/service categories could provide useful insights. It may so happen that country of origin turns out to be a proper determinant of brand trust in the case of some product/service categories. It is another pointer for future research.

References

Aaker DA (1996) Building strong brands. The Free Press, New York

Ambler T (1997) How much of brand equity is explained by trust? Manag Decis 35(4): 283–292

Balabanis G, Diamantopoulos A (2004) Domestic country bias, country of origin effect, and consumer ethnocentrism. Acad Mark Sci J 32(1):80–91

Bannister JP, Saunders JA (1978) UK consumers' attitude towards imports: the measurement of national stereotype image. Eur J Mark 12(8):562–570

Barney J, Hansen M (1994) Trustworthiness as a source of competitive advantage. Strateg Manag J 15(winter special issue):175–290

Bhattacharrya R, Devinney T, Pilluta M (1998) A formal model of trust based on outcomes. Acad Manage Rev 23(3):459–472

Biel AL (1993) Converting image into equity. In: Aaker DA, Biel AL (eds) Brand equity and advertising. Lawrence Erlbaum Associates, Hillsdale, pp 67–83

Bilkey W, Nes E (1982) Country of origin effects on product evaluation. J Int Bus Stud 8(1):89–99

Botschen G, Hemetsberger A (1998) Diagnosing means-end structures to determine the degree of potential marketing program standardization. J Bus Res 42(2):151–159

Chatterjee S, Chaudhuri A (2005) Are trusted brands important? Mark Manag J 15(1):1–16

Chao P (1993) Partitioning country-of-origin effects: consumer evaluations of a hybrid product. J Int Bus Stud 24(2):291–306

Chaudhuri A, Holbrook MB (2001) The chain of effects from brand trust and brand affect to brand performance: the role of brand loyalty. J Mark 65(2):81–93

Dellgado-Ballester E, Munuera-Aleman JL (2001) Brand trust in the context of consumer loyalty. Eur J Mark 35(11/12):1238–1258

Delgado-Ballester E, Munuera-Aleman JL (2002) Development and validation of a brand trust scale across product categories: a confirmatory and multigroup invariance analysis. In: Evans KR, Scheer LK (eds) Proceedings of the American Marketing Association Winter Educators' Conference. American Marketing Association, Chicago, pp 519–520

Dichter E (1962) The world customer. Harv Bus Rev 40(4):113–122

Doney PM, Cannon JP (1997) An examination of the nature of trust in the buyer-seller relationship. J Mark 61(2):35–51

Dornoff RJ, Tankersley CB, White GP (1974) Consumer's perception of imports. Akr Bus Econ Rev Summer:26–29

Erdem T, Swait J, Louviere J (2002) The impact of brand credibility on consumer price sensitivity. Int J Res Mark 19(1):1–19

ET Bureau (2009) Methodology of most trusted brands 2009 survey. The Economic Times, July 1. http://articles.economictimes.indiatimes.com/2009-07-01/news/27657732_1_brands-survey-brand-equity-service-brands. Accessed 7 Feb 2013

ET Bureau (2010) What does it take to be among the most trusted brands? The Economic Times, 31 Aug. http://articles.economictimes.indiatimes.com/2010-08-31/news/27568961_1_host-of-eligible-brands-brand-equity-consumers-trust. Accessed 10 Apr 2013

ET Bureau (2011) Most trusted brands 2011: how we did it? The Economic Times. 28 Sep http://articles.economictimes.indiatimes.com/2011-09-28/news/30212771_1_brands-survey-brand-equity-service-brands. Accessed 12 Apr 2013

ET Bureau (2012) Most trusted brands 2012: how the ranking was decided? The Economic Times. 7 Nov http://articles.economictimes.indiatimes.com/2012-11-07/news/34970739_1_brand-equity-general-category-respondent-types. Accessed 12 Apr 2013

Friedman T (2005) The world is flat. Farrar, Straus and Giroux, New York

Garbarino E, Johnson MS (1999) The different roles of satisfaction, trust, and commitment in customer relationships. J Mark 63(2):70–87

Gurviez P, Korchia M (2003) Proposal for a multidimensional brand trust scale. Paper presented at 32nd EMAC conference, marketing: responsible and relevant? Glasgow, 20–23 May

Hess JS (1995) Construction and assessment of a scale to measure consumer trust. In: Stern B, Zinkhan G (eds) Proceedings of the American Marketing Association Educators' conference, vol 6. American Marketing Association, Chicago, pp 20–26

Hess S, Bauer H, Kuester S, Huber F (2007) In brand we trust: marketing's impact on service brand personality and trust. CD-ROM, Proceedings of the 36th EMAC Colloquium, Reykjavik, May, Iceland

Holt D, Quelch J, Taylor E (2004) How global brands compete. Harv Bus Rev 82(9):68–75

Hong ST, Robert SW (1989) Effects of country-of-origin and product-attribute information processing perspectives. J Consum Res 16(2):175–187

Hsieh M (2004) An investigation of country-of-origin effect using correspondence analysis: a cross-national context. Int J Mark Res 46(3):267–295

Israel D (2008) Data analysis in business research: a step-by-step nonparametric approach. Response Books, New Delhi

Johnson-George G, Swap WC (1982) Measurement of specific interpersonal trust: construction and validation of a scale to assess trust in a specific other. J Pers Soc Psychol 43(6): 1306–1317

Keller KL, Lehmann DR (2006) Brands and branding: research findings and future priorities. Mark Sci 25(6):740–759

Lau G, Lee S (1999) Consumers' trust in a brand and the link to brand loyalty. J Mark Focus Manag 4(4):341–370

Levitt T (1993) The globalization of markets. In: The marketing imagination. New York, The Free Press, 20–49

Lewicki RJ, Bunker BB (1995) Trust in relationships: a model of trust development and decline. In: Bunker BB, Rubin JZ (eds) Conflict, cooperation and justice. Jossey-Bass, San Francisco, pp 133–173

Louis D, Lombart C (2010) Impact of brand personality on three major relational consequences (trust, attachment, and commitment to the brand). J Prod Brand Manag 19(2):114–130

Morgan RM, Hunt SD (1994) The commitment-trust theory of relationship marketing. J Mark 58(3):20–38

Nagashima A (1970) A comparison of Japanese and US attitudes towards foreign product. J Mark 34(1):68–74

Nagashima A (1977) A comparative 'made in' product image survey among Japanese businessmen. J Mark 41(3):95–100

Olson JC, Jacob J (1972) Cue utilization in the quality perception process. In: Venkatesan M (ed) Proceedings of the third annual conference of the association of consumer research. Association for Consumer Research, Chicago, pp 167–179

Pappu R, Quester P, Cooksey R (2006) Country image and consumer-based brand equity: relationships and implications for international marketing. J Int Bus Stud 38(5):726–745

Peterson RA, Jolibert AJP (1995) A meta-analysis of country-of-origin effects. J Int Bus Stud 26(4):83–101

Rosenbloom A, Haefner J (2009) Country-of-origin effects and global brand trust: a first look. J Glob Mark 22(4):267–278

Rotter J (1971) Generalized expectancies for interpersonal trust. Am Psychol 26(5):443–452

Samiee S, Shimp T, Sharma S (2005) Brand origin recognition accuracy: its antecedents and consumers' cognitive limitations. J Int Bus Stud 36(4):379–397

Schooler RD (1965) Product bias in the Central American common market. J Mark Res 2(4):394–397

Schooler R (1971) Bias phenomena attendant to the marketing of foreign goods in the US. J Int Bus Stud 2(1):71–81

Schuiling I, Kapferer J-N (2004) Real differences between local and international brands: strategic implications for international marketers. J Int Mark 12(4):97–112

Shimp TA, Sharma S (1987) Consumer ethnocentrism: construction and validation of the CETSCALE. J Mark Res 24(3):280–289

Sichtmann C (2007) An analysis of antecedents and consequences of trust in a corporate brand. Eur J Mark 41(9/10):999–1015

Sirdeshmukh D, Singh J, Sabol B (2002) Consumer trust, value, and loyalty in relational exchanges. J Mark 66:15–37

Thakor MV, Kohli CS (1996) Brand origin: conceptualization and review. J Consum Mark 13(3):27–42

Verlegh PWJ, Steenkamp JEM (1999) A review and meta-analysis of country-of-origin research. J Econ Psychol 20(5):521–546

Wang X, Yang Z (2008) Does country-of-origin matter in the relationship between brand personality and purchase intention in emerging economies?: evidence from China's auto industry. Int Mark Rev 25(4):458–474

Wolfe A (1991) The single European market: national of euro-brands. Int J Advert 10(1):49–58

Chapter 13
Capturing Indian Rural Market Through a Proactive Tool: Reverse Innovation

Rati Dhillon

Abstract Reverse innovation defines to the case where an innovation is acquired first in emerging economies before tricking up to rich nations. The reverse innovation concept that is spreading from developing to developed economies has been introduced by Immelt et al. (Harv Bus Rev 87:56–65, 2009) presently. Given its originality the reverse innovation concept still required to be combined with literature on features, diffusion, and the locus of innovation. Although example of reverse innovation are rare as it is still developing theoretical questions such as what types of innovations are probably spawn by the developing economies, why such innovations might spread to rich nations, what are the competitive benefits obtained by foreign and local companies to have fun in this process and how it influences the worldwide strategy and organization of multinational enterprises. Reverse innovation highlights in rich nations and sells their products in poor nations. Reverse innovation is performing the opposite. Reverse innovation also highlights the importance for reduced price point innovations emerging in developing globe to produce new market request back in richer economies. Reverse innovations also have global influence. Mainly, they have the importance to migrate from poor nations to rich ones. Reverse innovation needs a varied mindset flow of work and altogether paces for economically and socially consistent outcomes to develop. Reverse innovation fights to provide a powerful message because the data it provides is proper but not varied or new. Reverse innovation has two fundamental objectives: first is to support the organizations to grasp the theory underlying the process of reverse innovation and second is to offer them with practical guidance on how to perform the initiatives of reverse innovation. This study discusses in detail about the concept of reverse innovation, investigates its application in various industries in real time (Godrej, Tata Motors, and Philips), and explores how it can extend and enrich the mainstream theories of innovation. If understood and applied in a right way, reverse innovation strategy can play a significant role in today's recovering markets. This is one area which is still unexplored. When world over is recovering, it is important to know that there lies a vast opportunity in exploring this new area in rural India.

R. Dhillon (✉)
Bharati College, University of Delhi, New Delhi, India
e-mail: ratidhillon@gmail.com

Reverse innovation can help us understand and tap rural market in India in a better way. This paper is an attempt to highlight some of the major benefits of adopting this marketing strategy and what should be future approach for this type of marketing strategy.

Keywords Reverse innovation • Diffusion • Developing nations • Price point • Tapping markets

1 Introduction

1.1 Overview of Reverse Innovation

According to I2B (2011), reverse innovation is an innovation strategy used mainly in developing areas and then using these marketing/distributing innovations in developed areas. Several firms are emerging products in developing countries like India and China and then spreading them worldwide. The major part of reverse innovation is the gap in income that occurs between the developed nations and developing markets. There is no path to configure a product for the mass market of America and then merely modify it for the mass market of India or China. In poorer nations, buyers request solutions on a wholly varied curve of cost performance. They request high technology new solutions that provide ultra low prices and good enough quality. Reverse innovation is not good to have an increase in the growth rates of revenue.

Govindarajan (2012a) mentioned that an MNC learns to produce successful innovations in developing markets and then exports that knowledge and innovations to developed nation with new possibilities of business instantly. The restrictions inflicted by its traditional actions become surmountable and the firm can reimagine all its products and attack new areas in search of the development. But few organizations experience this type of reconnaissance because reverse innovation where emerging nations in a developing market persuade them to move upward to Western areas possesses massive challenges. It needs a firm to overcome its superior logic. Typically, reverse innovation includes major alterations to move out the old structures of organization to make new ones from scratch, manufacturing processes, reorienting sales force, and revamping the development of the product. Reverse innovation will enhance the future not just in poor nations but also everywhere. Several immense rich world opportunities of business will develop in poor nations also. To compete, worldwide corporations must be as lithe in innovating abroad as they are at home.

1.2 Evolution of Reverse Innovation

The journey of globalization of multinationals in America followed the process of evolution since it can be viewed in varied phases. The below figure shows the evolution of reverse innovation.

THE AMERICAN MULTINATIONAL APPROACH TO EMERGING MARKETS(EM)
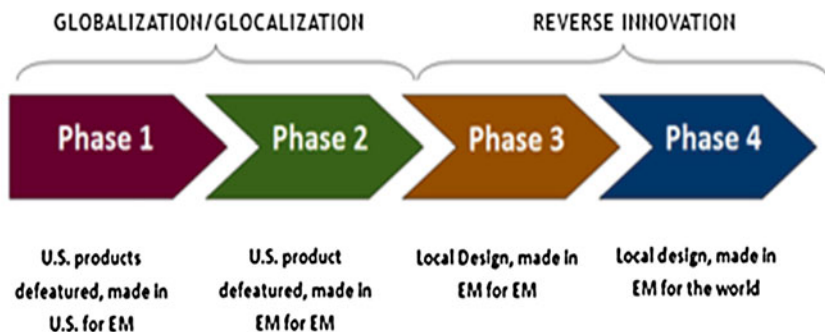
Fig. 13.1 Evolution of reverse innovation (Source: tuck.dartmouth.edu)

From the Fig. 13.1, each phase is described briefly below:

1.2.1   First Phase: Globalization

MNCs enhance the unparalleled scale economies by selling both the services and products all around the globe. Innovation first appeared at the house and then, new offerings were spread all over the world (Govindarajan and Tremble 2012).

1.2.2   Second Phase: Glocalization

According to Sarkar (2009), in this second phase, MNCs identified that while first phases reduced the prices, they were not as rival in local areas as they required to be. Therefore, they concentrated on winning the share market by modifying the world-wide offerings to attain local requirements. Still innovation emerged with requirements of home country, but the services and products were changed later to win in every market. To attain customer's budgets in poor nations, they sometimes de-characterized the occurring products.

1.2.3   Third Phase: Local Innovation

According to Govindarajan (2010), in this phase, MNCs are concentrating on developing products "for country, in country" in the first half of the reverse innovation process. They are adopting a market back view. That is, they are initiating with an assessment based on the zero customer's requirements rather than considering that they will make changes only to products which they have already. As teams grow local market products, the organizations enhance them to exist linked to and to advantage from a worldwide base of the resource.

1.2.4 Fourth Phase: Reverse Innovation

If third phase is "for the country, in a country," the fourth phase is about "for the world, in country." MNCs finish the process of reverse innovation by taking the innovations chartered for poor countries originally, by adapting them and scaling them up for global use (Govindarajan 2009).

2 Review of Literature

2.1 Why Reverse Innovation?

According to Govindarajan (2011), reverse innovation is an essential strategic priority. The stakes are extensive and nowadays, poor and rich nations report for roughly similar shares of worldwide economy. But for years, development has been far much robust in poor nations. Mostly, rich nations are in a gradual development recovery following an awful recession truly; the development gaps look much like a development chasm. Developing economies are anticipated to report for as much as two thirds of future development in global gross domestic product. Developing market rivalries offer the strongest drive for reverse innovation. If set up worldwide corporations do not innovate in poor nations, new rivalries will capture the chance Kishen et al. (2010) has mentioned that reverse innovation is applied to numerous industries and products. There are some sectors where they could likely rival with worldwide products. But in several consumer product companies and in other industrial goods, the concept of reverse innovation would be very essential. In India, local firms have enormous chance to advantage from reverse innovation. By the process of reverse innovation, innovations that were chartered originally from rural markets will be scaled up and adapted for urban areas. For several companies, reverse innovation is the need of hour to concentrate on rural areas and be their solution providers. In current era, the success of companies will thrive the volumes not only in rural areas but also in urban areas. Low-cost products made for rural areas can produce in urban areas as well, and hence, on account of scale economies, companies can gain huge profits. In addition to this, classes and masses will also become reverse innovation benefiters.

2.2 Why Conventional Innovation Theories Are Not Applicable in Case of Reverse Innovation?

According to Trimble (2012), innovators generally agree society's cultural goals but avoid the conventional methods of meeting those targets. These people generally have an obvious disregard for conventional theories. Nowadays, several established worldwide firms need to innovate when competing in developing markets since

innovation is risky and costly. The logic for innovations flowing downhill from rich world to emerging world is intuitive and natural. Nowadays, reverse innovation is working very well than conventional innovation and several worldwide companies are innovating to gain huge amount of profits.

2.3 Benefits of Reverse Innovation

According to Cramer (2010), the major benefit of reverse innovation is its simplicity. It asserted the approach that provides an antidote to develop the located and featured heavy products which are developed in the West.

According to Govindarajan (2012b), for western multinational corporations, reverse innovation is about making far from home and winning everywhere, and acquiring this process can have worldwide implications to complete the business of multinational corporations. The decision to innovate in emerging economies not only open up new development sources, but it is also viewed as a defense strategy for securing competitive benefit at home.

Khanna and Palepu (2006) mentioned that emerging multinational enterprises have the home field benefit over Western multinational corporations due to their local context knowledge and the requirements of local customers which permits them to perform something which multinational corporations resist to perform, i.e., to acquire their strategies to the local market.

Sharma and Iyer (2012) discuss that generating a lower possible cost product besides the intended advantages like reduced costs has unintended advantages such as frugal resource use and thereby preservation of inadequate resources. Frugal innovation can be described as the first stage of the method and an essential precondition for providing a reverse innovation.

According to Khanvelkar (2011), reverse innovation would lead to further development in industrialization. As several MNCs opt and adapt to invent and/or generate new products in India for Western as well as local markets, the economy of India would witness a development in foreign direct investment and also indigenous MNCs would spontaneously develop their investments to develop advanced facilities of research and development that would motivate to reduce the edge of both the engineering and innovation. It also means that the engineers would experience greater opportunities of employment and the market of consumer would succeed from developed good products to provide their requirements at cheap cost.

2.4 Challenges of Reverse Innovation

By adopting a trickle-up process to new notions, innovators are forced to challenge their views as well as complexity of numerous services and products. In other words, they are compelled to initiate with an empty canvas instead of merely (AIM 2010).

Adriaens et al. (2013) point out another major challenge of reverse innovation and the opportunity of spillover for vast economic growth in developing areas is the availability of professional people to assist the industrial development and motivate a market-driven innovation culture.

Aschmoneit and Janevska (2013) described some of the challenges which MNCs face when the reverse innovation pursues cannibalization risk and dilution of brand name when the organization establishes less costly products in their line of products. Other than essentially greater prices than advantages of such effort, those products can be viewed by firms as a threat to their overall margins and to the effectiveness of their production. The different needs and preferences of customers in varied geographic places can be viewed as an extra challenge when the implementation of frugal resources is done in the developed areas.

According to Jullens (2013), the actual challenge of reverse innovation is how to reverse innovate systematically on an ongoing foundation alternative on every once or one off in a while foundation. Otherwise, this will just exist a captivating intellectual practice but not of much practical worth. For foreign companies, this refers emerging essential local research and development capabilities on ground.

Another challenge mentioned by Gautam (2013) is leapfrog in techniques. Developing economies experience in lack of infrastructure is carried out for granted in emerging economies for any launch of the product. As an outcome, the similar product based on the proven technique from mature economies cannot move forward. Sometimes, a technological leapfrog is needed to overcome the constraints of the infrastructure. However, the success is yet to be licensed as reverse innovation as these products have not yet predicted their back way into the emerging economies.

2.5   Popular Global Practices of Reverse Innovation

The study of Syed and Gihle (2013) describes the reverse innovation phenomenon in healthcare and quickly developing systems in less income nations, are capable of producing solutions for contemporary challenges of the health system in high and middle income nations. Depasse and Lee (2013) suggested a new model to enhance the health solution flow within the pipeline of reverse innovation. The reverse innovation series in worldwide health systems is couched within and interlinked intimately to a wider global movement targeted at identifying the actual importance of middle- and low-income nations in contributing to the challenges of health systems worldwide.

Govindarajan et al. (2009) examined how reverse innovation is used to new mobility industry advantages and combined the emerging and developed economies including innovation sharing that travel from the regions of south to north rather than in other direction. Rather than trying to spread costly new innovations to poorer places, frugal innovations are spread to healthier well-emerged markets after some

adaptation of those innovations. Aside from raising and transforming the living standard in developing economies through the development of new company employment and supply chain opportunities, they expect that reverse innovation will outcome in innovations of mobility that can be scaled rapidly to mass areas through new segments of market which was not mentioned previously.

Talukdar et al. (2010) stated that the reverse innovation process as presently practiced in business starts by concentrating on requirements and needs for low-cost products in lesser emerging nations. Christensen discusses in their paper that compared to healthy countries where gasoline and electricity consumptions are ubiquitous, emerging countries are an ideal region to commercialize the technologies of green energy.

Roetter (2011) in his study mentioned that reverse innovation, which is capable of providing effective and reliable performance in surroundings with underdeveloped or poor infrastructure in terms of transportation, electric power, clean water, service and repair facilities, and unfavorable conditions with regard to humidity, cleanliness, and temperature, must be affordable and useful for users and buyers with restricted financial resources. These features of reverse innovations can then become the competitive benefit sources and/or opportunities for mentioned new consumers in rich markets whose requirements are being stated poorly by locally emerged services and products.

Ruan et al. (2012) refer that reverse innovation is an expanded disruption model state that it could be handled as a kind of disruptive innovation. Corsi and Di Minin (2011) point out that reverse innovation is a kind of disruptive innovation that emerges not from similar geographical areas that incumbent firms dominate but rather from the areas of developing economies where a product/technology has been commercialized to fit the features of those markets specifically providing the best BoP. Reverse innovation does not distribute in lower market areas because the products were not better enough for much sophisticated market areas but it is from the initiation stage intended to fulfill the requirements and needs of lower market areas. Later, those products can find its place in the emerged markets also.

According to Immelt et al. (2009), reverse innovation focuses on emerging services and products particularly aimed at the business of pyramid customers which are upgraded to sell in the emerged markets. It is predicted that companies are capable of creating customized products with cost benefit and functionality for poor without compromising comfort and safety (Van den Waeyenberg and Hens 2008). Growing a product particularly in rural areas can be sold for reduced costs because of considerable demand importance (Craig and Douglas 2008). London and Hart (2004) stated that successful ventures in business of pyramid areas possessed an extra capability that was based on facilitating and valuing the bottom-up co-invention by different partners of local proper solutions. In turn, these solutions gathered increased the capacity beyond the secured organizational boundaries. This process can be viewed as a bottom-up making of new solutions in less emerged globe to match the surroundings of these areas.

3 Research Methodology

The following chapter discusses briefly about the research paradigm, research design, sampling design, data analysis, collection, and interpretation techniques adapted in this study.

3.1 Research Paradigm

This study adopts interpretivism as the research paradigm. Interpretivism defines the methods which are used to emphasize the meaningful nature of people's participation in both social and cultural life. Interpretivism research processes include focus groups, interviews, and research diaries (Chalmers 2004). This study adopts interpretivism approach since this study adopts case study research design and this suits best for this study when compared to positivism (Cousin 2005).

3.2 Research Approach

This study adopts qualitative research. Warren and Karner (2005) mentioned that qualitative research usually takes place in naturally occurring situations as contrasted with the quantitative research in which behaviors and settings are controlled and manipulated. Qualitative research emphasizes a holistic interpretation. A qualitative research always builds a theory through an inductive approach to describe about the rapport among the data categories. This study adopts qualitative research since the researcher's purpose is to predict responses to proposed questions of research by gathering data in textual analysis rather than numerical analysis (Anfara et al. 2002).

3.2.1 Research Design

This study adopts case study research design. According to William (2009), case study research design can be quantitative, but because of the wide nature of case study itself, it is always used as a qualitative research method. Case study is also used for hypothesis testing and theory generation. This study adopts the case study approach since it examines briefly about the technical and ethical problems related to the reverse innovation in companies of rural India (Yin 2003). This study considers Tata Motors, Philips, and Godrej for reverse innovation in rural India. Tata Motors is considered in this study since it is the most renowned automobile industry in India since 1945 and still it has affordability at its core.

Godrej is considered for this study since it is a leading manufacturer of chemicals even before independence and products are delivered at its best based on reverse innovation.

Similarly, Philips is considered for this study since the technologies in this company are often promising and they are moving rapidly to innovate in developing economies.

3.3 Sampling

This study adapts convenience sampling. Convenience sampling is the study of subjects taken from a group that is accessible to the researcher's convenience. This study adopts convenience sampling since it conducts the analysis of companies based on the qualitative research. Researchers prefer this type of sampling to acquire information without having to migrate comprehensively or construct a component of vast ranging subjects. This saves both money and time which can make a huge variation while carrying out the research (Wise Greek 2013).

3.4 Data Collection

This study makes use of only the secondary data and no primary data. According to Patton (2002), secondary data is the information which already occurs in some form or other but which was not gathered primarily for the need of data at hand. Secondary data is adopted in this study since it is time consuming and the responses are gathered from the respondents in textual format (Cooper and Schindler 2006). Secondary data collected in this study would be with specific reference to reverse innovation strategies adapted by three different companies, by names, Tata Motors, Philips, and Godrej, belonging to India.

4 Company Analysis Using Reverse Innovation in Rural India

4.1 Tata Motors

According to Yin (2009), Tata group of India is one of the companies which has been innovating the new approach. The Tata Nano automobile is an innovation which pushed the envelope in the world of the Indian automotive industry. Tata Motors set their target price at $2,500 before they designed the car. They made plans by keeping suppliers in mind and their target customers are scooter and motorcycle

drivers who wanted a safer vehicle. Tata Motors provides functional goals for most of the parts rather than technical specs in the early stage of the design process. This helped to manage the reorientation and the basic tenets of practicality and efficiency to meet the cost target.

Efficient design of Tata Nano comes from the items that are essential for basic transportation and removes the nonrelevant ones, i.e., having one component or part which can perform a task like good as two components or parts can do, thus resulted in cost savings. For example, the Nano has only one side mirror and one windscreen wiper and it uses minimal foam padding which contains urethane for the seats and these seats have integrated headrests. It also refrains from emphasizing items which are not feasible because of the monetary reasons. Air conditioner, radio, air bags, antilock brakes, and power steering are not included, whereas the instrumental panel comprises of only an odometer, fuel gauge, and analogue speedometer similar to that of the two-wheelers (Wells 2010).

Tata has come up with many practical ways in order to reduce the car weight as well as to trim down the overall cost. It uses comparatively light and small engine that is strategically placed at the back side of the car. This design enables the car to uniquely combine maneuverability and space and formulate a new benchmark among the small cars. For example, the car will be smaller in overall dimensions when compared to the classic Suzuki's Maruti 800, since it offers about 20 % more seating capacity as an outcome of design choices like putting the wheels at the extreme edges of the car. Other factors which contribute to the reduction of weight are the usage of plastic body panels, hollow steering wheel shafts, and smaller tubeless tires. As an outcome of these measures, Tata Nano weighs only 590 kg. The strategy of lean design has helped to minimize the weight as well as maximize the performance of the energy consumed per unit and delivers high fuel efficiency (Tiwari and Herstatt 2012)

Tata Nano illustrates the Gandhian engineering design or is frugal, i.e., economical, basic, and functional. It showcases the potential for future disruption, as it is selected to compromise on a few key features for lower-cost performance which will be appreciated by the middle-class family clients or customers in India. It is frugal but the effective design of cars fills the gap left by the most mainstream car's performance. The wheel design mark and rear engine created a new standard for small cars in the market that protected the innovation from being too easily exploited or imitated by others (Zhou and Li 2008).

4.2 Philips

According to Matheson (2013) in 1930, Philips in India started its operations. Philips India is a leader in semiconductors, lighting, medical systems, consumer electronics, personal care, and domestic appliances with a range of internationally current products which is backed by both the superior technology and design. Philips has brought superior technology to Indian customers at affordable prices. It has been instrumental in bringing latest technologies such as digital widescreen

TVs, high-definition rear projection TVs with DVD, and integrated wireless FM, among several others, to Indian customers. To increase its penetration in semi-urban and rural markets, Philips has particularly designed products and targeted at the rural and semi-urban customer in India. For example, Philips has created a specific brand Vardaan in its range of color TV, targeted at the semi-urban and rural markets. To counter the problem of power supply in rural India, Philips has customized its television to perform on a voltage range of about 90–270 V, thus eliminating the requirement for a voltage stabilizer. Philips launched the first free-power radio in the world which has become very popular in the semi-urban and rural market (Li and Kozhikode 2008).

Prahalad and Mashelkar (2010), Li and Kozhikode (2008)), and Quintane et al. (2011) refer that Philips has developed specifically for the Asian market based on the customer needs. Instead of bringing the products of European to Asian customers, Philips succeeded by identifying different lifestyle and cultural needs and customizing technologies and products for the people who buy them. Philips launched innovative promotion campaigns particularly in rural areas. The Philips consumer electronics and lighting divisions have launched integrated programs of rural marketing which has been spread across the semi-urban and rural areas where population is below 50,000. Philips also structured the product pricing to make them affordable for the target customers in small towns and rural areas. For example, Philips introduced a portable compact drive system at an affordable price of about US$ 83 for the rural and semi-urban customers. It is one of the largest distribution networks with higher penetration levels in the semi-urban and rural areas. To enhance its logistics and distribution network and to raise the geographical reach of its products, it carried out the extensive productwise exercise of mapping over 540 districts across India. Major retailers were identified and an approach of key account management was adopted in order to strengthen the channel of distribution (Li and Kozhikode 2008 and Yin 2009).

Yin (2009) points out that the local Indian management runs the Philips India operations. This enables the Philips to understand the local consumer insights and fine-tune its strategy in order to analyze the dynamics of the local market. Philips is leveraging various advantages provided by India such as software development capability, intellectual capability, processing capability, and cost effectiveness of resources. Philips has product offerings across affordable price and performance points for a wide range of Indian market. Philips product portfolio encompasses global products which caters to anywhere in the world customers and styling and high-reliability products for the mass customer base (Quintane et al. 2011).

4.3   Godrej

According to Inkpen and Ramaswami (2006), Indian conglomerate Godrej & Boyce launched the cheapest super economical refrigerator in the world, namely, Chotukool, at the price of $69 in 2010. The fridge is a portable unit of top-opening weights with only 7.8 kg; it uses the high-end insulation in order to stay cool for

hours without power and also consumes only half of the energy used by the regular refrigerators. To reach its efficiency, Chotukool does not have any compressor, but it runs on a fan and cooling chip akin to those used in the computers. Similar to computer, it will run on batteries. Chotukool engineering credentials are boosted by the fact that it has 20 parts, as opposed to more than 200 parts in a normal refrigerator. Unlike the general refrigerators, it opens from the top in order to prevent cold from escaping (Li and Kozhikode 2009).

Mahmood and Zheng (2009) point out that Chotukool is another example for local enterprise's innovation model which was successful in diffusing and designing an appropriate technology for mass markets of India. Chotukool overcomes social and technological barriers and addresses one of the most pressing problems in India that hosts the largest population deprived of electricity in the world, that is, 92 % of the Indian population lives in the rural places, equaling about 71.7 million households or 380 million people. The quantity and quality of power of these people have access to very poor and prolong these areas' development. The power situation in rural areas of India cannot be fixed overnight; products such as Chotukool are required to make people's lives a little better. Effective refrigeration in rural areas will help the customers extend their access not only to food as well as to essential drugs (Kapoulas and Mitic 2012; Inkpen and Ramaswami 2006).

According to Mahmood and Zheng (2009) and Li and Kozhikode (2009), the Chotukool was codesigned with a village woman in order to ensure its acceptability and it is distributed by the micro-finance group members. Initially, Godrej's team built and designed a unit of prototype cooling from the ground up and tested the Chotukool in the field with the customers. In 2008, more than 600 women in Osmanabad, a city in India's Marathwada region, were selected to participate in a co-creation event. It worked with the original prototypes and was collaborated with every product's design aspect. They helped for the interior arrangements and also made suggestions for the lid and offered insights on color that is eventually setting on candy red. The outcome was the Chotukool or little cool top-opening unit with a capacity of 43 L at 1.5 ft×2 ft and it has enough room for the certain items where customers can keep fresh for even 2 days. The Chotukool also showcases the distinctive features of the reverse innovation and it started with the features of inferior performance but its portability and affordability are appreciated by the niche market that happens to be the mass market areas in the developing countries, namely, India.

5   Conclusion

This study examined the reverse innovation as a marketing strategy in rural India. The reverse innovation is a practice that can be carried out by both emerging multinational enterprises and Western multinational corporations. The benefits of reverse innovation are simplicity, defense strategy securing competitive benefit at home, and home field benefit over Western MNCs, generating a lower possible cost product and further development in industrialization. The challenges associated with

reverse innovation are trickle-up process to new ideas, availability of professional people, cannibalization risk and dilution of brand name, essential local R&D capabilities, and leapfrog in techniques. Reverse innovation can be redesigned or reworded for context-specific applicability; however, as it is the request of present time and destiny of future, it can neither be stopped nor be retarded. Avoiding reverse innovation can cost several firms, particularly nowadays world class MNCs, huge loss than a missed chance abroad. It can cause severe damage or even pain in their own well-set-up home market. Reverse innovation shows a bold invention with far-reaching implications. The flows uphill of innovation and its future depend in developing markets. Nowadays, emerging countries are being tapped for breakthrough innovations that can undo new areas in the rich globe and help solve worldwide societal issues such as poor access and high cost to companies.

Reverse innovation is critical to review because it acquires huge outright of innovation but does so with relatively evident observations that are useful anywhere. Several Western companies have myopia about product needs and requirements in emerging nations and can study by describing customer requirements and perceiving the channels, support requirements, and infrastructure in these nations to innovate products that are much common. Reverse innovation could outcome in making products that can appeal to both global and local customers, and hence, there will not be a requirement for local adaptation in future. Thus, it can be concluded that reverse innovation has the importance not only to change the company but also to transform the globe.

6 Recommendations

The practical direction on how to operate reverse innovation appears a bit overdone as well. To mention the Western thinking challenges and opportunities of local innovation, a solution is recommended such as local growth teams which is usually a Skunk Works to make new products based on local requirements. The local growth team is supposed to be completely autonomous and perform as a complete unit of business with a whole value chain involving supply chain, product growth, servicing, marketing, sales, and manufacturing. This recommendation is similar to construct a completely parallel and new unit of business to occurring capabilities. The local growth teams will likely need new competencies. Always, these will be professional sets which the organization has never before required. If the occurring people and teams are not capable of innovation, perhaps the existing structures and teams required to be rethought wholly. Local growth teams must have the responsibility of profit and loss. Local growth teams must have the authority of decision-making to select which products to grow and how to make, service, and sell them. Local growth teams must have the assistance and right to draw from global resources of companies.

It is recommended that MNCs must enhance a core understanding of local consumer issues. Local firms must construct capabilities of worldwide distribution

and worldwide brands. The largest barrier for reverse innovation is not budgetary or technology constraints. It is based on mind-set and organization. In reverse innovation, the success does not rely much on financial resources or technology as it relies on pursuing proper company and maintaining appropriate mind-set.

It is recommended that the product development and local ethnographic companies in every developing nation partnering with entrepreneurial and mid-sized companies in the West to provide insights, market requirements, delivery channels, and capabilities of local product development would provide low cost and rapid access to developing markets. This recommendations would permit Western companies to increase their intellectual property and enter developing and new markets while local companies with a good understanding of local requirements, channels, and customs could change designs and enhance solutions to provide to local consumers.

References

Adriaens P, De Lange D, Zielinski S (2013) Reverse innovation for the new mobility. Ross School of Business working paper. University of Michigan, Ann Arbor

Aim (2010) Reverse innovation – developing world lessons for innovators. Available at http://www.Aimqld.Com.Au/Publications/Whitespace1002.Htm. Accessed 26 Dec 2013

Anfara VA, Brown KM, Mangione TL (2002) Qualitative analysis on stage: making the research process more public. Educ Res 31(7):28–38

Aschmoneit M, Janevska D (2013) Closing the gap between frugal and reverse innovation: lessons learned from the case of Tata Nano, master of science in business administration strategy and management in international organizations. Linkoping University, Linkoping

Chalmers M (2004) Hermeneutics, information and representation. Eur J Inf Syst 13(3):210

Cooper DR, Schindler PS (2006) Business research methods, 3rd edn. McGraw-Hill, New York

Corsi S, Di Minin A (2011) Disruptive innovation…In reverse: a theoretical framework to look at new product development from emerging economies. Working paper N. 04/2011. Istituto Di Management – Scuola Superiore Sant'anna, Pisa

Cousin G (2005) Case study research. J Geogr High Educ 29(3):421–427

Craig SC, Douglas SP (2008) Targeting rural consumers in emerging markets. Stern School of Business, New York, pp 1–24

Cramer Y (2010) Reverse innovation a popular trend. Available at http://www.business-strategy-innovation.com/2010/02/reverse-innovation-popular-trend.html. Accessed 26 Dec 2013

Depasse JW, Lee PT (2013) A model for 'reverse innovation' in health care. Glob Heal 9:40

Gautam N (2013) Reverse innovation: enablers and opportunities 2(1). Available at http://www.hella.com/hella-in/assets/media/Auto_Tech_Review_Reverse_Innovation_Jan_13.pdf

Govindarajan V (2009) What is reverse innovation? Available at http://www.tuck.dartmouth.edu/people/vg/blog-archive/2009/10/what_is_reverse_innovation.htm. Accessed 26 Dec 2013

Govindarajan V (2010) What is reverse innovation? Available at http://www.shrmindia.org/knowledge-center/strategic-hrm/business-strategy/what-reverse-innovation. Accessed 26 Dec 2013

Govindarajan V (2011) Available at http://blogs.hbr.org/2011/02/reverse-innovation-at-davos/ Accessed 11 Jan 2014

Govindarajan V (2012a) A reverse innovation playbook. Available at http://hbr.org/2012/04/a-reverse-innovation-playbook/ar/1. Accessed 26 Dec 2013

Govindarajan V (2012b) A reverse innovation playbook. Harv Bus Rev 90(4):120–124

Govindarajan V, Trimble C (2012) Reverse innovation create far from home, win everywhere. Harvard University Press, Boston

Govindarajan V, Trimble C, Immelt J (2009) Reverse innovation: how GE is disrupting itself. Harv Bus Rev 87:56–65

I2B (2011) What is reverse innovation. Available at http://www.i2b.org.mk/index.php?option=com_content&view=article&id=80%3Areverse-innovation-definition-and-examples&catid=904%3Astories&Itemid=88&lang=en. Accessed 26 Dec 2013

Immelt JR, Govindarajan V, Trimble C (2009) How GE is disrupting itself? Harv Bus Rev 87:56–65

Inkpen A, Ramaswami K (2006) Global strategy: creating and sustaining advantage across borders. Oxford University Press, Oxford, pp 152–179

Jullens J (2013) Reverse innovation, interview with chief executive China. Available at http://www.Johnjullens.Com/Uploadfilecode/Uploadtest/20131126062536.pdf. Accessed 26 Dec 2013

Kapoulas A, Mitic M (2012) Understanding challenges of qualitative research: rhetorical issues and reality traps. Qual Mark Res: Int J 15(4):354–368

Khanna T, Palepu KG (2006) Emerging giants. Harv Bus Rev 84(10):38–39

Khanvelkar V (2011) Reverse innovation: trend, strategy and advantages it brings to India. Available at http://www.Business-Standard.Com/Article/Companies/Reverse-Innovation-Trend-Strategy-And-Advantages-It-Brings-To-India-111092800129_1.html. Accessed 26 Dec 2013

Kishen R, Kumar A, Pasricha A (2010) Reverse innovation: the new paradigm in rural marketing – challenges and opportunities. Available at http://ashusimsr.blogspot.in/2010/01/reverse-innovation-new-paradigm-in.html. Accessed 11 Jan 2014

Li JT, Kozhikode RK (2008) Knowledge management and innovation strategy: the challenge for latecomers in emerging economies. Asia Pac J Manag 25(3):429–450

Li JT, Kozhikode RK (2009) Developing new innovation models: shifts in the innovation landscapes in emerging economies and implications for global R&D management. J Int Manag 15(3):328–339

London T, Hart SL (2004) Reinventing strategies for emerging markets: beyond the transnational model. J Int Bus Stud 35:350–370

Mahmood IP, Zheng WT (2009) Whether and how: effects of international joint ventures on local innovation in an emerging economy. Res Policy 38(9):1489–1503

Matheson T (2013) The global financial crisis: an anatomy of global growth. Working Paper, International Monetary Fund. Available at http://www.imf.org/external/pubs/ft/wp/2013/wp1376.pdf

Patton MQ (2002) Qualitative research and evaluation methods. Sage, London

Prahalad CK, Mashelkar RA (2010) Innovation's holy grail. Harv Bus Rev July–Aug:132–141

Quintane E, Casselman RM, Reiche BS, Nylund PA (2011) Innovation as a knowledge-based outcome. J Knowl Manag 15(6):928–947

Roetter M (2011) Wireless applications in health care and reverse innovation it's all about politics, greed and money. The Academic-Industry Research Network. Available at http://www.theairnet.org/files/research/Roetter/roetter_Wireless_Health.pdf

Ruan Y, Hang CC, Subramanian AM (2012) Disruptive innovation in emerging markets: strategies used in India and China. Working paper N. 01/2012. National University of Singapore, Singapore

Sarkar C (2009) Reverse innovation: an interview with Vijay Govindarajan. Available at http://www.edgemi.org/reverseinnovation.shtml. Accessed 26 Dec 2013

Sharma A, Iyer GR (2012) Resource-constrained product development: implications for green marketing and green supply chains. Ind Mark Manag 41:599–608

Syed S, Gihle I (2013) Reverse innovation in global health systems. WHO. Available at http://www.globalizationandhealth.com/content/pdf/1744-8603-9-36.pdf

Talukdar S, Horn MB, Alton R, Christensen CM (2010) Winning and losing bets on green technologies, Harvard University, working paper. Available at http://www.Thefgi.Net/Wp-Content/Uploads/2010/09/Green-Energy-Paper-05.27.10-Vfinal.pdf. Accessed 26 Dec 2013

Tiwari R, Herstatt C (2012) Assessing India's lead market potential for cost-effective innovations. J Indian Bus Res 4(2):97–115

Trimble C (2012) Reverse innovation and the emerging-market growth imperative. Available at http://iveybusinessjournal.com/topics/innovation/reverse-innovation-and-the-emerging-market-growth-imperative#.UtEATtIW2p4. Accessed 11 Jan 2014

Van Den Waeyenberg S, Hens L (2008) Crossing the bridge to poverty, with low-cost cars. J Consum Mark 25(7):439–445

Warren CAB, Karner TX (2005) Discovering qualitative methods: field research, interviews, and analysis. Roxbury, Los Angeles

Wells P (2010) The Tata Nano, the global 'value' segment and the implications for the traditional automotive industry regions. Camb J Reg Econ Soc 3:443–457

William W (2009) Research methods in education. Pearson Education, New Delhi

Wisegreek (2013) What is convenience sample? Available at http://www.Wisegeek.Org/What-Is-A-Convenience-Sample.htm. Accessed 26 Dec 2013

Yin RK (2003) Case study research: design and methods, 3rd edn. Sage, Thousand Oaks

Yin RK (2009) Case study research: design and methods, 4th edn. Sage, Thousand Oaks

Zhou CH, Li J (2008) Product innovation in emerging market-based international joint ventures: an organizational ecology perspective. J Int Bus Stud 39(7):1114–1132

Chapter 14
Capturing the Brand Essence and Communication Commonalties of a Western Brand in an Eastern Country

Kanwal Kapil and Avinash Kapoor

Abstract Post liberalization in Indian economy, a lot of multinational giants have entered the Indian market. As now the brands have been viewed as post-valued strategic assets in the present era, the concept of brand essence has gained prominence for the research community. The brand managers of these companies have a tough task of globally harmonizing the image and essence of their brands. In spite of sending the same signals via communication and integrated marketing programs, there are still many possibilities that brand may be viewed differently by different consumers of different countries. The same product may be at different life cycle stage and may be perceived to be of different usage in different countries. This study is aimed to identify commonalities in brand essence and brand communication so that they can tailor their marketing communications to make them perceive the intended essence of their brands. This study focuses on capturing the commonalties in the brand essence and brand communication of a Western brand (Nike) in India to draw out implications for brand managers.

Keywords Brand essence • Brand personality • Brand communications • Brand identity

1 Introduction

Twenty-three years after the onset of liberalization, almost all major Western brands are rapidly entering the Indian markets. Multinational giants such as Nike, Adidas, P&G, Vodafone, and Apple have strong presence in the Indian market. Brands are the very reasons for any company's existence. Brand managers have a tough task of globally harmonizing the image of their brands. It is possible that the country of origin effect may affect the image of the brand. In order to achieve the consistency,

K. Kapil (✉) • A. Kapoor
Marketing area, Management Development Institute (MDI), Gurgaon, India
e-mail: kanwalkapil@mdi.ac.in; avinashkapoor@mdi.ac.in

companies have to have a very clear and unambiguous strategy to strengthen their brand capital. Companies standardize cues like logos, brand names, and advertising globally, so that they are able to portray a global image across countries. In spite of sending the same signals via communication and integrated marketing programs, there are still many possibilities that brand may be viewed differently by different consumers of different countries. The same product may be at different life cycle stage and may be perceived to be of different usage in different countries. For instance, consumers in different countries have different kinds of food habits as it is largely cultural and social phenomenon. In essence, the image of any brand is not just controlled by the marketing manager or brand manager, but many more extraneous factors such as level of competitiveness in that country, cultural contexts, category penetration, and so forth are responsible for that image. Brand image is not merely dependent on communication strategy but is influenced by the consumer experiences and publicity (Schultz and Chernatony 2002).

Because of varied sources of information available to a consumer, it becomes imperative that brand managers should critically analyze as to how their brand is being perceived by the customers. Companies would like to have a strong base of brand loyalists who may or may not be similar across geographies in terms of demographic and psychographic behavior (Melewar et al. 2005).

Consumers are bombarded with innumerable messages through different media. Past experiences of the customers will have a strong impact on marketing information processing (Berry et al. 2002). Brand managers have to have consistency, coherence, and permanence in their communication and other marketing stimuli. For global brands, it becomes a big challenge as different countries have different national stereotypes, expressions of the culture, and ethnocentrism. Further Asia and West differ in dimensions of individualism vs. collectivism. Yet certain brands have defied local boundaries and have universal and global appeal and image.

Consumers in a country like India have a high liking and good image of products originating out of Western countries as very "Western" is perceived to be synonymous with modern. So generally, just Western associations qualify as a favorable brand attribute.

Global brands such as Coke and Levi's have personified the Western affluent lifestyle and freedom, thereby commanding global demand and respect (Batra et al. 1996). In a developing economy like India, the consumers have started reaping the benefits of globalization, thereby having access to the world-class products. Before globalization, foreign goods used to have a tag of high status. Now in spite of high cost, even then they are still in high demand as purchasers of foreign goods associate status and affluence with them (Ger et al. 1993).

Things are changing very fast, so the perception that the very Western is blindly favored is no longer an asset but is turning out to be a liability these days. There is heterogeneity of brand signals that consumers receive frequently. Therefore, consumers now have a better accessibility and approachability to brand preferences and choices along with new products. This also in a way reflects their response to new cultural order and changing desires and expectations This poses a considerable challenge for the brand manager to identify a coherent brand essence which should

resonate with consumers' desires and preferences (Coulter et al. 2005). Therefore, it becomes important that the very attribute called "Western" which had been impacting the corporate brand perception needs to be investigated in the Indian context.

There are many factors which affect the brand information and brand perception; these also establish the extent of relationship that consumer develops with the brand in the long run (Aaker et al. 2004; Fournier 1998). Brand image tends to be symbolically retained and understood by the consumers in their own perspectives (Solomon 1983). Therefore, the symbolic meaning of brand attributes has become a hot subject of investigation for many marketing scholars (Aaker 1997; Bettman 1993; Hogg et al. 2000).

A consumer identifies himself or herself with the personality of the brand as brands tend to have unique associations and personality characteristics (Ligas 2000; Fournier 1991). Postmodern scholars in the marketing field have been propounding that brands are not just existing because of functional attributes but they signify symbolic and emotional meaning. Traditional researchers have ignored this very important aspect of brands which largely display strong symbolism.

Several researchers in the postmodern era have been criticizing the traditional experimental researchers who viewed products as mere functional things, thus ignoring the symbolic meaning of the products (Belk 1988; Hirschman and Holbrook 1982; Levy 1959; McCracken 1986, 1987, 1988; Solomon 1983).

Brand researchers have for a long time tried in various ways to define and understand a brand with various interpretations including associations, identities, personalities, etc. One of the most intensely studied aspects is the brand personality or persona approach. This is very obvious because this approach treats the brand as a person and tries to define its traits and characteristics. This approach instinctively attracts researchers as people do generally tend to humanize many of their possessions, and hence this approach would take support of this proved tendency of people.

Many scales, techniques, and theories have been developed by the researches in the field of marketing and psychology to investigate and unearth brand personality attributes. Further these scales have been used to describe various facets of a brand. A brand can be described in the following aspects: firstly, each brand has physical and functional attributes which can be identified by looking at those aspects tangibly. Secondly, each brand signifies and evokes cultural associations. Thirdly, brand is a relationship, fourthly brand also reflects the imagery and self-concept of the user, and finally brand acquires or is provided with some personality associations by the marketers (Kapferer 1996). To convey all these facets of the brand to the target audience, communications become the key and vital aspect for the brand managers as these facilitate consumers to feel about his or her brand lively over a time.

Few researchers argue that the measurement of brand personality is difficult as it is adding more conceptual confusion. Most of the brand personality scales covering different constructs are inadequate to capture the complete brand personality (Azoulay and Kapferer 2003). Furthermore most of the scales use and superimpose all the human characteristics on brands to convey or measure personality, thereby ignoring the distinct faces of brand identity, where personality is just one of the constructs only.

Looking into these challenges, we try to address the issue of brand essence by presenting a theoretical framework. In this paper, we take brand essence which is part of the brand identity to look at the brand from consumer perspectives. We choose the brand "Nike" which is one of the most popular brands in India. We then try to identify the brand image of Nike and essence associations of the same, and then we try to see what associations consumers have when it comes to communication of Nike. Then we try to map whether the brand essence as perceived by consumers is matching with the communication strategy of Nike.

2 Brand Essence

"*Brand essence is the central nature of what the brand represents to all those who come into contact with it. A brand sometimes has a soul which he defines as 'a spiritual centre, the core value(s) that defines the brand and permeates all other aspects of the brand'*" (Upshaw 1995). Consumers form a mental picture of these associations to organize and interpret the brand in their own words (Murphy and Medin 1985).

In trying to define brand essence in terms of brand persona, we think of brand essence or brand core as a set of characteristics or traits which moderates or influences the presence or absence of some other characteristics while also determining, in some cases, the strength of other characteristics. So, we can say that the essence would consist of those characteristics that would be those that satisfy two conditions: one, they would be the strongest traits of the brand, and two, they would be the cause of the most number and strengths of the other characteristics of the brand.

The brand essence more specifically is a single thought that captures the soul of a brand (Van Auken 2000). It resembles the elements of brand identity as it creates the brand association in the minds of consumers (Aaker 1996; De Chernatony 2001; Aaker and Joachimsthaler 2000). However, the challenge is to maintain and retain the essence of a brand in the minds and hearts of consumers (Keller 2003; Kelly 1998). As such, consumers cocreate the meaning of brand essence beyond the marketplace (Brown et al. 2003). However, it is very difficult to identify and establish as to how the consumers perceive the real meaning of essence. Also the existing literature offers very little to brand managers for renewing their brands and brand representations. Therefore, it is indeed a requirement that the lucid model is conceived that conveys the associations among perceived brand representation and information (Johar et al. 2005).

Further, in order to communicate the brand positioning, personality traits are used for effective communication (De Chernatony 2001). Following the same, we investigate as to how the personality of Nike is perceived in India and what consumers in India feel about the characteristics of the brand campaign.

3 Investigating the Commonalities in Brand Essence and Communications: The Case of Nike in India

3.1 Methodology

The objective of this study was to capture the brand essence and communication commonalities for the brand Nike. For achieving this research objective, we chose to follow an exploratory design. The setting for this research was the National Capital Region (NCR), Delhi, India. After several discussions with the brand manager, the sales manager, and other industry and academic experts, we choose to conduct the study in two phases. In first phase of the study, 50 graduates of five business schools were interviewed. They were asked a question that "if Nike was a human being, what associations come to your mind about Nike?" This question was unaided recall. They were asked to write at least five associations for the same. The results of the group were collated and tabulated. Then we selected those associations which had been conveyed by five or more respondents. The results showed that 11 characteristics emerged which satisfied this condition which were spirited, full of energy, sporty, athletic, real, cool, hardworking, winner, confident, Western, and fit (Table 14.1). Then these characteristics were shared with the brand manager and sales manager to get their perspective. They agreed with most associations but strongly suggested to add one more characteristic, which was "champion," as the company strongly believes that Nike is a champion brand. In all 12 associations became an input for the next phase of the study.

A questionnaire was prepared based upon these attributes.

The second phase of research was then carried out where we administered the developed questionnaire on 160 students enrolled in finance and HR courses.

Table 14.1 Brand attributes and campaign characteristics of Nike

Qualitative results		
	Nike brand	Nike campaign
Spirited	10	7
Full of energy	6	7
Sporty	9	8
Athletic	7	9
Real	6	5
Cool	7	5
Hardworking	8	3
Winner	10	6
Western	9	10
Confident	7	7
Fit	6	5
Champion	0	0

The respondents were asked to rate the Nike brand on the identified attributes on a scale of 1–5 (where 1 represents not at all like this and 5 represents surely like this).

After obtaining the ratings of Nike brand, the students were shown the Nike advertisements in print and electronic media, and then in the second question, the respondents were asked to rate the communication of the brand Nike (where 1 represents not at all like this and 5 represents surely like this). This question was asked to capture the communication and brand commonalities for the Nike brand. The exploratory factor analysis of the data was carried out to arrive at the factors which represent the brand essence and the reflection of the brand communication of Nike.

4   Results and Discussion

Before conducting the exploratory analysis, we checked the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and the Bartlett test of sphericity. Accordingly we found that the sample size was adequate. Also, before carrying out the factor analysis, it is important to test whether the data can be subjected to factor analysis. Hence, to check the relation between the data, we have used the KMO measure of sampling adequacy and Bartlett test. The Kaiser-Meyer-Olkin measure of sampling adequacy is a statistic which indicates the adequacy of sample size. The KMO measure of sampling adequacy is 0.87, which is greater than 0.6, which shows that variables are fitting with the structure of the other variables. To check the hypothesis of the model, we used correlation and regression analyses as they were able to give the nature and strength of the relationship between the various constructs.

Also the significance level is 0.00, which is less than 0.05, which verifies that the data is suitable for factor analysis and there are significant relationships among the variables.

Table 14.2 captures the results for the brand essence of Nike. The exploratory factor analysis enabled the extraction of four factors for brand essence, explaining the cumulative variance of 68.66 %. The first factor contained characteristics such as spirited, sporty, full of energy, athletic, and fit. This factor can be clubbed and called as *acrobatic*. The second factor contained two attributes, namely, winner and champion, which can be termed as *conqueror*. The extraction led to the third factor which contained variables such as cool and Western. These two factors can be termed as *progressive*. This name is chosen as the Western brands in countries like India are considered to be forward-looking. Finally the results showed the fourth factor containing variables such as determined and real. These factors can be termed as *assiduous*. With the help of these factors, we can say that the brand essence of the brand Nike has four elements, namely, acrobatic, conqueror, progressive, and undaunted.

Table 14.3 shows the results of brand communication effects of Nike, where three factors were extracted by exploratory factor analysis to capture the brand communication characteristics of Nike explaining for the cumulative variance of 67.99 %. The first factor contained characteristics such as spirited, sporty, full of energy, athletic, and fit, which were earlier captured for brand essence and were termed as *acrobatic*. The second factor contained characteristics such as cool,

Table 14.2 Results for brand essence

Rotated component matrix[a]

	Component			
	1	2	3	4
Q5 Spirited	0.525	0.433	0.179	0.110
Q5_Sporty	0.805	0.605	0.358	−0.170
Q5 Full of energy	0.843	0.634	0.163	0.174
Q5 Athletic	0.774	0.566	0.275	0.289
Q5_Fit	0.750	0.144	0.645	0.199
Q5 Determined	0.366	0.390	−0.178	0.696
Q5_Winner	0.226	0.851	0.576	0.654
Q5 Champion	0.334	0.881	0.222	0.551
Q5_Cool	0.115	0.298	0.750	0.681
Q5 Real	0.118	−0.135	0.156	0.802
Q5 Confident	0.400	0.268	0.368	0.419
Q5 Western	0.232	−0.101	0.791	0.142

Extraction method: principal component analysis
Rotation method: varimax with Kaiser normalization
[a]Rotation converged in six iterations

Table 14.3 Results for brand communication

Rotated component matrix[a]

	Component		
	1	2	3
Q6_Spirited	0.811	0.125	−0.199
Q6_Sporty	0.881	0.229	−0.111
Q6_Full of energy	0.864	0.213	0.370
Q6_Athletic	0.875	0.285	0.260
Q6_Fit	0.700	0.329	0.138
Q6_Determined	0.581	0.348	0.604
Q6_Winner	0.396	0.362	−0.296
Q6_Champion	0.398	0.329	−0.211
Q6_Cool	0.167	0.641	0.312
Q6_Hardworking	−0.364	0.215	0.696
Q6_Confident	0.295	0.810	−0.161
Q6_Western	0.192	0.632	0.376

Extraction method: principal component analysis
Rotation method: varimax with Kaiser normalization
[a]Rotation converged in seven iterations

confident, and Western. The second factor in brand essence contained two characteristics such as cool and Western, but the brand communication results show that confident is also part of this factor; we can term this factor as *nonchalant*. The third factor contained characteristics such as determined and hardworking; we can term it as *assiduous*.

5   Discussion and Conclusion

This study tries to capture the brand essence of Nike. Further the consumers were asked to review the brand communications of Nike. Ideally the essence of the brand should be reflected in the brand communication. The results corroborate the fact that the brand essence is not created just by the communications but also other elements like the experience which the brand provides, the marketing mix elements, and a lot of other environmental variables (Schultz and De Chernatony 2002). We can see from the results of the study that three factors were common in the brand essence and brand communication but one factor, namely, *conqueror*, was not captured in the brand communications at all.

Historically, Nike has been named after the Greek goddess of victory. The brand has been using many top-class athletes as brand endorsers. Companies are increasingly using brand archetype paradigm so that they are able to build symbolic meanings, which can bring strong identities across different subcultures (Tsai 2006). For example, the brand Nike Air Jordan is related to the hero archetype the world over. The total consumer experience of the hero archetype is because of the experiential potential of the brands and their marketing communication and communication among the consumer groups (Tsai 2006).

On indicative verbatim was:

> When I watch Nike commercials, I am unable to relate to Michael Jordan and feel disconnect with the message, however I would be happy to see my sports icons like Sachin, Yuvraj, Dravid and Dhoni sporting Nike shoes. Nike is a brand for winners with insatiable spirit to conquer all odds

This shows that the global brand like Nike has very strong associations with the *conqueror* component of brand essence which is confirmed by this study also. But the brand communications fail to capture the same in a country like India. So this reinforces the argument that the global brand managers should be careful in selecting messages for global brands in countries like India, so that the exact essence of brand is also captured in the communications. Basketball is not as popular as cricket in India, so consumers may not relate to players of basketball. So it will be fruitful if the company chooses the corresponding iconic class player from a game which is a craze in the country and comes out with the subbrand or collection like Nike Yuvi collection.

Our findings also corroborate the view that apart from one central element which is brand story, the brands in total four central elements which are brand essence, idealized community, and brand paradox (Brown et al. 2003). The congruence between the representation of brand symbolism through communication and brand essence can have a positive influence on consumers. For achieving the holistic goals of effective brand communication, practitioners should have permanence, coherence, and durability in their messages to communicate their brand essence. Brand managers should clearly focus on 'Total customer experience'. Brand managers can achieve this by not only highlighting the utilitarian attributes such as quality and performance, but also emotional connect with the brand.

References

Aaker DA (1996) Building strong brands. The Free Press, New York

Aaker JL (1997) Dimensions of brand personality. J Mark Res 34:347–356

Aaker DA, Joachimsthaler E (2000) Brand leadership. The Free Press, New York, p 43

Aaker J, Fournier S, Brasel A (2004) When good brands do bad. J Consum Res 31(1):1–16

Azoulay A, Kapferer JN (2003) Do brand personality scales really measure brand personality? Brand Manag 11(2):143–155

Batra R, Myers JG, Aaker DA (1996) Advertising management, 5th edn. Prentice Hall, Upper Saddle River, p 716

Belk RW (1988) Possessions and the extended self. J Consum Res 15:139–168

Berry LL, Carbone LP, Haeckel SH (2002) Managing the total customer experience. MIT Sloan Manag Rev 43(3):85–89

Bettman JR (1993) ACR fellow's award speech: the decision maker who came in from the cold. In: McAlister L, Rothschild ML (eds) Advances in consumer research, vol 20. Association for Consumer Research, Provo, pp 7–11

Brown S, Kozinets RV, Sherry JE (2003) Teaching old brands new tricks: retro branding and the revival of brand meaning. J Mark 67:19–33

Coulter RA, Price LL, Feick L, Micu C (2005) The evolution of consumer knowledge and sources of information: Hungary in transition. J Acad Mark Sci 33:604–619, p 605

De Chernatony L (2001) From brand vision to brand evaluation. Strategically building and sustaining brands. Butterworth Heinemann, Oxford

Fournier S (1991) Meaning-based framework for the study of consumer-object relations. In Holman RH, Solomon MR (eds) NA – advances in consumer research volume 18. Association for Consumer Research, Provo, pp 736–742

Fournier S (1998) Consumers and their brands: developing relationship theory in consumer research. J Consum Res 24:343–373

Ger G, Belk RW, Lascu DN (1993) The development of consumer desire in marketizing and developing economies: the cases of Romania and Turkey. Adv Consum Res 20:102–107, p. 104

Hirschman EC, Holbrook MB (1982) Hedonic consumption: emerging concepts, methods and propositions. J Mark 46:92–101

Hogg MK, Cox AJ, Keeling K (2000) The impact of self-monitoring on image congruence and product/brand evaluation. Eur J Mark 34(5/6):641–666

Johar GV, Sengupta J, Aaker JL (2005) Two roads to updating brand personality impressions: trait versus evaluative inferencing. J Mark Res 42:458–469, p. 469

Kapferer JN (1996) Stealing brand equity: measuring perceptual confusion between National Brands and 'Copycat' own-label products. Mark Res Today 23(2):96–103

Keller KL (2003) Strategic brand management: building, measuring and managing brand equity, 2nd edn. Prentice Hall, Upper Saddle River, p 638

Kelly T (1998) Brand essence—making our brands last longer. J Brand Manag 5:390–391 (p. 390)

Levy SJ (1959) Symbols for sale. Harv Bus Rev 37:117–124

Ligas M (2000) People, products and pursuits: exploring the relationship between consumer goals and product meanings. Psychol Mark 17:983–1003

McCracken G (1986) Culture and consumption: a theoretical account of the structure and movement of the cultural meanings of consumer goods. J Consum Res 13(June):71–84

McCracken G (1987) Advertising: meaning or information? In: Wallendorf M, Anderson P (eds) Advances in consumer research, vol 14. Association for Consumer Research, Provo, pp 121–124

McCracken G (1988) Culture and consumption. Indiana University Press, Bloomington

Melewar TC, Hussey G, Srivoravilai N (2005) Corporate visual identity: the re-branding of France telecom. J Brand Manag 12:379–394, p. 391

Murphy GL, Medin DL (1985) The role of theories in conceptual coherence. Psychol Rev 92:289–316

Schultz M, De Chernatony L (2002) Introduction: the challenges of corporate branding. Corp Reput Rev 5(2/3):105–112

Solomon MR (1983) The role of products as social stimuli: a symbolic interactionism perspective. J Consum Res 10:319–329

Tsai S-P (2006) Investigating archetype icon transformation in brand marketing. Mark Intell Plan 24(6):648–663

Upshaw LB (1995) Building brand identity: a strategy for success in a hostile marketplace. Wiley, New York

Van Auken B (2000) Developing the brand building organization. J Brand Manag 7(4):281–290

Chapter 15
Considerations in Medical Software Purchase: Evidence from Dentistry in India

Jaydeep Mukherjee

Abstract With the proliferation of software in medical industry, marketers are trying to gain insights into the factors that medical professions consider important while making their software purchase decisions. New product adoption by a service provider has not been the focus of academic research in emerging markets like India. Since India is culturally and socially very different from western countries (where most of the academic research has taken place), this study becomes important. Since medical software is still a niche area, there is a need to investigate adoption and diffusion of these new innovations in the market. This research explores the key considerations in medical software purchase so as to improve the probability of marketing success of these products.

The conceptual framework was developed based on extensive literature review. The scales were adapted and the framework was empirically tested. Data was collected from 160 respondents from the dentistry business and could be considered representative of the target market of such medical software in India.

The results suggest that the adoption decision is facilitated by operational novelty, trialability, perceived risk, and relative advantage at an overall level. However, operational novelty and relative advantage were the significant factors which improved the probability of adoption. This finding could be used for designing marketing initiatives and budget allocation.

This framework could be a base model from where to start the process. This could help them have framework for deciding their marketing strategies. However, prudent marketers of medical software need to understand the behavior of their specific "target market."

Keywords Adoption of medical software in India • Framework for software adoption • Technology adoption in medical devices

J. Mukherjee (✉)
Management Development Institute, Gurgaon, India
e-mail: jmukherjee@mdi.ac.in

1   Introduction

The drive toward evidence-based practice in health care requires changes in work practices and supporting technology. Evidence-based practice can be defined as "the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients." This is contributing to the increase in use of software content in medical devises. Medical software industry has been adapting their product portfolio to cater to these emerging requirements. Medical software is becoming more complex and can be categorized into various subcategories like integrated medical software, surgery management programs, portability systems, knowledge-based systems, telemedicine software, etc. With the proliferation of software in medical industry, marketers are trying to gain insights into the factors that medical professions consider important while making their software purchase decisions. Since medical software is still a niche area, there is a need to investigate adoption and diffusion of these new innovations in the market. This research explores the key considerations in medical software purchase so as to improve the probability of marketing success of these products.

Due to the rapid evolution in the medical sciences, uses of innovative software products have become a necessity. The purchase decision processes for such products are often quite complex as they are business purchases with large buying centers. Buying center dynamics could be quite complex because of interplay of professional, social, and personal orientation of the decision-making unit. Research concerning innovations in the services context has primarily focused on new service development (Edgett 1994; Kelly and Storey 2000) or consumers' adoption of new types of services (Vrechopoulos et al. 2001). There are some researches about purchasing agent's opinion of a collective organizational decision (Chwelos et al. 2001). New product adoption by a service provider has not been the focus of academic research in emerging markets like India. Since India is culturally and socially very different from western countries (where most of the academic research has taken place), this study becomes important.

Any medical software sale in India is regulated by various agencies like FDA and is governed through standards like IEC 62304:2006,[1] ISO 13485[2], etc. Yet, there are resistances in adoption of new medical software by medical practitioners. In many cases, the features of software are inconsistent with the user's expectations or requirements. Sometimes, even after purchase, the software is used in unexpected ways which leads to post-purchase dissatisfaction. There are also cases where software is used in inappropriate but foreseeable ways, for which adequate design and operational controls were not applied by the developer. Similarly, user interface (UI) complexity caused user confusion, delay in use, or inability to use the software.

---

[1] IEC 62304:2006 is a standard which specifies life cycle requirements for the development of medical software within medical devices.

[2] ISO 13485 is a standard of Indian Standards Organization, published in 2003, that represents the requirements for a comprehensive management system for the design and manufacture of medical devices.

UI sometimes makes it difficult for user to correct data entry errors or modify device settings in a timely fashion. Software can falsely cause the user to believe a critical situation exists when it does not, or vice versa.

Some research has been done on the effect of culture on user acceptance of information technology, predicting behavioral intentions of consumers. Social influence represents societal pressure on users to engage in a certain behavior. This social pressure for an individual to perform a behavior varies by culture. The social influence based on culture will provide additional explanatory power concerning consumers' intention to use a technology (Bandyopadhyay and Fraccastoro 2007). This research explores how medical practitioners operating in Indian social and cultural context make purchase decisions of medical software.

The rest of the paper has a review of relevant literature on the area of innovation characteristics and their influence on adoption. Based on that, a conceptual framework was developed which was tested empirically. The research methodology and sample characteristics are presented. This is followed by the results of the data analysis and a discussion regarding the influence of contextual factors on medical practitioner's perceptions of innovation characteristics. The final section of the article presents conclusions, their implications, and suggestions for future research.

2   Literature Review

Adoption of medical software by medical institutions is the main focus in this research. Prior research demonstrates the importance of certain perceived innovation characteristics to be strong predictors of adoption rate (Black et al. 2001). Relative advantage, compatibility, trialability, observability, and complexity are commonly recognized as variables which are used for evaluating an innovation (Rogers 1995). Similarly, Technology Adoption Model (TAM) given by Venkatesh et al. (2003) is widely accepted and referred to framework for analyzing technology adoption. TAM proposed that behavioral intention has two key determinants – perceived ease of use (PEOU) and perceived usefulness (PU). The following section provides detailed understanding of each of the constructs and their interlinkages.

Relative advantage and operational novelty independently influence the adoption of a new technology (Weiss and Dale 1998). Relative advantage is the degree to which an innovation is perceived superior to ideas that it supersedes. It relates to comparing an innovation with products/services currently available. Three aspects of relative advantage have been identified; they are economic advantage, effectiveness, and reliability (Rogers 1995). Effectiveness is the degree to which an innovation is communicated as being relatively more capable in achieving an ideal end state. Reliability is the degree to which an innovation is communicated as being consistent in its results. The characteristics of effectiveness and reliability seem to be particularly applicable to an industrial market setting (Dearing et al. 1994).

Compatibility refers to an innovation's consistency with the existing values and past experiences of the adopters. Idea that is not compatible with the cultural norms

of a social system is likely to have slow adoption (Dearing et al. 1994). Complexity is the degree to which an innovation is relatively difficult to understand and use (Rogers 1995). Especially in the case of high-technology products, the complexity of an innovation is one of the main reasons for slow adoption or a total lack of adoption of the innovation in the mainstream markets (Chiasson and Lovato 2001). Weiss and Dale (1998) use the term "operational novelty" as a contraction of Rogers' complexity and compatibility, or rather as its inverse, i.e., incompatibility.

In clinical practice context, perceived usefulness appeared to be a more important factor than perceived ease of use. Thus, improvements in ease of use of the system will lead to increased perceived usefulness. Also, improvements in functionality will lead to an increased intention to use the system. Finally, both perceived ease of use and perceived usefulness will be prerequisites for acceptance in clinical practice (Schaik et al. 2002).

Innovation's relative advantage, complexity, compatibility, and perceived risk are significant characteristics that influence its acceptability (Jaakola and Renko 2007). Risk is defined as "the amount that would be lost if the consequences of an act were not favorable and individual's subjective feeling of certainty that the consequences will not be favorable." Risk is also defined in simplified form as "variation in distribution of possible outcomes, their likelihoods, and their subjective values." Risk is measured from three different perspectives – (a) derived from perception of product attributes level, (b) overall perception of the product class-/category-related risk, and (c) individual's personality trait on risk aspect. Antecedents to risk perception vary from situation to situation; however, the factors that stand out common across situations are (a) product level attributes; (b) likelihood of failure that leads to negative consequences; (c) individual's purchase goals, e.g., for self-use or as gift; and (d) other conditions associated with the specific purchase situation, e.g., product being sold via catalog, online, at the mall, etc. (Dowling and Staelin 1994).

3   Research Framework Development

The purpose of this research was to investigate the product-related characteristics that medical practitioners considered important while assessing their purchase of a new software product. Since there were too many constructs, and their interrelationships were not clear, depth interviews were conducted with a total of five decision makers of medical software users located in a major city in India. Their decision-making process was specifically probed on the following constructs: relative advantage, compatibility, trialability, observability, complexity, perceived ease of use, perceived usefulness, operational novelty, economic advantage, effectiveness, and reliability.

The mapping of the responses reflected that the software buying process was a high involvement, multistep, and multiconsideration process. Variables like operational novelty, trialability, perceived risk, and relative advantage were the key
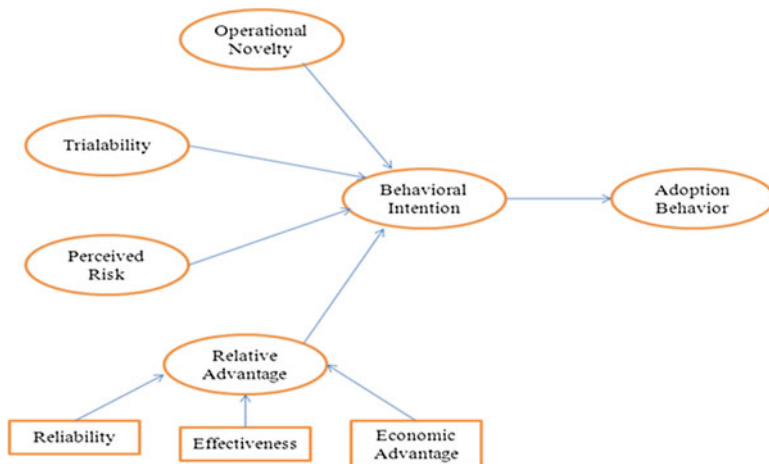
Exhibit 15.1   Framework for software adoption

drivers. Relative advantage was evaluated based on reliability, effectiveness, and economic advantage. Thus, a framework was developed to the model of adoption of the innovative software (refer to Exhibit 15.1).

Purchase behavior is quite difficult to measure in the context of a research study. However, the theory of reasoned analysis posits that "a behavioral intention measure will predict the performance of any voluntary act." Fishbein and Ajzen's model appears to hold quite well within the constraint of choice "not available to the respondent." Thus, it would seem that the Fishbein and Ajzen model has strong predictive utility (Sheppard et al. 1988).

Thus, the modified model, which was empirically tested, is given in Exhibit 15.2.

4   Operationalization of the Variables

4.1   Perceived Risk

The concept of perceived risk was first introduced by Bauer (1960). A substantial number of studies have also employed the concept of perceived risk (Tabak and Barr 1998). A negative association between perceived risk and new product purchase (innovative behavior) has been supported, e.g., Shimp and Bearden (1982) and Black et al. (2001). Grewal et al. (1994) distinguished between performance and financial risk; performance risk was the possibility that the product will fail to deliver the desired benefits, whereas financial risk included the risks associated with the initial purchase price as well as the subsequent maintenance costs. Product-specific risk has been tested by three questions:
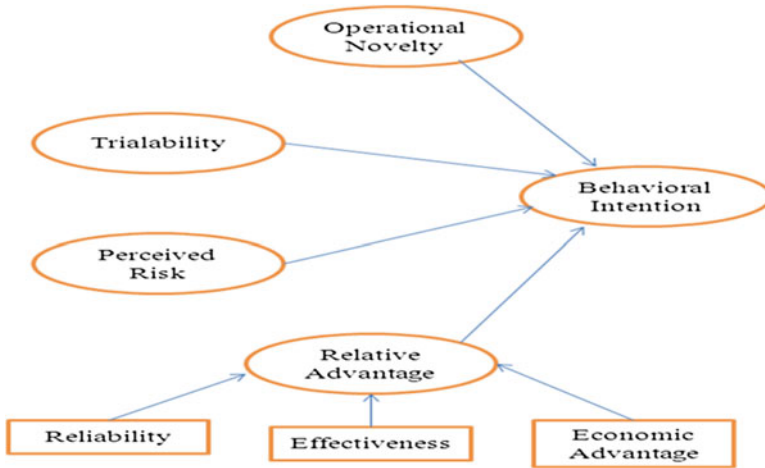
Exhibit 15.2 Software adoption framework to be empirically validated

1. Sometimes the proposed benefits of a new software may not materialize in actual use.
2. There is always a risk of upsetting patients if adopting a new software delays the process.
3. I am willing to use a new software if I find it easier to get the software to do what I want it to do relative to an existing software.

On the other hand, product category risk has been tested by:

1. I am willing to use a software product that has never been used in my industry.
2. I am willing to use a new software if learning to use it is easier than an existing software.
3. I am willing to use a new software if it gives faster return on investment than an existing software in the market.

4.2 Trialability

Trialability was the degree to which an innovation may be tried on a limited basis. Some innovations are more difficult than others to divide for trial (Rogers 1995). Trialability has been tested by asking the following questions:

1. I am willing to use a new software in my practice once I see it in actual use.
2. I am willing to use a new software in my practice after I try it myself.

4.3   Operational Novelty

Complexity is related to the skills and efforts needed and ease of use in clinical practice. The new product format was described to differ from existing products in the sense that it required new skills and routines from doctors who wished to include it in their routine work.

1. I am willing to use a new software if it is easier to use in clinical practice than an existing software.
2. Interacting with a new software should be clear and easily understood by me.

Compatibility of a new product with current medical practices and the prescriber's or his/her colleague's experiences are crucial for the product's acceptance. Compatibility with patient's experiences and norms was also relevant.

1. I am willing to use a new software even if its workflow is not compatible with my clinic's existing workflow.
2. My organization/clinic can adjust to new technology quickly.

4.4   Relative Advantage

Relative advantage is measured on two dimensions – reliability and effectiveness.

Reliability is the degree to which an innovation is communicated as being consistent in its results (Dearing et al. 1994). Reliability has been tested by asking the following questions:

1. Interacting with a new software should be clear and easily understood by me.
2. I am willing to use a new software if it is proven to be more reliable than an existing software in the market.
3. I am willing to use a new software if it improves my performance.

Effectiveness, i.e., the degree to which a new product is more capable of achieving an ideal end state, refers to the medical advantages of the product. The perceived effectiveness of a medical software is dependent upon the efficacy of available alternative software, tools like manual examination, data entry, etc. Effectiveness has been tested by asking the following questions:

1. I am willing to use a new software if it is easier to use in clinical practice than an existing software.
2. I am willing to use a new software if it promises consistent results over time than a current software in the market.
3. I am willing to use a new software only when the benefits of using it are clear to me.

The economic advantage of the product is related to its cost and savings and/or the earnings it would produce. Economic advantage can be equated to profitability, and it has been further divided into capital cost of the innovation and perceived savings (Völlink et al. 2002). A new product was considered to have an advantage if it enabled cost savings or could function as a source of income. It has been tested by asking the following questions:

1. I intend to use a new software rather than a conventional software if/when I can afford it.
2. I am willing to use a new software if it gives predictable and controllable administration costs than an existing software in the market.
3. I am willing to use a new software if it has lower maintenance costs than an existing software in the market.

4.5 Behavioral Intention

Behavioral intention is defined as a cognitive decision-making process to perform a behavior or action (Das and Pal 2011). Thus, behavioral intention could be used as a predictor for adoption decision in this research. It was measured by:

1. I would use a new software rather than a conventional software when it becomes available to me.
2. I intend to use a new software rather than a conventional software if/when I can afford it.
3. Given that I had access to a new software, I predict that I would use it rather than a conventional software.
4. I am willing to use a new software.

5 Methodology

Survey research was conducted. A 5-point Likert scale (strongly agree, agree, neither agree nor disagree, disagree, and strongly disagree) was developed to measure each of the constructs. The construct validity was provided by the literature-based development of the constructs (refer to Exhibit 15.3 for the references). The reliability was checked by conducting a pilot survey among 60 respondents. Based on the findings, a few of the questions were either modified or dropped (refer to Exhibit 15.4 for the final questionnaire).

The sampling was purposive. Three hundred copies of the questionnaire were sent to the branch offices of a software firm in India, which developed software for application in dentistry. Company's sales force decided to make most potential software customers as their target. The respondents were drawn from a targeted group of key decision-making individuals associated with medical practitioners. Before

Exhibit 15.3 Scale development references

Construct	Sub-construct	Questions, generic	Reference paper title
Perceived risk	Product category risk	I am willing to use a software product that has never been used in my industry	None
		I am willing to use a product that my peers have not tried	None
		Software changes regularly; still I am willing to use a new software	None
	Product-specific risk (performance risk, financial risk, relational risk)	Sometimes the proposed benefits of a new software may not materialize in actual use	Innovation diffusion and relationship marketing: an empirical study of factors influencing the intention to adopt the innovation of modular facility technology
		The cost involved in switching to a new software is really unknown	
		There is always a risk of upsetting patients if adopting a new software delays the process	Critical innovation characteristics influencing the acceptability of a new pharmaceutical product format
Observability/ communicability	Publicity	I would use a new software if my competitors talk about it	
		I am willing to use a new software if I read about it in media	
		I am willing to use a new software demonstrated in conferences	
	Word of mouth	I am willing to use a new software which I feel are popularly talked about	
Trialability/ divisibility	Result demonstrability	I am willing to use a new software only when the benefits of using it are clear to me	Predicting behavioral intentions of consumers: a framework
		I am willing to use a new software only if I can see the results of its usage	
	Visibility	I am willing to use a new software in my practice once I see it in actual use	None
		I am willing to use a new software in my practice after I try it myself	None
		I am willing to use a new software in my practice only if it is tested in the marketplace	None

(continued)

Exhibit 15.3 (continued)

Construct	Sub-construct	Questions, generic	Reference paper title
Operational novelty	Complexity (skills and efforts needed, ease of use in clinical practice)	Learning to use a new software is easy for me	Clinical acceptance of a low-cost portable system for postural assessment
		I am willing to use a new software if it is easier to use in clinical practice than an existing software	
		Interacting with a new software should be clear and easily understood by me	
	Compatibility (with current practice and norms, with patient's experiences, with doctor's or colleague's experiences)	My organization/clinic can adjust to new technology quickly	
		I am willing to use a new software even if its workflow is not compatible with my clinic's existing workflow	
		I am willing to use a new software even if it's different from the standards used in the industry	
Relative advantage	Reliability	I am willing to use a new software if it is proven to be more reliable than an existing software in the market	Critical innovation characteristics influencing the acceptability of a new pharmaceutical product format
		I am willing to use a new software if it promises consistent results over time than a current software in the market	
	Effectiveness	I am willing to use a new software if it improves my performance	Clinical acceptance of a low-cost portable system for postural assessment
		I am willing to use a new software if it enhances my effectiveness on the job	
		I am willing to use a new software if I find the system useful in my job	
		I am willing to use a new software if using it in my job enables me to provide better services to patients	
	Economic advantage	I am willing to use a new software if it gives faster return on investment than an existing software in the market	Innovation diffusion and relationship marketing: An empirical study of factors influencing the intention to adopt the innovation of modular facility technology
		I am willing to use a new software if it gives predictable and controllable administration costs than an existing software in the market	
		I am willing to use a new software if it has lower maintenance costs than existing PMS in the market	

Social advantage	I am willing to use a new software if those people who are important to me would support my use of this software	The effect of culture on user acceptance of information technology
	I am willing to use a new software if those who are important to me would want me to use this software	
	I am willing to use a new software if those people whose opinions I value would prefer me to use this software	
Effort advantage	I am willing to use a new software if learning to use it is easier than an existing software	Clinical acceptance of a low-cost portable system for postural assessment
	I am willing to use a new software if I find it easier to get the software to do what I want it to do relative to an existing software	
	I am willing to use a new software if I find it easier to interact with it than an existing software	
Behavioral intention	I would use a new software rather than a conventional software when it becomes available to me	The effect of culture on user acceptance of information technology
	I intend to use a new software rather than a conventional software if/when I can afford it	
	Given that I had access to a new software, I predict that I would use it rather than a conventional software	
	I am willing to use a new software	

Exhibit 15.4 Questionnaire

This is a survey for exploring technology adoption in dentistry. It is an academic research conducted by MDI, Gurgaon. Please complete the following questionnaire with specific regard to the above inquiry, by ticking ☑ the appropriate cell

Questions	Strongly agree	Agree	Neither agree/nor disagree	Disagree	Strongly disagree
I am willing to use a software product that has never been used in my industry					
I would use a new software if my competitors talk about it					
I am willing to use a new software in my practice once I see it in actual use					
My organization/clinic can adjust to new technology quickly					
I am willing to use a new software if it enhances my effectiveness on the job					
I am willing to use a new software if those people who are important to me would support my use of this software					
I would use a new software rather than a conventional software when it becomes available to me					
I am willing to use a product that my peers have not tried					
I am willing to use a new software if I read about it in media					
I am willing to use a new software in my practice after I try it myself					
I am willing to use a new software even if its workflow is not compatible with my clinic's existing workflow					
I am willing to use a new software if I find the system useful in my job					
I am willing to use a new software if those who are important to me would want me to use this software					
I intend to use a new software rather than a conventional software if/when I can afford it					
Software changes regularly; still I am willing to use a new software					

Exhibit 15.4 (continued)

Questions	Strongly agree	Agree	Neither agree/nor disagree	Disagree	Strongly disagree
I am willing to use a new software demonstrated in conferences					
I am willing to use a new software in my practice only if it is tested in the marketplace					
I am willing to use a new software even if it's different from the standards used in the industry					
I am willing to use a new software if using it in my job enables me to provide better services to patients					
I am willing to use a new software if those people whose opinions I value would prefer me to use this software					
Given that I had access to a new software, I predict that I would use it rather than a conventional software					
Sometimes the proposed benefits of a new software may not materialize in actual use					
I am willing to use a new software which I feel is popularly talked about					
Learning to use a new software is easy for me					
I am willing to use a new software if it is proven to be more reliable than an existing software in the market					
I am willing to use a new software if it gives faster return on investment than an existing software in the market					
I am willing to use a new software if learning to use it is easier than an existing software					
I am willing to use a new software					
The cost involved in switching to a new software is really unknown					
I am willing to use a new software only when the benefits of using it are clear to me					

Exhibit 15.4 (continued)

Questions	Strongly agree	Agree	Neither agree/nor disagree	Disagree	Strongly disagree
I am willing to use a new software if it is easier to use in clinical practice than an existing software					
I am willing to use a new software if it promises consistent results over time than a current software in the market					
I am willing to use a new software if it gives predictable and controllable administration costs than an existing software in the market					
I am willing to use a new software if I find it easier to get the software to do what I want it to do relative to an existing software					
There is always a risk of upsetting patients if adopting new software delays the process					
I am willing to use a new software only if I can see the results of its usage					
Interacting with a new software should be clear and easily understood by me					
I am willing to use a new software if it improves my performance					
I am willing to use a new software if it has lower maintenance costs than existing PMS in the market					
I am willing to use a new software if I find it easier to interact with it than an existing software					

Demographic data

Practice type	☐ Student	☐ Single clinic	☐ Multiple clinics	☐ Radiology center	☐ Dental hospital
City of practice	…………………………………………				
Number of years in practice	☐ 0–5	☐ 6–10	☐ 11–15	☐ More than 15	
Average daily patient count	☐ <10	☐ 10–20	☐ 20–30	☐ 30–50	More than 50

administering the self-reported questionnaire, a sales representative gave a brief overview of the survey purpose and then asked the medical practitioner/administrative team to fill up the survey.

The survey was conducted in the first 2 weeks of December 2012. This short period provided a window that avoided late response effects discussed in some traditional surveys (Cooper and Schindler 1998). Respondents were offered two incentives. The first was the opportunity to receive the survey results as part of their participation. The second was that their participation would result in a collective contribution to academic literature. Completed responses from 160 medical practitioners were received and analyzed.

The sample included 135 (84 %) single clinics, 23 (15 %) multiple clinics, and 2 (1 %) hospitals. There were 45 (28 %) clinics which had less than 10 patients daily, 82 (51 %) clinics which had 10–20 patients daily, 18 (11 %) clinics which had 20–30 patients daily, while the remaining 15 (10 %) had 30–40 patients daily. There were 70 (44 %) clinics which had less than 5 years of practice, 42 (26 %) clinics which had 5–10 years of practice, 26 (16 %) clinics which had 10–15 years, while the remaining 22 (14 %) had more than 15 years of practice. The sample was representative of the target market of such medical software in India.

6   Data Analysis

Reliability was checked using SPSS 10.0 software. Cronbach's alpha figures (given in Exhibit 15.5) were more than the minimum acceptance range of 0.6 for exploratory research (Malhotra 2004).

After assessing the eligibility of scale for measuring different variables in the study, the next step was to test the hypothesized relationships in a structural model. As the chi-square (χ^2) test is susceptible to sample size, an overall model fit was also examined using the Tucker-Lewis index (TLI), the comparative fit index (CFI), and the root-mean-square error of approximation (RMSEA). According to literature (Arbuckle and Wothke 1999), the recommended fit values for all the fit indices are ≥ 0.90 and that of RMSEA is ≤ 0.08. The results obtained from AMOS software are given in Exhibit 15.6. All fit indices were within the recommended range, indicating an acceptable model fit.

Exhibit 15.5 Reliability figures of the constructs from SPSS software

Sr. no.	Construct	Cronbach's alpha
1	Behavioral intention	0.6897
2	Relative advantage	0.6886
3	Operational novelty	0.6676
5	Perceived risk	0.7000
6	Trialability	0.7245

Exhibit 15.6 Relevant results from AMOS software

Statistic	Recommended value	Obtained value
(χ^2)/df	<3.00	1.450
GFI	>0.90	0.907
CFI	>0.90	0.922
RMSEA	<0.08	0.052
TLI	>0.90	0.900

Exhibit 15.7 Regression results

Coefficients[a]

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.
		B	Std. error	Beta		
1	(Constant)	7.753E-02	.457		.170	.865
	RADV	.568	.112	.375	5.081	.000
	OPR_NOV	.304	.061	.327	5.012	.000
	TRIAL	−4.68E-03	.072	−.005	−.065	.948
	RISK	.114	.077	.108	1.487	.139

[a]Dependent variable: BI

However, the regression data (given in Exhibit 15.7) suggests that relative advantage and operational novelty had positive impact on behavioral intention and were significant also. However, "trialability" and "perceived risk" did not have significant impact on behavioral intention.

7   Discussion

The buying decision of medical software is typically a business buying decision in India, which suggests the presence of a buying center. It is very easy to comprehend the presence of multiple stakeholders in a multi-doctor hospital chain or a clinic which has multiple doctors. Even if it were a single doctor clinic, multiple stake-holders are involved. There would be users of the software, like the operators who would have a perspective which is likely to be different from the doctor as far as adoption of software was concerned. Similarly, there could be influencers like the medical associations and associates of the doctor or those who manage the finances of the organization; each of whom could have perspectives which are diverse as well as divergent. The process of an organizational buying was expected to be stepwise, with different stakeholders being concerned about different aspects of the frame-work at different stages of the buying process. Thus, the results are to be interpreted, keeping in view the contextual realities of this research.

This research tries to provide only a macro understanding of the medical software purchase process. As respondents in this research were people who played

different roles in the buying center, the findings would not be specific to any particular role. However, the framework has validated the major drivers of the purchase intention, which could be used as a checklist for instantiating and evaluating any marketing or sales initiative.

The marketing initiative should enhance the perception of relative advantage and trialability and at the same time reduce the perceived risks associated as well as operational novelty of adoption.

The results were quite interesting. The overall structural model was acceptable which showed that operational novelty, trialability, perceived risk, and relative advantage were the drivers of the purchase intention. However, in the regression analysis, operational novelty and trialability were found to be not significant.

These seemingly contradictory results needed a deeper analysis. If one were to choose a particular result over the other, then the structural model which was validated by AMOS software was possibly more robust, as it considered interdependence of the variables as well as considered latent constructs, while regression method assumed interdependence of variables. One possible way to explain the apparent difference between the analyses by two different methods is that the two insignificant variables were possibly not adequately used by the marketers, which resulted in their becoming insignificant as independent variables. However, they potentially had significant impact on the adoption decision, as is evident from the analysis which considers interdependence among variables. Thus, the objective would be to explore how these two variables could be used better by the marketers.

Trialability could be enhanced by creating demonstration centers or training facilities where any doubts regarding the software could be addressed. The other way to increase trialability would be to make the software modular, where the buyer could buy specific modules (core product) and keep adding new functionalities or augmentations. Pricing mechanisms like selling software as a service could also be used to alleviate this problem.

Relative advantage had three components, reliability, effectiveness, and economic advantage. Reliability is normally established based on past track record, which gets manifest in the brand. However, for innovative new-to-the-market products, where such possibility does not exist, testimonials and endorsements could be quite helpful.

Effectiveness of software is relatively difficult to demonstrate in the short run. However, specific functionalities which are not present in competitive offers can be highlighted as point of difference. This can also be possibly supported by more subtle use of word-of-mouth recommendations and testimonials from users who are known to the customer.

Economic advantage is best addressed by showing the life cycle cost. However, care has to be exercised in making this presentation as it can be perceived differently by different members of the buying center. Life cycle cost is normally the concern of the top management, and they may see cost savings in operations (part of which could be reduction on manpower) as a major advantage. However, if the same presentation is made to end users, this could be quite disconcerting. In such cases, one may highlight only the ease of operation.

Risk perceptions could have many dimensions and be difficult to assess. One of the ways to address this aspect is to keep listing the concerns of the customer and not to counter the concerns as and when they appear. After the marketer has a reasonably comprehensive list of concerns, all of them can be bunched together into a set of main concerns and addressed comprehensively. This is very critical as the risk perceptions keep lingering and the customer starts imagining problems, especially in case of new products. In a group decision making, the process can become more complicated. Comprehensive handling has the ability to provide closure, which is essential in progressing the decision-making process.

Operational novelty has different impacts on the different members of buying center. Hence, it requires careful handling by the sales and marketing team. The specific use of operational novelty as a marketing tool is context specific and needs to be handled carefully. It is normally a serious concern for the operations team and not the top management. Since any change, howsoever small, requires adjustments to be made in operations and require people to come out of their comfort zone, there is likely to be resistance. On the other hand, the top management is likely to look forward to the benefits that the operational novelty can provide. This aspect is to be well assessed by the sales team by addressing the different elements of the buying centers, sensitively and possibly differently.

8   Limitations

Out of the 300 questionnaires that were sent, only 160 usable responses were received. Also, the selections of the respondents were convenience based. Thus, the sample might not be representative of the population.

This research was primarily focused on the product aspects. There could be more product-related factors like pricing (as Indian consumers are very price sensitive), which need to be explored. Similarly, there could be considerable impact of the intangible aspects like the brand name, collaboration with international partners, etc., which could improve the predictive power of the model.

Perceived risk construct which was used in this model could be further differentiated between product category risk and product-specific risk. For our study, it was combined. This area needs further research as the consumers may have entirely different ways to mitigate the different risks.

9   Area of Future Research

Several studies have developed and used quantitative instruments to measure adopter's perceptions of predetermined innovation attribute taxonomies. This model builds on previous research done by developing a comprehensive model for Indian conditions

and empirically validating the model. However, the two broad areas of further improving the models are as given below:

The software purchase is mostly a business buying; consequently it is a multiple-member decision-making process. There is need to understand which specific constituent of a buying center was interested in which aspect of the software. Thus, future research could be conducted on specific target consumers in the organization, representing different elements of the buying center.

This research was from the product-centric point of view; however, specifically controlling for or studying intangible aspects like brand associations, previous relationship with the buying firms, etc., would improve the model.

References

Arbuckle JL, Wothke W (1999) Amos 4.0 user's guide. Smallwaters Corporation, Chicago

Bandyopadhyay K, Fraccastoro KA (2007) The effect of culture on user acceptance of information technology. Commun Assoc Inf Syst 19:522–543

Bauer RA (1960) Consumer behavior as risk taking. In: Hancock RS (ed) Dynamic marketing in a changing world. American Marketing Association, Chicago, pp 389–398

Black NJ, Lockett A, Winklhofer H, Ennew C (2001) The adoption of internet financial services: a qualitative study. Int J Retail Distrib Manag 29(8):390–398

Chiasson MW, Lovato CY (2001) Factors influencing the formation of a user's perceptions and use of a DSS software innovation. Database Adv Inf Syst 32(3):16–35

Chwelos P, Benbasat I, Albert S, Dexter AS (2001) Research report: empirical test of an EDI adoption model. Inf Syst Res 12(3):304–321. doi:10.1287/isre.12.3.304. 9708

Cooper DR, Schindler PS (1998) Business research methods, 6th edn. McGraw-Hill Book Co, Singapore

Das R, Pal S (2011) Exploring the factors affective the adoption of mobile financial services among the rural under-banked, Retrieved on 27th November 2012 from https://www.iimahd.ernet.in/assets/snippets/workingpaperpdf/2011-02-022011-02-02Rajanish.pdf

Dearing JW, Meyer G, Kazmierczak J (1994) Portraying the new: communication between university innovators and potential users. Sci Commun 16(1):11–42

Dowling GR, Staelin R (1994) A model of perceived risk and intended risk-handling activity. J Consum Res 21:119–134

Edgett S (1994) The traits of successful new service development. J Serv Mark 8(3):40–49

Grewal D, Gottlieb J, Marmorstein H (1994) The moderating effects of message framing and source credibility on the price-perceived risk relationship. J Consum Res 21:145–153

Jaakkola E, Renko M (2007) Critical innovation characteristics influencing the acceptability of a new pharmaceutical product format. J Market Manag 23(3–4):327–346

Kelly D, Storey C (2000) New service development: initiation strategies. Int J Serv Ind Manag 11(1):45–63

Malhotra NK (2004) Marketing research: an applied orientation. Pearson Education Inc., Upper Saddle River

Rogers EM (1995) Diffusion of innovations. The Free Press, New York

Schaik PV, Bettany-Saltikov JA, Warren JG (2002) Clinical acceptance of a low-cost portable system for postural assessment. Behav Inform Technol 21(1):47–57

Sheppard BH, Hartwick J et al (1988) The theory of reasoned action: a meta-analysis of past research with recommendations for modifications and future research. J Consum Res 15:325–343

Shimp TA, Bearden WO (1982) Warranty and other extrinsic cue effects on consumers' risk perceptions. J Consum Res 9:38–46

Tabak F, Barr SH (1998) Innovation attributes and category membership: explaining intention to adopt technologic innovations in strategic decision making contexts. J High Technol Manag Res 9(1):17–33

Venkatesh V, Morris MG, Davis G, Davis F (2003) User acceptance of information technology: toward a unified view. MIS Q 27(3):425–478

Völlink T, Meertens R, Midden CJH (2002) Innovating 'diffusion of innovation' theory: innovation characteristics and the intention of utility companies to adopt energy conservation intervention. J Environ Psychol 22(4):333–344

Vrechopoulos AP, George SJ, Doukidis GI (2001) Internet shopping adoption by Greek consumers. Eur J Innov Manag 4(3):142–153

Weiss JA, Dale BC (1998) Diffusing against mature technology: issues and strategy. Ind Mark Manag 27(4):293–304

Chapter 16
Counterfeit Purchase Intentions Among College Students: An Empirical Investigation

Rojalin Mishra and Asmita Shukla

Abstract Nowadays, counterfeiting has become a severe threat to the world economy. These counterfeit goods are deteriorating the value of genuine brands. Therefore, with consideration to this reality that counterfeiting is increasing, it is necessary to study the psychological factors behind counterfeit purchase intention. This study was designed to get a better understanding of the general phenomenon of counterfeiting as well as the specific reasons why people purchase counterfeit goods. The main objective of the present study was to examine the mediating role of impulsive buying tendency (IBT) on the relationship between hedonic shopping motivation (HSM), fashion consciousness (FCS) and willingness to buy counterfeit goods (WBC). The results were obtained from a structural equation analysis by testing a sample of 355 college students from different cities of Odisha, India. The findings confirmed the proposed mediation model, that is, IBT acts as a mediator between HSM and WBC as well as between FCS and WBC. Finally, the results are discussed and suggestions for future research are given.

Keywords Hedonic shopping motivation • Fashion consciousness • Impulsive buying tendency and willingness to buy counterfeit goods

1   Introduction

Counterfeit goods refer to any unauthorised product that infringes upon intellectual property rights like the brand names, patents, trademarks or copyrights (Chaudbry and Walsh 1996; Kapferer 1995). Counterfeiting goods closely imitate the appearance of the original goods. Counterfeits are those products bearing a trademark that is identical to, or indistinguishable from, a trademark, registered to another party, thus infringing the rights of the holder of the trademark (Bian and Veloutsou 2007; Chaudbry and Walsh 1996). The consumer is the end user in the counterfeit transaction process and consumer involvement may be attributed to sheer ignorance or in some

R. Mishra (✉) • A. Shukla
School of Humanities, Social Sciences and Management,
IIT Bhubaneswar, Bhubaneswar, Odisha, India
e-mail: rojalin123@gmail.com; asmitas@gmail.com

cases as a willing participant (Cordell et al. 1996). Consumers' cognitive willingness to purchase the counterfeit goods has become a matter of concern today. The topic of the research was to examine the psychological factors behind the buying behaviour, when the products are known to be counterfeits.

Nowadays, counterfeiting has emerged as a severe threat to the economy, which hampers the original brand value Harvey and Romaine (1985). Previous research studies revealed that the cases where people prefer counterfeit goods than the genuine ones, being fully aware of the fact that what they were buying were far from the originals, were mainly due to two reasons: their easy access and amazingly low prices (Gentry et al. 2001). It remains a fact that there are many people who purchase counterfeit goods and this has become a serious economic problem. Genuine brand owners invest a huge sum to build a brand name and goodwill for their products, while counterfeit producers use dubious methods to copy the same with minor and insignificant changes to dupe the owner of the brand, their hard-earned money by easily using the brand names without having to spare their cost for it. The most important factor is to understand the reason behind a person's willingness or unwillingness to seek out and purchase counterfeit goods. As per the evidence from the past research, about one-third of consumers would knowingly purchase counterfeit goods (Phau et al. 2001; Tom et al. 1998). Previous research has also revealed that consumers may be willing to purchase counterfeit luxury products in order to obtain the benefits with a perceived value relating to the price-quality trade-off (Cheek and Easterling 2008; Eisend and Pakize 2006; Furnham and Valgeirsson 2007; Phau and Teah 2009; Phau et al. 2009; Wilcox et al. 2009). Major researches had been focused on different factors like the marketing skills of the retailer, shopping environment, product category, brand price, brand image and country of origin of counterfeit goods (Chakraborty et al. 1997;Yoo and Lee 2012), with considerable less research on consumers who buy the counterfeit products. Several studies have examined the various psychological factors regarding consumers buying behaviour in the context of counterfeit purchases. Research has been done to examine the impact of big five personality, attitude, and materialism on willingness to buy counterfeit goods (Furnham and Valgeirsson 2007). Previous studies also suggested that the variables like fashion, lifestyle, perceived social/emotional value, perceived utilitarian value and perceived economic value significantly influence the buying behaviour of consumers to pay for luxury fashion brands (Li et al. 2012). Previous studies have hardly examined the role of hedonic motivation, fashion consciousness and impulsive buying tendency in the context of willingness to buy counterfeit goods. All the abovementioned variables are related to other psychological factors like personality and materialism and also have significant relationship with impulsive buying tendency (López and Villardefrancos 2013). So it calls for further investigation to find out whether impulsive buying tendency has any impact on willingness to buy counterfeit goods or not. The objective of this study is to examine the impact of impulsive buying tendency as a mediator on the relationship between hedonic shopping motivation and fashion consciousness on willingness to buy counterfeit products.

2   Method

2.1   *Participants*

The sample included in this research comprises of 355 students from Odisha (India). Fifty-four percent of the total samples were male and 46 % were female. Age range was between 17 and 26 years. As for education level, 47 % of the samples were undergraduates, 22 % were graduates and 31 % had a postgraduation degree.

2.2   *Measures*

2.2.1   Hedonic Shopping Motivation

Hedonic shopping motivation was measured by a 12-item scale developed by Arnold and Reynolds (2003). This instrument evaluates the motivation to engage in excessive buying patterns. It includes 12 statements (e.g. "To me, shopping is an adventure") and ratings are made on a five-point scale from 1 (strongly disagree) to 5 (strongly agree). The Cronbach's alpha for hedonic shopping motivation scale was 0.94.

2.2.2   Fashion Consciousness

This study adopted five items from the Fashion Conscious Scale (FCS) developed by Gould and Stern (1989) to measure respondents' level of fashion consciousness. Examples of the items from the scale are "I am very conscious of the fashion related to my own gender" and "I pay attention to the way people dressed". Respondents indicated their agreement on a scale of 1 (strongly disagree) to 5 (strongly agree). The Cronbach's alpha coefficient was 0.86.

2.2.3   Impulsive Buying Tendency

The impulsive buying tendency was assessed by the scale developed by Lin and Chen (2013). It includes nine items each rated on a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree) assessing the buying tendency (e.g. I often buy things spontaneously). Cronbach's alpha for impulsive buying tendency scale was 0.90.

2.2.4   Willingness to Buy Counterfeit Products

Willingness to buy counterfeit products was measured by the scale developed by Furnham and Valgeirsson (2007). Response was measured by the statement: given good quality and good price, I would have no problem in buying counterfeit

products like clothing, CDs and DVDs, software, watches and shoes on a five-point scale. In the current study, Cronbach's alpha was 0.80.

2.3   Procedure

Data collection was conducted in different cities in Odisha, India. A structured questionnaire was prepared which included all the relevant factors. Five hundred questionnaires were distributed out of which 300 and 50 valid responses were obtained. The response rate was 71 %.

2.4   Statistical Analysis

Structural equation models (SEMs) were used in this research to test the conceptual framework and to investigate relationships among variables using Amos 18. The goodness of fit of the model was estimated, using the chi-squared test, the $\chi 2/df$ ratio, the Comparative Fit Index (CFI), the Goodness-of-Fit Index (GFI), the Adjusted Goodness-of-Fit Index (AGFI) and the Root Mean Square Error of Approximation (RMSEA). Correlation and reliability analysis were also used to validate the scales using SPSS18.

3   Results

The main objective of this study was to determine whether impulsive buying tendency acts as a mediator between hedonic shopping motivation, fashion consciousness and willingness to buy counterfeit goods. In order to test the role of impulsive buying tendency as a mediator, we followed the procedure given by Baron and Kenny (1986). Regression analysis was used to test the mediating effect. For a mediation model, regression coefficients of all the equations must be significant and R^2 of third equation must be greater than the R^2 of first equation.

To test the mediating effect of impulsive buying tendency on the relationship between hedonic shopping motivation and willingness to buy counterfeit goods, we ran the following regression equations:

$$WBC = \beta_0 + \beta_1 HSM \tag{16.1}$$

$$IBT = \beta_0 + \beta_2 HSM \tag{16.2}$$

$$WBC = \beta_0 + \beta_3 HSM + \beta_4 IBT \tag{16.3}$$

where β = regression coefficient, WBC = willingness to buy counterfeit goods, HSM = hedonic shopping motivation and IBT = impulsive buying tendency.

Table 16.1 Summary of regression analysis of hedonic shopping motivation and impulsive buying tendency on willingness to buy counterfeit goods

Equations	R^2	B
$WBC = \beta_0 + \beta_1 HSM$ (16.1)	0.77	0.88*
$IBT = \beta_0 + \beta_2 HSM$ (16.2)	0.83	0.91*
$WBC = \beta_0 + \beta_3 HSM + \beta_4 IBT$ (16.3)		
HSM	0.80	0.45*
IBT		0.47*

WBC willingness to buy counterfeit goods, HSM hedonic shopping motivation, IBT impulsive buying tendency

$N = 355$, *$p < 0.01$

Table 16.2 Summary of regression analysis of fashion consciousness and impulsive buying tendency on willingness to buy counterfeit goods

Equations	R^2	B
$WBC = \beta_0 + \beta_1 FCS$ (16.4)	0.66	0.81*
$IBT = \beta_0 + \beta_2 FCS$ (16.5)	0.71	0.84*
$WBC = \beta_0 + \beta_3 FCS + \beta_4 IBT$ (16.6)		
FCS	0.79	0.25*
IBT		0.67*

WBC willingness to buy counterfeit goods, FCS fashion consciousness, IBT impulsive buying tendency

$N = 355$, *$p < 0.01$

The results obtained are shown in Table 16.1. As the results of the first regression equation, hedonic shopping motivation significantly predicted willingness to buy counterfeit goods. On the basis of the second regression equation, hedonic shopping motivation significantly predicted impulsive buying tendency. Hedonic shopping motivation and impulsive buying tendency significantly predicted willingness to buy counterfeit goods in the third equation in Table 16.1.

Similarly to test the mediating effect of impulsive buying tendency on the relationship between fashion consciousness and willingness to buy counterfeit goods, we ran the following regression equations:

$$WBC = \beta_0 + \beta_1 FCS \tag{16.4}$$

$$IBT = \beta_0 + \beta_2 FCS \tag{16.5}$$

$$WBC = \beta_0 + \beta_3 FCS + \beta_4 IBT \tag{16.6}$$

where β = regression coefficient, WBC = willingness to buy counterfeit goods, FCS = fashion consciousness and IBT = impulsive buying tendency.

Similarly the regression results in Table 16.2 indicate the mediating role of impulsive buying tendency between fashion consciousness and willingness to buy counterfeit goods.

Table 16.3 shows the correlations, mean values and standard deviations for the variables included in the analysis. For exploratory research, a Cronbach's α greater than 0.70 is generally considered reliable (Nunnally 1978). Cronbach's α statistics

Table 16.3 Correlations, means and standard deviations of all the variables

	1	2	3	4
1. HSM	1			
2. FCS	0.895**	1		
3. IBT	0.910**	0.842**	1	
4. WBC	0.876**	0.810**	0.877**	1
Mean	35.02	13.67	26.21	14.28
S.D.	11.47	4.82	8.37	4.76

HSM hedonic shopping motivation, *FCS* fashion consciousness, *IBT* impulsive buying tendency, *WBC* willingness to buy counterfeit goods
**$p<0.01$

for the study variables are 0.88 (HSM), 0.89 (FCS), 0.86 (IBT) and 0.87 (WBC) for each of the four factors, respectively.

Results seem to suggest that impulsive buying tendency act as a mediator between hedonic shopping motivation, fashion consciousness and willingness to buy counterfeit goods. Finally, in order to obtain an overall fit of the relationships between the variables used in the regression, they were subjected to structural equation analysis using the AMOS v. 18.0. Initially, the model tested (Model 1) was constructed from the regression results and suggests for both the direct effects (of hedonic shopping motivation and fashion consciousness on willingness to buy counterfeit goods) and the indirect effects (via impulsive buying tendency).
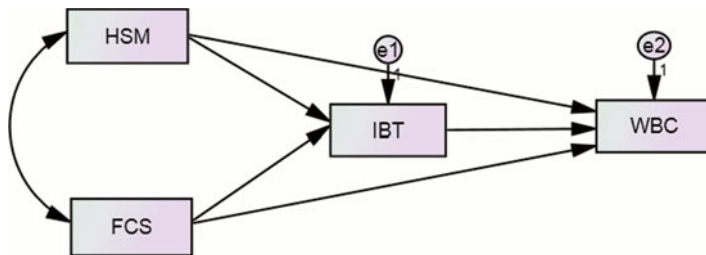
The results of the structural analysis indicated the value of chi-square and degrees of freedom as 0 and the probability level cannot be computed. The regression weights indicated that the direct effect of fashion consciousness on willingness to buy counterfeit goods was not significant ($\beta=0.066$, $p=0.211$). Subsequently, we tested an alternative model (Model 2).

Fig. 16.1 Final model showing the relationship between hedonic shopping motivation, fashion consciousness, impulsive buying tendency and willingness to buy counterfeit goods

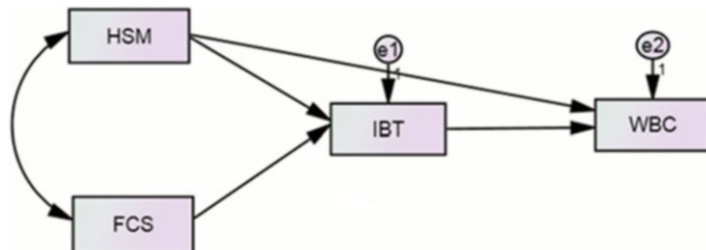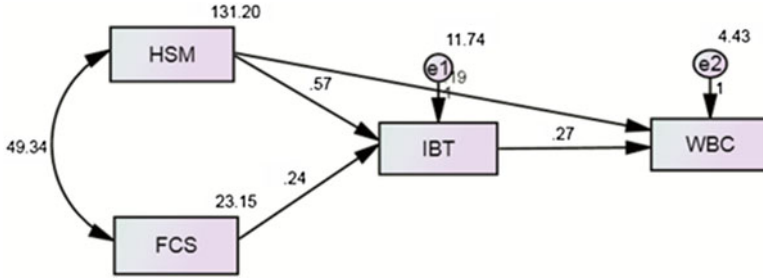This model restricts the direct path between fashion consciousness and willingness to buy counterfeit goods. The goodness-of-fit measures revealed that the overall model exhibits a good fit. The goodness-of-fit indices show, in general, a good adjustment of the model to the data [$\chi2$ (df) = 1.16(1), $\chi2$/df = 1.16; CFI = 1.00; GFI = 0.99; AGFI = 0.98; RMSEA = 0.040]. The results of the path analysis are shown in Fig. 16.1.

All structural paths used in the model between hedonic shopping motivation, fashion consciousness and impulsive buying tendency were proved to be significant as $p < 0.001$. The model demonstrates the mediating role of impulsive buying tendency between hedonic shopping motivation, fashion consciousness and willingness to buy counterfeit goods. The model also revealed the direct relationship between hedonic shopping motivation and willingness to buy counterfeit goods.

4 Discussion and Conclusion

The traditional assumption is that consumers purchase counterfeit brand purchases predominantly because of their low prices (Gentry et al. 2006; Phau et al. 2001). The present study first demonstrates psychological factors like hedonic shopping motivation, fashion consciousness and impulsive buying tendency are also the reason of counterfeit brand consideration. The result showed that hedonic shopping motivation significantly predicted willingness to buy counterfeit goods. The present study also showed the indirect effect of hedonic shopping motivation (HSM) through the mediator impulsive buying tendency. Fashion consciousness has an indirect and positive impact on willingness to buy counterfeit goods (WBC). The result shows the covariance between hedonic shopping motivation and fashion consciousness. Nowadays, everyone wants to buy fashion/luxury goods to maintain the lifestyle of current generation. The consumers with medium and even low levels of income desire to consume luxury products as the rich consumers (Hanzaee and Jalalian 2012) which leads to purchase of counterfeit brands. Consumers with medium and low incomes, who have not enough money to buy fashion/luxury products, are purchasing these counterfeit goods. This study found that consumers who have fashion consciousness

and impulsive buying tendency had shown more willingness to buy counterfeit goods. But in case of consumers having hedonic motivation, they have positive attitude towards counterfeit goods. Hedonic shopping motivation has a positive impact on willingness to buy counterfeiting and this relationship is mediated by impulsive buying tendency. Consumers shopping with hedonic motive are more attentive towards enjoyment perspectives. They consider shopping as a way of relieving stress and an escape mechanism from daily life. Consumers with hedonic shopping motive feel shopping as adventure and a pass time. So, they can buy counterfeit goods without thinking of consequences. Consumers having impulsive buying tendency normally shop goods for satisfaction of their inner urge. Impulsive buyers normally take an immediate decision of purchase.

5   Implication and Future Research

Some practical implications could be proposed from the findings in the current study. For instance, marketers need to understand the psychological factors of consumer to minimize the counterfeit trade. Previous researches in consumer behaviour revealed that the main reason behind the purchase of counterfeit goods was low prices and easy access. The present study demonstrates that the reason can be the consumers' psychological factors like motivation, perception and habit. This study also has certain limitations that we hope will be sort out in the near future. Firstly, the role of demographic factors like age, gender, income class and educational background had been excluded from our investigation. Secondly, we did not segregate the effect of willingness to buy counterfeit goods for different product categories. Future researchers can take different product categories to compare the counterfeiting. Finally, the variables under this study are only some psychological factors; there are other variables (perception, affect and learning) which need to be studied. Besides the psychological factors, other factors like economic and legal factors can be taken into consideration. Despite the various limitations of the study, we hope this research will contribute a lot to the understanding of the growing counterfeit market.

References

Arnold MJ, Reynolds KE (2003) Hedonic shopping motivation. J Retail 79:77–95

Bian X, Veloutsou C (2007) Consumers' attitudes regarding non-deceptive counterfeit brands in the UK and China. J Brand Manag 14(3):211–222

Chakraborty G, Allred A, Sukhdial AS, Bristol T (1997) Use of negative cues to reduce demand for counterfeit products. Adv Consum Res 24(1):345–349

Chaudbry PE, Walsh MG (1996) An assessment of the impact of counterfeiting in international markets: the piracy paradox persists. C J World Bus 2:34–48

Cheek WP, Easterling CP (2008) Fashion counterfeiting: consumer behaviour issues. J Fam Consum Sci 100(4):40–48

Cordell V, Wongtada N, Kieschnick L (1996) Counterfeit purchase intentions: role of lawfulness attitudes and product traits as determinants. J Bus Res 35(1):41–53

Eisend M, Pakize S (2006) Explaining counterfeit purchases: a review and preview. Acad Mark Sci Rev 12:1–22

Furnham A, Valgeirsson H (2007) The effect of life values and materialism on buying counterfeit products. J Socio-Econ 36(50):677–685

Gentry JW, Putrevu S, Shultz C, Commuri S (2001) How now Ralph Lauren? The separation of brand and product in a counterfeit culture. Adv Consum Res 28:258–265

Gentry JW, Putrevu S, Shultz CJ (2006) The effects of counterfeiting on consumer research. J Consum Behav 5:245–256

Gould SJ, Stern BB (1989) Gender schema and fashion consciousness. Psychol Mark 6:129–145

Harvey MG, Romaine IA (1985) International counterfeiters: marketing success without the cost and the risk. C J World Bus 20(3):37–45

Hanzaee KH, Jalalian S (2012) Impact of non-price factors on purchase intention counterfeits. Res J Appl Sci Eng Technol 4(18):3313–3322

Kapferer J (1995) Brand confusion: empirical study of a legal concept. Psychol Mark 12:551–569

Li G, Li G, Kambele Z (2012) Luxury fashion brand consumers in China: perceived value, fashion lifestyle, and willingness to pay. J Bus Res 65(10):1516–1522

Lin Y, Chen C (2013) Passengers' shopping motivations and commercial activities at airports – the moderating effects of time pressure and impulse buying tendency. Tour Manag 36:426–434

López JM, Villardefrancos E (2013) Five-factor model personality traits, materialism, and excessive buying: a meditational analysis. Personal Individ Differ 54(6):767–772

Nunnally JC (1978) Psychometric theory, 2nd edn. McGraw-Hill, New York

Phau I, Teah M (2009) Devil wears (counterfeit) Prada: a study of antecedents and outcomes of attitudes towards counterfeits of luxury brands. J Consum Mark 26(1):15–27

Phau I, Prendergast G, Chuen LH (2001) Profiling brand-piracy-prone consumers: an exploratory study in Hong Kong's clothing industry. J Fash Mark Manag 5(1):45–55

Phau I, Teah M, Lee A (2009) Targeting buyers of counterfeits of luxury brands: a study on attitudes of Singaporean consumers. J Target Meas Anal Mark 17(17):3–15

Tom G, Garibaldi B, Zeng Y, Pilcher J (1998) Consumer demand for counterfeit goods. Psychol Mark 15(5):405–421

Wilcox K, Kim H, Sen S (2009) Why do consumers buy counterfeit luxury brands? J Mark Res 46(2):247–293

Yoo B, Lee S (2012) Asymmetrical effects of past experiences with genuine fashion luxury brands and their counterfeits on purchase intention of each. J Bus Res 65(10):1507–1515

Chapter 17
Critical Factors Within Organizations Influencing Effective Use of CRM Solutions

Šebjan Urban, Samo Bobek, and Tominc Polona

Abstract Better management of customer relations is one of key issues in recovering economies and is therefore one of key problems of managing in recovering markets. In this paper, issues of effective use of customer relations management (CRM) solutions are discussed. Developed conceptual model is based on the technology acceptance model (TAM). In the literature, researchers analyze several important organizational factors and connect them to the performance, effectiveness, implementation, and use of CRM solutions. Researchers often connect the usefulness of CRM solutions with the individual level of customers, and less with the level of organization and its orientations. In the model, these issues are contained in set of organizational factors (process, technological, and innovation orientation of organizations) influencing the effective use of CRM solutions. Organizational factors are reflected in the three types of orientations – in process, technological, and innovation orientation of companies. In this paper, the model is presented and organizational factors are discussed more deeply.

1 Introduction

Customer relationship management (CRM) solutions have been developed as an approach based on maintaining positive relationships with customers, increasing customer loyalty, and expanding customer lifetime value (Brassington and Pettit 2000; Ahn et al. 2003). There are two main reasons for the increased interest in the field of CRM solutions: the development of information technologies and the increased importance of orientation to the customers as the basic business philosophy.

Š. Urban (✉) • S. Bobek • T. Polona
School of Economics and Business, University of Maribor, Slovenia,
Razlagova 14, 2000 Maribor, Slovenia
e-mail: urban.sebjan@uni-mb.si; samo.bobek@uni-mb.si; polona.tominc@uni-mb.si

Effective CRM solution is about acquiring, analyzing, and sharing knowledge about and with your customers for the quick and timely service to the customer. CRM solution provides an integrated view of customer interactions starting with software applications that capture these interactions and with the effective analyses of the data to reveal the hidden and important information required for improving the relationship of firms with the customers (Davood Karimzadgan et al. 2013).

After implementing CRM solutions, the improvement of its effectiveness is the constant endeavor of organizations. CRM solution held out a lot of promise in the mid-1990s, but a considerable number of failures caused concern about its usefulness (Kaushik and Kundan 2009). An important factor for this could be that the management in the organization still often treats the technological aspects as the most important and not enough attention to processes and employees (Vella and Caruana 2012). Research results show that the technology is important, but is not the only and sufficient factor for the success of the implementation of the CRM system (Mary Lou et al. 2005). The majority of problems in implementation of CRM are not of the technological nature but organizational and include organizational changes and disorders, different views regarding customers data, and changes in business processes (Finnegan and Currie 2010). That is why the comprehensive research of organization's orientation toward organizational factors that have the impact on effective use of CRM solutions is needed.

Researchers are analyzing the effectiveness of implementation of CRM solutions (McGill and Bax 2007) from the different points of view. Researchers often base their work on TAM (technology acceptance model) model and extend it with factors associated with level of individuals at the different working positions (Avlonitis et al. 2005; don Lee et al. 2010), as well as at the level of the whole organization; some are also oriented toward research of factors influencing the usefulness of IT solutions and technologies at clients on the market (Giovanis et al. 2012).

Our preliminary research of published findings by other authors shows that issues of organizational factors, especially regarding the orientation of organizations and perceived usefulness of IT solutions at the level of organization, were not researched. Goldenberg (2000) discussed the CRM solutions as the technology-integrated business process management strategy that maximizes relationships and encompasses the entire organization.

In this paper, the model which incorporates impacts of organizational factors on effective use of CRM will be presented and process orientation, technology orientation, and innovation orientation will be further explained as prerequisites for effective implementation of CRM solutions.

2   Theoretical Background

For the effective use of modern IT solutions, several internal and external factors have to be taken into account. Researchers analyzing the effective use of CRM solutions, technology and other IT solutions, are including different critical organizational factors. Moreno and Melendez (2011) have developed model and found the fundamental role of the organizational factors (aspects to do with the leadership of the top management, human resource management, functional integration, and organizational structure) in the implementation of CRM. Considering that implementing CRM requires changes both in the way a firm is organized and in its business processes (Sin et al. 2005), any model needs to include a variable measuring the importance and effect of these organizational factors on CRM success. Thus, the strategy, the organizational structure, and the business processes all need to be transformed to implement CRM, since success in the initiative will depend on creating the right synergy between technological systems, processes, and people (Xu and Walton 2005).

Almotairi (2008) has reviewed critical factors of successful CRM – although we found no organizational factor regarding the organization's orientation, the factors included may represent the starting point for studying process and technological orientation of organization, since they include process and technological aspects of these factors. Hung and others (2010) suggested the integrated model with organizational factors (size of organization, employees' capabilities in the field of informatics systems, innovativeness of management, and capacity for knowledge management) that are the most important for CRM solutions implementation.

Davood Karimzadgan et al. (2013) were comparing CRM solutions based on organizational factors, where management, structures, and employees were included. They found that organizational factors (management, structures, and employees) have a major impact on performance of CRM solutions.

Tan et al. (2002) are focusing on five factors needed for effective implementation of CRM solution: customer-centric strategy, commitments from people, improved or redesigned process, software technology, and infrastructure. The field-focused research of Sarmaniotis et al. (2013) deals with factors of effective implementation of CRM solutions in luxury hotels. The following factors of effective implementation of CRM solutions were identified: effective customer communication strategy, profitable marketing strategy and IT infrastructure, suitable organizational strategy, and administrative support.

Avlonitis et al. (2005) were analyzing the relationship among three factors (social factors, organizational factors, and factors of an employee) and perceived usefulness of CRM solutions, used by an employee in the organization, by using the TAM model. They found out that there is a positive relationship between each of these factors and perceived usefulness of the CRM solution. don Lee et al. (2010) identified formal and informal influential factors that have an impact on usefulness of

ERP system. Among formal factors, the trainings and educations and working environment were included, and communication at the informal factors' side. Significant association was found between trainings and educations on one side and usefulness of ERP system on the other.

3   Conceptual Model

According to our preliminary research conducted within several case research studies and based on published research by other authors mentioned above, we developed conceptual model presented by Fig. 17.1. The conceptual model incorporates the relationships among influencing organizational factors, determined by (1) process orientation, (2) technology orientation, and (3) innovation orientation of organization, which have an impact on the effective use of CRM as well as on the intensity of implementation and use of CRM solutions. Within this process, the TAM model, which includes the perceived usefulness of IT solutions and technologies, was taken into account and its parts have been adapted.

CRM solution focuses on automatization and improvement of processes in organization (Xin et al. 2002). Chen and Popovich (2003) define the CRM solution as the integrated approach, including the process; therefore, the organization has to be process oriented for the effective use of CRM solution.

Technology should be considered as the incentive for implementing the CRM solution (Bose 2002; Ryals and Knox 2001), since it enables the adequate and in-depth information that are available in the entire organization, for employees about all subjects in the market (Payne and Frow 2004; Yu 2001). Research results show that CRM is a very complex and comprehensive concept of integration of IT (Bull 2003), while Chen and Ching (2004) stress that IT investments on general ensure higher performance of CRM solution. CRM solution requires the IT to capture, store, organize, and distribute customer information (Piccoli et al. 2003). Also,
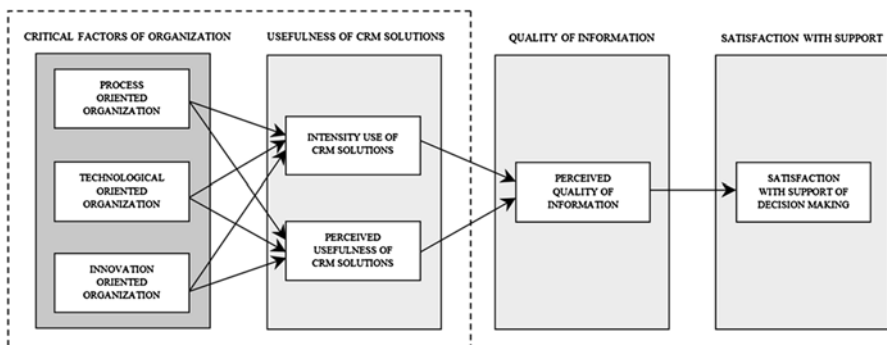

Fig. 17.1 Conceptual research model

Chen and Popovich (2003) found the technology to be a very important factor of CRM solution. Several studies found the positive relationship between the perceived usefulness of new IT solutions and the attitude toward technology (Vijayasarathy 2004; Plewa et al. 2012). Recent studies focused on the identification of organizational factors, leading to the successful use of CRM solutions (Yu 2001); therefore, the usefulness of CRM solution may differ among organizations also due to organizational factors (Chen and Ching 2004).

Increased use of digital technologies by customers, especially the use of Internet, changes also the abilities and expectations about customer relations management (Tamminga and O'Halloran 2000). Progress in the field of data technologies, like data warehousing in data mining, is crucial for working and effectiveness of CRM solutions (Bull 2003). The CRM itself is not a technology, but is a system focused to customers, the strategy, and/or the set of business processes and methodology (Greenberg 2001), but is dependent from the technology. For example, Pan and Lee (2003) discuss that e-CRM contributed to the expansion of traditional technology of CRM and became the new channel with the integration of Internet technology. Communication focused on potential customers can use individual approach by e-mails and social media (Facebook, YouTube, Twitter, blogs) (Quinton and Harridge-March 2010).

There are also several researches found in the literature that connect the use of CRM solution with innovation capacity and ability. Ramani and Kumar (2008) suggested the CRM to be the cocreator of design, maintenance, and promotion of relationships with stakeholders in the market, and as such, the CRM represents the strategic element for innovative capacity development. Organizations that have important information about their customers are capable to increase their innovative capacity to meet the needs of the target market (Ottum and Moore 1997; Souder et al. 1997). Several studies confirm that triggers of innovations in the firm are important information about market demands and competition (Lagrosen 2005). Lin et al. (2010) also stress the important effects of CRM solution on the innovativeness, but it was also found that different levels of CRM solution may have the effect on different kinds of innovativeness. But no research deals with the perceived usefulness (and its intensity) in regard to the organization's orientation toward innovations.

In the rest of this paper, three types of orientations – process, technology, and innovation – within three frameworks of organizational factors regarding our conceptual model are further explained.

4   Process Orientation

Process orientation of organization may be defined as the organizational effort that requires the creation of the platform of business processes for organizational structure and planning (Reijers 2006; Sabherwal et al. 2001). Škrinjar et al. (2010, 2011) defined elements of process orientation: strategic view, process definition

and documentation, process measurement and management, process organizational structure, people management, market orientation, supplier view, process organizational culture, and IT/IS support. In the literature, we can find several other concepts that define the process orientation of organizations: process-based organization (O'Connell et al. 2006), process enterprise (Hammer and Stanton 1999), process-oriented organization (Kumar et al. 2008), process-focused organization (Neubauer 2009), etc.

The process orientation approach focuses on processes instead on hierarchy (McCormack and Johnson 2001) and on business processes instead on functional structures (Reijers 2006). The philosophy of process management is heuristic comprehensive problem-solving, process oriented, focused on customers and based on facts, incorporated in entire organization (Kohlbacher and Gruenwald 2011). Management of business processes includes the discovery, design, operations, optimization, and simulation of business processes (Smith and Fingar 2003). Several researchers also suggested the constructs for measurement of process orientation of organization (Kohlbacher and Gruenwald 2011; McCormack and Johnson 2001; Reijers 2006; Vera and Kuntz 2007) with nine different dimensions: process design and documentation, management commitment, process owner, process performance measurement, corporate culture in line with the process approach, organizational structure in line with the process approach, people and expertise, process-oriented HR systems, and coordination and integration of process projects.

Brocke and Rosemann (2010) defined six important elements of business process management: strategic coordination, governance, methods, IT, people, and culture. Smart et al. (2008) defined the following factors: process strategy, process architecture, process ownership, measurement of processes, and process improvement, while Lockamy and McCormack (2004) identified the process management and measurements and process jobs in process view.

5 Technological Orientation

Innovation orientation is strongly R&D-oriented, is proactive in acquiring new technologies, and uses sophisticated and new technologies in the development of new products (Cooper 1985; Burgelman and Sayles 1986). Because of their strong commitment to R&D, technology-oriented firms can build new technical solutions and offer new and advanced products to meet customer needs (Gao et al. 2007). Gatignon and Xuereb (1997) propose that technologically oriented firms can use their technical knowledge to build new technical solutions to address the needs of their customers.

A technology-oriented firm tolerates and often encourages employees with "crazy ideas" or an instinctive interest in inventing something drastically new. In such a firm, introducing breakthroughs becomes a strategic and cultural priority (Hurley and Hult 1998). Yang et al. (2012) indicted that a technology-oriented firm has the ability to simultaneously focus on internal technological resources (i.e., scientific expertise, design processes, and internal communication) and external

technological opportunities (i.e., intelligence gathering, technology scanning, dissemination, and networking). Reflecting the philosophy of a "technological push," technology-oriented firms believe that consumers prefer products and services that offer technological superiority (Li 2005) that gives the firm potential for a greater competitive advantage – one that cannot be easily imitated by the competition (Gatignon and Xuereb 1997; Song and Parry 1997).

The value of a technology orientation, however, likely depends on technological turbulence, which refers to the rate of technological changes within an industry. When the level of technological changes is relatively low, firms can benefit from relying on and making full use of their current technologies. However, because of their commitment to technological superiority, technology-oriented firms devote their resources to R&D activities, which incurs substantial costs and expenses that may not be worthwhile when the pace of technological change is low. Hence, a higher level of technology orientation is needed to cope with high levels of technological turbulence (Gao et al. 2007).

6   Innovation Orientation

The earliest papers in the field of innovative stance date back to 1992, when the researchers started to explain innovative stance as an all-encompassing whole of innovative programs in organizations, which are strategic in nature (Worren et al. 2002). Kundu and Katz (2003) think that "being innovative" is an element of the innovative orientation. Homburg et al. (2002) also understand innovative stance as a function which is reflected in the number of innovations offered by the company, insofar as these innovations are available to customer and to the point of how much these innovations are highlighted. According to Amabile (1997), the key elements of innovative orientation are as follows: value based on creativity and innovation in general, risk-taking approach, a sense of pride in the organizational team, the excitement of being able to do something, and the offensive strategy with the future prospects.

Innovative approach can lead to competencies in the technological field and innovative production methods. It also increases employee satisfaction, helps exposing unique talent, and increases the productivity in organization. Apart from that, it can have positive effects on the brand itself. Innovative orientation can foster the development of innovative capacities (Branzei and Vertinsky 2006), it positively affects the firm's long-term success, and it enhances organizational flexibility, willingness to change, and the introduction of new products while decreasing organizational inertia (Hult et al. 2004). Innovative orientation implies the openness of the organization to new ideas and its responsiveness to changes following the adoption of new technologies, resources, skills, and administrative systems. Innovative attitude is a key factor in overcoming barriers and improving the ability of organizations to successfully adopting or implementing new systems, processes, or products (Zheng Zhou et al. 2005).

7   Conclusion

In this paper, we discuss the critical organizational factors (procedural, technological, and innovative orientation of organization) and their impact on the usability of CRM information solutions. In order to effectively and efficiently implement and use CRM solutions in companies, they need to understand the role of key organizational factors. Compared to the other researchers dealing with IT solutions and technologies, we were not restricted to specific jobs and the characteristics of users within the organization (Avlonitis et al. 2005; Son et al. 2012) or users on market (Schierz et al. 2010), which means that we have discussed the use of CRM information solutions at the level of an entire organization.

There are a lot of successful expansions and additions to the TAM model (e.g., Sternad et al. 2011). A construct of usefulness of the CRM information solutions which derives from the TAM model has been included in the conceptual model. We have filled a gap in the research attempts in the field of IT solutions, which is a result of the lack of empirical evidence on the direct and indirect impact of critical organizational factors, which are reflected in the approach of an organization and its inclination to use CRM information solutions efficiently and effectively. In this paper, we have attempted to additionally clarify the effective use of CRM solutions. The conceptual model includes other constructs with which we want to verify the benefits of the intensity of use and perceived usefulness of CRM information solutions, which are reflected in the quality of information and, consequently, in the satisfaction reflected in its support. Preliminary research conducted as research studies has already partly confirm some of our assumptions and undergoing field research conducted on sample of companies will provide deeper understanding of relationships between variables in our conceptual model.

References

Ahn YJ, Kim KS, Han SK (2003) On the design concepts for CRM systems. Ind Manag Data Syst 103(5):324–331

Almotairi M (2008) CRM success factors taxonomy. In: European and Mediterranean conference on information systems, 25–26 May

Amabile TM (1997) Motivating creativity in organizations: on doing what you love and loving what you do. Calif Manage Rev 40(1):39–58

Avlonitis G, Nikolaos J, Panagopoulos G (2005) Antecedents and consequences of CRM technology acceptance in the sales force. Ind Mark Manag 34(4):355–368

Bose R (2002) Customer relationship management: key components for IT success. Ind Manag Data Syst 102(1/2):89–97

Branzei O, Vertinsky I (2006) Strategic pathways to product innovation capabilities in SMEs. J Bus Ventur 21(1):75–105

Brassington F, Pettit S (2000) Principles of marketing. Prentice Hall, London

Brocke J, Rosemann M (eds) (2010) Handbook on business process management 1. Springer, London

Bull C (2003) Strategic issues in customer relationship management (CRM) implementation. Bus Process Manag J 9(5):592–602

Burgelman RA, Sayles LR (1986) Inside corporate innovation: strategy, structure, and management skills. Free Press, New York

Chen J-S, Ching KHR (2004) An empirical study of the relationship of IT intensity and organizational absorptive capacity on CRM performance. J Glob Inf Manag 12(1):1–17

Chen IJ, Popovich K (2003) An empirical study on the e-CRM performance influence model for service sectors in Taiwan. Bus Process Manag 9(5):672–688

Cooper RG (1985) Industrial firms' new product strategies. J Bus Res 13(2):107–121

Davood Karimzadgan M, Davood V, Rahebeh A (2013) Investigating factors that affect CRM success with using structural equation modeling (case study: between staffs in Isfahan R&D scientific small city). Int J Acad Res Econ Manag Sci 2(2):160–168

don Lee H, Sang M, Olson DL, Chung SH (2010) The effect of organizational support on ERP implementation. Ind Manag Data Syst 110(2):269–283

Finnegan DJ, Currie WLA (2010) A multi-layered approach to CRM implementation: an integration perspective. Eur Manag J 28:153–167

Gao GY, Zheng Zhou K, Yim CKB (2007) On what should firms focus in transitional economies? A study of the contingent value of strategic orientations in China. Int J Res Mark 24:3–15

Gatignon H, Xuereb J-M (1997) Strategic orientation of the firm and new product performance. J Mark Res 34:77–90

Giovanis A, Binioris S, Polychronopoulos G (2012) An extension of TAM model with IDT and security/privacy risk in the adoption of internet banking services in Greece. EuroMed J Bus 7(1):24–53

Goldenberg B (2000) What is CRM? What is an e-customer? Why you need them now. In: Proceedings of DCI customer relationship management conference, Boston, MA, 27–29 June

Greenberg P (2001) CRM at the speed of light. McGraw-Hill, Berkeley

Hammer M, Stanton S (1999) How process enterprises really work. Harv Bus 77(6):108–118

Homburg C, Hoyer WD, Fassnacht M (2002) Service orientation of a retailer's business strategy: dimensions, antecedents, and performance outcomes. J Mark 66(4):86–101

Hult G, Tomas M, Hurley RF, Knight GA (2004) Innovativeness: its antecedents and impact on business performance. Ind Mark Manag 33:429–438

Hung SY, Hung WH, Tsai CA, Jiang SC (2010) Critical factors of hospital adoption on CRM system: organizational and information system perspectives. Decis Support Syst 48:592–603

Hurley RF, Hult GTM (1998) Innovation, market orientation, and organizational learning: an integration and empirical examination. J Mark 62:42–54

Kaushik M, Kundan S (2009) CRM: a strategic approach. J Manag Res 8(2):65–82

Kohlbacher M, Gruenwald S (2011) Process orientation: conceptualization and measurement. Bus Process Manag J 17(2):267–283

Kumar U, Lavassani KM, Kumar V, Movahedi B (2008) Measurement of business process orientation in transitional organizations: an empirical study. Bus Inf Syst 7:357–368

Kundu SK, Katz JA (2003) Born-international SMEs: BI-level impacts of resources and intentions. Small Bus Econ 20(1):25–47

Lagrosen S (2005) Customer involvement in new product development: a relationship marketing perspective. Eur J Innov Manag 8(4):424–436

Li JJ (2005) The formation of managerial networks of foreign firms in China: the effects of strategic orientations. Asia Pac J Manag 22(4):423–443

Lin R-J, Chen R-H, Chiu KK-S (2010) Customer relationship management and innovation capability: an empirical study. Ind Manag Data Syst 110(1):111–133

Lockamy A, McCormack K (2004) The development of a supply chain management process maturity model using the concepts of business process orientation. Supply Chain Manag Int J 9(4):272–278

Mary Lou R, Liu RR, Hazard K (2005) Strategy, technology and organisational alignment: key components of CRM success. Database Mark Cust Strategy Manag 12(4):315–326

McCormack K, Johnson B (2001) Business process orientation, supply chain management and the ecorporation. IIE Solutions Norcross 33(10):33–37

McGill T, Bax S (2007) From beliefs to success: utilizing an expanded TAM to predict web page development success. Int J Technol Hum Interact 3(3):36–53

Moreno AG, Melendez AP (2011) Analyzing die impact of knowledge management on CRM success: the mediating effects of organizational factors international. J Inf Manag 31(5):437–444

Neubauer T (2009) An empirical study about the status of business process management. Bus Process Manag J 15(2):166–183

O'Connell J, Pyke J, Withehead R (2006) Mastering your organization's processes: a plain guide to business process management (1ed.). Cambridge University Press, Cambridge

Ottum BD, Moore WL (1997) The role of market information in new product success/failure. J Prod Innov Manag 14(4):258–273

Pan SL, Lee JN (2003) Using e-CRM for a unified view of the customer. Commun of ACM 46(4):95–99

Payne A, Frow P (2004) The role of multi-channel integration in customer relationship management. Ind Mark Manag 33(6):527–538

Piccoli G, O'connor P, Capaccioli C, Alvarez R (2003) Customer relationship management – a driver for change in the structure of the US lodging industry. Cornell Hotel Restaur Admin Q 44(4):61–73

Plewa C, Troshani I, Francis A, Rampersad G (2012) Technology adoption and performance impact in innovation domains. Ind Manag Data Syst 112(5):748–765

Quinton S, Harridge-March S (2010) Relationships in on line communities: the potential for marketers. J Res Interact Mark 4(1):56–73

Ramani G, Kumar V (2008) Interaction orientation and firm performance. J Mark 72(1):27–45

Reijers HA (2006) Implementing BPM systems: the role of process orientation. Bus Process Manag J 12(4):389–409

Ryals L, Knox S (2001) Cross-functional issues in the implementation of relationship marketing through customer relationship management. Eur Manag J 19(5):534–542

Sabherwal R, Hirschheim R, Goles T (2001) The dynamics of alignment: insights from a punctuated equilibrium model. Organ Sci 12(2):179–197

Sarmaniotis R, Assimakopoulos C, Papaioannou P (2013) Successful implementation of CRM in luxury hotels: determinants and measurements. EuroMed J Bus 8(2):134–153

Schierz PG, Schilke O, Wirtz BW (2010) Understanding consumer acceptance of mobile payment services: an empirical analysis. Electron Commer Res Appl 9(3):209–216

Sin LYM, Tse ACB, Yim FHK (2005) CRM: conceptualization and scale development. Eur J Mark 39(11/12):1264–1290

Škrinjar R, Bosilj-Vukšić V, Indihar-Štemberger M (2010) Adoption of business process orientation practices: Slovenian and Croatian survey. Bus Syst Res 1(1–2):1–50

Škrinjar R, Bosilj-Vukšić V, Indihar-Štemberger M (2011) Empirical examination of the dimensions of business process orientation. In: Proceedings of the ITI 2011 33rd international conference on information technology interfaces, Cavtat, Croatia, 27–30 June, pp 83–88

Smart PA, Maddern H, Maull RS (2008) Understanding business process management: implications for theory and practice. University of Exeter, Discussion papers in management, Paper number, 07/08, pp 1–35

Smith H, Fingar P (2003) Business process management: the third wave. Meghan-Kiffer Press, Tampa

Son H, Park Y, Kim C, Chou J-S (2012) Toward an understanding of construction professionals' acceptance of mobile computing devices in South Korea: an extension of the technology acceptance model. Autom Constr 28:82–90

Song XM, Parry ME (1997) A cross-national comparative study of new product development processes: Japan and the United States. J Mark 61:1–18

Souder WE, Buisson D, Garrett T (1997) Success through customer driven new product development: a comparison of US and New Zealand small entrepreneurial high technology firms. J Prod Innov Manag 14(6):459–472

Sternad S, Gradišnik M, Bobek S (2011) The influence of external factors on routine ERP usage. Ind Manag Data Syst 111(9):1511–1530

Tamminga P, O'Halloran P (2000) Finding the real value in CRM: leveraging IT solutions through the customer driven approach. Cutter IT J 13(10):4–11

Tan X, Yen DC, Fang X (2002) Internet integrated customer relationship management. J Comput Inf Syst 42(3):77–83

Vella J, Caruana A (2012) Encouraging CRM systems usage: a study among bank managers. Manag Res Rev 35(2):121–133

Vera A, Kuntz L (2007) Process-based organization design and hospital efficiency. Health Care Manage Rev 32(1):55–65

Vijayasarathy LR (2004) Predicting consumer intentions to use on-line shopping: the case for an augmented technology acceptance model. Inf Manag 41(6):747–762

Worren N, Moore K, Pablo C (2002) Modularity, strategic flexibility, and firm performance: a study of the home appliance industry. Strateg Manag J 23(12):1123–1140

Xin T, Yen DC, Xiang F (2002) Internet integrated customer relationship management: a key success factor for companies in the e-commerce arena. J Comput Inf Syst 42(3):77–86

Xu M, Walton J (2005) Gaining customer knowledge through analytical CRM. Ind Manag Data Syst 105(7):955–972

Yang Y, Wang Q, Zhu H, Wu G (2012) What are the effective strategic orientations for new product success under different environments? An Empirical Study of Chinese Businesses. J Prod Innov Manag 29(2):166–179

Yu L (2001) Successful customer – relationship management. MIT Sloan Manag Rev 42(4):18–19

Zheng Zhou K, Gao GY, Yang Z, Zhou N (2005) Developing strategic orientation in China: antecedents and consequences of market and innovation orientations. J Bus Res 58:1049–1058

Chapter 18
Customer Voices Incorporated in a Marketing Class: A Review

Kirti Sharma, Jaydeep Mukherjee, and Mukul P. Gupta

Abstract The focus of this paper is to revisit the manner in which marketing pedagogy could assume the task of incorporating the consumer's voice in the classroom. Consumer's voice is well established as a central theme in marketing literature, curriculum, and business practices. Educators teaching marketing as a subject are continuously in pursuit of understanding the consumer behavior and, thereby, play an important role in influencing how a new crop of managers perceive, receive, and respond to this aspect of conducting business. The business world also constantly keeps demanding tools and strategies to help them better understand their consumer, as also to widen their consumer base in a constantly changing scenario.

Keywords Role of academics in the field of marketing • Marketing education • Customer voice • Listening to a consumer's voice • Market failures • Teaching customer centricity • Marketing class

1 Introduction

A general impression seems to be growing: that there is a sort of disconnect between conceptual knowledge, i.e., academia and operational skills, i.e., the business world. Several studies have pointed out this gap between business education and actual practice. This gap, on one hand, leaves the academia to grapple with questions regarding its relevance and, on the other, causes concern that without an academic backbone to the industry, workplace skills may not be adequately standardized, and they may even miss out on being systematically incorporated into business practices. B-schools are trying to bridge this gap by improving their industry-academia interface by inviting people from the world of business to teach, as well as by forming joint research agenda with the members of the industry.

K. Sharma (✉) • J. Mukherjee • M.P. Gupta
Management Development Institute, Gurgaon, India
e-mail: kirti.sharma@mdi.ac.in; jmukherjee@mdi.ac.in; mukul@mdi.ac.in

2   Marketing: Practice and Education

The authors feel that this gap is a manifestation of the difference between how the prevailing marketing pedagogy perceives the consumer, the consumer's voice, how it incorporates this into the curriculum, and how the industry formats the marketing function. Essentially, this means that the academia and the industry differ on issues of indentifying their consumer and capturing the consumer's voice.

The question, therefore, emerges: What is the role of academics in the field of marketing? – Is it to provide basic skills to students who are preparing to join the industry? Or, is it to conduct research, focus on understanding the problems and find solutions to the same, and evolve framework and theories that the industry can apply to improve its functioning? Often, there is a lack of clarity on who is expected to lead, as that defines the agenda of various stakeholders.

Therefore, the principal endeavor here is to identify the critical assumptions and differences in perspective. Some of the concerns explored here are as follows.

When we say "voice of the consumer," whose voice are we talking about? Who exactly is this consumer? Businesses across the board usually only focus on the customers who have the ability to pay for their products of services, typically missing out the obligates who voice their rejection and the beneficiaries who are entitled to certain types of gains (Bolton et al. 2004; J Mark Manag 2012). This creates a gap, for while the academia would cover all conceptual possibilities, the industry chooses to focus on what is practical and economically viable.

Both marketing education and businesses seem to be doing well as regards capturing voices of advocacy and complaints, but do they truly manage to capture rejection on any level? From a practical point of view, this poses a big problem because trying to capture such voices could be extremely expensive, notwithstanding questions about the utility. From a practitioner's point of view, this problem may go even deeper. Capturing the voice of rejection could potentially bring up issues of inefficiency on the practitioner's end, and hence, the latter is unlikely to be interested in the subject. The question arises, should academics insist on pursuing such areas or should they leave it to the discretion of the industry?

However, for some business organizations, it could be important to capture the consumer's voice of rejection and understand the reasons behind it in order to improve performance. It is a voice of rejection again when a consumer switches to competition or chooses substitute products/services – are we doing enough to capture the message therein? Who is responsible for capturing the voices of consumers from these various categories, to what end can these be studied, and whether the system followed in the industry encourages such an endeavor or not?

For example, in case of a hospital, who may be considered the consumer? Is it the patient who avails himself/herself of its products/services or the insurance company that pays the bills, or is it the doctors who provide their skills, or is it the government that is responsible for conducting checks and inspections and issuing necessary licenses, etc.? In this way, all businesses, large and small, find their "consumer" on various levels, and they all have a varying set of demands they expect to

be met. Thus, we have a continuum of consumer voices ranging from advocacy to complaint to rejection (Madichie 2009; Warren 1992).

While pondering the role of marketing education from the point of view of conceptual knowledge vis-à-vis operational skills, we may want to find out how strongly are the two aspects linked – are they independent of each other or are they only contextually relevant? In case they are found to be strongly linked, educators would likely be required to play a more active role as executors and advisors than remain dissociated from practice, as is the norm in academia – the two worlds split into thinkers and doers. It is largely to deal with this limitation that executives are increasingly finding their way into the academic world as executive professors (O'Driscoll and Murray 1998; Mentzer and Schumann 2006).

In order to find answers to the questions detailed above, understanding what the industry values and how it operates is of paramount importance. Our endeavor should be to figure out where lies the locus of the problem: Is it the education system that falls short of delineating clearly the importance of listening to a consumer's voice, or is it the organizational structure of businesses that dilutes the need to focus on the voice of the consumer by using a disconnected matrix of performance measures and reward systems?

This is a conflict of perspectives and driving it is the matter of focus on process/results. While the academia focuses on the overall development of the society through the development of a healthy organization and efficient market systems, the industry focuses on its own interests, on maximizing profits rather than maximizing the utility and service to its consumers. It may be admitted that this induces the possibility of market failures and inappropriate use of means in many situations.

For example:

A. The "Triomune" controversy about providing affordable anti-AIDS drugs to sub-Saharan Africa
B. Portrayals of women in advertisements wherein there is no conceivable connection with the product or the target audience
C. Provocation of target audience with the deceitful communications for the benefit of easy attention, reach, and recall

Regulatory interventions are the mechanisms devised by the society to deal with such situations, but are these robust solutions? Who is responsible for bringing in socially responsible consumption behavior? Can the academia or the industry absolve itself of its responsibilities to the society at large by citing market forces such as inadequate regulatory frameworks?

Practice in the marketplace is operationally driven and values workplace skills, while results achieved thus become the key parameters of assessment. This creates an inherent bias towards short-term results, which – it is easy to conclude – may be better managed by focusing on consumers who do not voice a critical point of view. It is seen that industry practices systematically discourage the listening of critical consumer's voice and the thinking process of managers reflects psychological processes such as selective retention and the like (Hershey and Walker 2006; Rohit and Biswatosh 2009; Roy 2012).

It may even be suggested that the reward systems ingrained in corporate practices pose a threat to the intention to capture and understand the consumer's voice. Consumers do not directly reward managers – they reward the organization which in turn rewards its managers, and thus, managers are in a constant dilemma over whom to esteem more as the consumer: their organization or the user of the products/ services of their organization. And these two are often found to be very different and distant in nature. This causes a major gap in terms of developing effective marketing strategies.

This, in turn, has large-scale implications on how marketing is perceived, practiced, and taught. The role of marketing has undergone a sea change from being perceived and practiced as a "function" to occupying a more integral role in the marketplace as an "activity." Today, it has long-term implications and a wider application that integrates finance and operations by taking into account customer satisfaction as well as the consumption of organizational resources.

Essentially, this calls upon the discipline of marketing education to widen its scope, acquire a more holistic approach that goes beyond short-term market considerations, and positions itself at the center of the cross-functional process of a service-centered business model (Vargo and Lusch 2004). It requires that marketing education equip students with a problem-solving approach and the ability to understand its consumers, attract new ones, and retain its existing lot, rather than focus on providing specific techniques that may prove useful in solving particular problems. Looking to the future of marketing as an educational discipline in the dynamic world of business, growth would have to mean a consumer-driven activity, whose individual components all work in tandem with understanding and innovation.

3   Conclusion

Finally, the pursuit of clarity in this regard is affected by a potential conflict of interest: the source of funding for academic research. In many cases, industry is the source of this funding, giving rise to several questions: The industry, with its particular set of priorities, directing research – is this the ideal situation? Can academia work with full freedom, critically evaluate the existing paradigm, and achieve its objective of doing what is good for society within this set up?

References

Bolton RN et al (2004) Invited commentaries on – evolving to a new dominant logic for marketing. J Mark 68:18–27

Editorial (2012) Paradigmatic and geographic diversity in marketing theory and practice. J Mark Manag 28(1–2):1–7

Hershey L, Walker S (2006) Using the CPPD method of analysis for teaching case studies in the marketing management class. Mark Educ Rev 16(2):45

Madichie NO (2009) "Mind the gaps" between the marketing theory train and the marketing practice platform: the case of egg card. Mark Rev 9(1):39–62

Mentzer JT, Schumann DW (2006) The theoretical and practical implications of marketing scholarship. J Mark Theory Pract 14(3):179–190

O'Driscoll A, Murray JA (1998) The changing nature of theory and practice in marketing: on the value of synchrony. J Mark Manag 14:391–416

Rohit V, Biswatosh S (2009) Disciplining the discipline: understanding postcolonial epistemic ideology in marketing. J Mark Manag 25(7–8):811–824

Roy DP (2012) Promoting active learning of ethical issues in marketing communications using debates. Mark Educ Rev 22(1):73–76

Vargo SL, Lusch RF (2004) Evolving to a new dominant logic for marketing. J Mark 68:1–17

Warren HB (1992) Implementing holistic education in marketing courses. Mark Educ Rev 2:21–22

Chapter 19
Demutualisation of Stock Exchanges in India: The Corporate Governance Chapter

Sandeep Goel

Abstract The Indian stock exchanges were mostly broker dominated, and the concept of governance was not given the due importance it deserves. This resulted in erosion of investors' wealth and ultimately their confidence in the stock market. Since investors are the backbone of any stock exchange, it got necessary to infuse a sense of confidence among the investors. That is how the corporatisation of stock exchanges took place for streamlining the process of corporate governance. Corporate governance is one of the most pivotal issues associated with demutualisation of stock exchanges. On account of recovering markets due to subprime crisis in 2007–2008 and the global recession, for better corporate management, the corporate governance of the stock market becomes all the more relevant. This paper highlights the fundamental issues in the demutualisation of these stock exchanges and their facelift for better governance structure in the said context. The primary contribution this study seeks to make is in the sphere of corporate governance related to the process of demutualisation of Indian stock exchanges in this phase of markets rebuilding. It is hoped that it will improve the investors' perception about the reliability of stock exchanges and promote better spirit of trust and governance.

Keywords Demutualisation • Stock exchange • Investors • Regulators • Corporate governance

1 Introduction

Prior to the 1990s, stock exchanges worldwide were operating as mutual organisations. In the early 1990s, stock exchanges started going for major organisational and operational changes. One of the most noted changes was 'demutualisation'. The inadequacy of proper governance system and transparency in many exchanges had eroded the investor's confidence. This was the major driving force behind demutualisation of stock exchanges. Also, increasing conflicts in the stock exchanges

S. Goel (✉)
Faculty- Finance, MDI, Gurgaon, India
e-mail: sandeep@mdi.ac.in

member's interests and tough competition led to a reduction in the stock exchanges wealth which led to a change in the stock exchange governance structure for demutualisation (Serifsoy 2006). The increasing competition among the stock exchanges, global business horizons and the advent of new information technology necessitated the move of demutualisation.

The management structure of most of the Indian stock exchanges was dominated by the brokers; therefore, for better governance, it was imperative that these exchanges were corporatised. Thus, corporate governance emerged out as the most essential factor in this process of demutualisation. The objective of a stock exchange and of the brokers trading on them are different; therefore, brokers being the part of management also can often lead to a conflict of interests, and, in most cases, the brokers have prioritised their interest than larger stakeholders. The evidence is in the form of Harshad Mehta and Ketan Parekh in the past.

So, demutualisation was introduced as a measure to check this as it results in the separation of the ownership and brokerage activity. Through demutualisation, a stock exchange becomes a corporate entity with its own objectives, and it transforms from a non-profit organisation to profit-making company. *Demutualisation is the process through which any member-owned organisation becomes a shareholder-owned company. This company could either be listed on a stock exchange or closely held by its shareholders (ET).*[1] Several researches and discussion papers have defined the concept of demutualisation as given below.

2 Definitions of Demutualisation

- 'The demutualization of an exchange is a process by which a non-profit member-owned organization is transformed into a for-profit shareholder corporation. Ownership is somewhat open' (The World Federation of Exchanges, WFE 2005, Cost and Revenue Survey 2005, annex 1, p.37).
- 'The transformation of an exchange into a for-profit shareholder-owned company is referred to as demutualization'. In most cases, the demutualised exchange becomes a for-profit enterprise (IOSCO, IOSCO Discussion paper, 2000, p. 1).

The transformation of exchanges from mutual to demutualised structure involves two key features:

(a) Change in the ownership structure
(b) Change in legal as well as organisational form

Both need to be accompanied by adequate safeguards to ensure appropriate governance.

---

[1] http://articles.economictimes.indiatimes.com/2002-01-21/news/27334241_1_demutualisationtrading-rights-brokers. Accessed on August 7, 2013.

3   Motives for Demutualisation

The most obvious motive and benefit of demutualisation is that it leads to the separation of the ownership and control of stock exchanges from the trading activity as discussed above, which eliminates the conflict of interest between exchange and broker-members. This reduces the chances of manipulation of people's money by the brokers. Thus, the most important benefit is better governance.

3.1   Improved Governance

The demutualisation makes a corporation to act more decisively and rapidly to various business challenges and issues. There is a management that takes actions that are in the best interests of the stock exchange and ultimately its shareholders. Therefore, the shareholders' interests are not overlooked as a part of corporate governance. Further, the demutualised organisational structure allows greater transparency in the form of financial reporting to various stakeholders. Further, the demutualised organisational structure will allow for greater transparency because stock exchanges will be obliged to report to their shareholders not only regarding the bottom line but also on issues regarding corporate governance (Hughes and Zargar 2006, p. 10–11).

3.2   More Capital for the Exchanges

For the stock exchanges, demutualisation means access to more resources, which is very important in this competitive trading world. Further, demutualised stock exchanges go public to raise new finance similar to the evidence for firms (e.g. Boehmer and Ljungqvist 2002; Kim and Weisbach 2005). Also, it leads to globalisation in the form of a strategic alliance with other exchanges or acquisition. A corporatised structure facilitates easy access to finance. Replacement of floor trading with screen trading is a clear example that shows the importance of demutualisation in raising capital.

3.3   Investor Participation

A demutualised stock exchange invites higher participations from investors. Separation of membership and ownership provides a sense of confidence among the investors. For example, contrary to NSE structure that is mainly composed of broker-dealers as members, a demutualised structure allows both institutional investors and retail investors to become shareholders.

3.4   Organisational Strength

For any organisation to sustain and grow, stakeholders' support is must. Demutualisation enables stock exchanges to get legitimacy from society, from market or from financial institutions (Hawley 1968).

4   The Global Trend to Demutualisation

A number of stock exchanges have demutualised and become corporate entities. Leading among these are the NASDAQ, the Australian Stock Exchange (ASX), the Hong Kong Stock Exchange, the Singapore Stock Exchange and the New York Mercantile Exchange.

The demutualisation trend started in 1993 with the Stockholm Stock Exchange, which was the first stock exchange to demutualise. This was followed by several other major stock exchanges such as ASX, TSX, the Singapore Stock Exchange and the Hong Kong Exchanges and Clearing Limited ('HKEx'). ASX was one of the first exchanges to come out with an initial public offering (IPO). In Asia-Pacific, Singapore Exchange Limited ('SGX') was the first stock exchange to demutualise in December 1999. In 2000, Tokyo Stock Exchange, one of the largest exchanges in the world, completed its demutualisation (Hughes and Zargar 2006, p. 7).

In Europe, major stock exchanges such as London Stock Exchange, Deutsche Borse and Euronext become public companies. In 2000, LSE became a public limited company (London Stock Exchange plc) in the mid-2001 (Ibid. p. 7–8).

The first demutualised stock exchange in the United States was Chicago Mercantile Stock Exchange (CME), in 2000. In 2003, the CME came out with its IPO and listed its shares on the NYSE (Ibid., p. 8). In 2000, the NASDAQ Stock Market, Inc. which used to be known as the National Association of Securities Dealers, a wholly owned unit of NASD, separated from it and went public. The US Securities and Stock Exchange Commission ('SEC') on January 13, 2006, approved application of the NASDAQ to become a registered securities exchange (Ibid. p. 8–9). Table 19.1 lists international stock exchanges which got demutualised.

5   Demutualisation in India

5.1   History

Rameshan (2002) cited that Demutualisation has been experimented in India even before the concept came to be propounded internationally. The Over The Counter Stock Exchange of India, promoted and incorporated in 1990 by financial institutions as a non-profit company under Section 25 of the companies Act, was a

Table 19.1 Global stock exchanges demutualised

Demutualised exchange	Year	Demutualised exchange	Year
Stockholm Stock Exchange	1993	Euronext	2000
Helsinki Stock Exchange	1995	The NASDAQ	2000
Copenhagen Stock Exchange	1996	NYMEX	2000
Amsterdam Stock Exchange	1997	Tokyo Stock Exchange	2001
Australian Stock Exchange	1998	Osaka Stock Exchange	2001
Iceland Stock Exchange	1999	Chicago Mercantile Exchange	2002
Athens Stock Exchange	1999	Toronto Stock Exchange	2002
Stock Exchange of Singapore	1999	Kuala Lumpur Stock Exchange	2004
Hong Kong Stock Exchange	2000	Chicago Board of Trade	2005
London Stock Exchange	2000	NYSE	2005
Deutsche Borse	2000	BSE	2005

Note: Compiled from stock exchanges' database

pioneering attempt in separating ownership and membership of the exchange.[2] The subsequent setting up of the National Stock Exchange of India Limited in November 1992 as a tax-paying company with a different organisational setup unlike other stock exchanges in the country was another significant effort in this direction.

The government vide the Securities Laws (Amendment) Act of 2004 amended the Securities and Contract (Regulations) Act of 1956 to make corporatisation and demutualisation of stock exchanges mandatory.[3] It not only requires separation of ownership and trading rights but also requires that the majority ownership rests with the public and those without any trading rights. Earlier, stock exchanges were supposed to be self-regulating agencies of their members, but after the above ordinance, they were externally regulated.

The process of demutualising stock exchanges in India actually started with the Bombay Stock Exchange which was demutualised in August 2005. The National Stock Exchange has had a demutualised structure since its inception. NSE is one of the first demutualised stock exchanges in the country, where the ownership and management of the exchange is completely divorced from the right to trade on it. Though the impetus for its establishment came from policymakers in the country, it has been set up as a public limited company, owned by the leading institutional investors in the country.

In the United Kingdom, in March 2000, the London Stock Exchange got demutualised. In the case of both these exchanges, the legal process was broadly the same: conversion from a not-for-profit mutual entity, i.e. an association of stock-

---

[2] Ramaseshan, R., Issues in Demutualisation of Exchanges http://nseindia.com/content/press/jun2002b.pdf. Accessed on December 10, 2013

[3] http://www.legalcrystal.com/acts/description/51506, http://www.prsindia.org/uploads/media/vikas_doc/docs/acts_new/1167484504_THE__SECURITIES__LAWS.pdf. Accessed on December 10, 2013

brokers, into a for-profit public limited company. However, the underlying purpose of demutualisation in India is absolutely different from that in the United Kingdom. In India, demutualisation was mandated by the government as a regulatory measure for ending the brokers' control over the exchanges. But the London Stock Exchange's demutualisation was entirely its own voluntary decision, aimed at developing its business in the fast-changing and globalising world. This step was expected to improve its international competitiveness, provide greater flexibility, facilitate speedier decision-making and enable it to form international alliances, as and when necessary. In fact, the voluntary route is the international norm.[4]

5.1.1   Focus

1. The representation of stockbrokers on the governing board of each exchange is restricted to a maximum of one fourth of the board's strength, the remaining three fourths of the directors being appointed in the manner specified by SEBI from time to time.
2. The aggregate shareholding of broker-shareholders (i.e. shareholders having trading rights as brokers) is limited to a maximum of 49 % of the exchange's equity capital.
3. A minimum of 51 % of the equity capital is to be held at all times by public other than broker-shareholders.
4. No broker-shareholder is allowed to have more than 5 % voting rights.
5. The demutualisation scheme is individual exchange-based scheme, prescribing a mandatory model. The exchanges, which are unable to comply, will have to close down. Thus, demutualisation is bound to affect the overall structure of India's exchanges.

5.2   Present Status Quo

In terms of **legal structure**, the stock exchanges in India could be segregated into two broad groups – stock exchanges which were set up as association of persons and later converted into companies, viz. BSE, ASE and Madhya Pradesh Stock Exchange, and the remaining stock exchanges which were set up as companies, either limited by guarantees or by shares. Apart from NSE, all stock exchanges whether established as corporate bodies or Association of Persons were earlier non-profit-making organisations.

---

[4] Gupta L.C., (2013) Demutualisation of Indian stock exchanges: A critical evaluation and some suggestions, http://www.scmrd.org/Demutualisation%20of%20Stock%20Exchanges.pdf. Accessed on August 7, 2013

As per SEBI ([2002](#)), presently, out of 25 stock exchanges in India, there are nine recognised operational stock exchanges in India.[5]

1. Ahmedabad Stock Exchange Ltd.
2. Bangalore Stock Exchange Ltd.
3. Bombay Stock Exchange Ltd.
4. Calcutta Stock Exchange Ltd.
5. Delhi Stock Exchange Ltd.
6. Madhya Pradesh Stock Exchange Ltd.
7. Madras Stock Exchange Ltd.
8. National Stock Exchange of India Ltd.
9. Bangalore Stock Exchange Ltd.

Few of them have lost their recognition status, for example, Bhubaneswar Stock Exchange Ltd.'s recognition was valid up to June 4, 2013. The rest have some or the other litigation cases going against them in the Court. For example, due to pending litigation before the Hon'ble Madras High Court, Coimbatore Stock Exchange Ltd. (CSX) has not filed application for renewal of recognition which expired on September 17, 2006. The Hyderabad Stock Exchange Ltd. (HSE) failed to dilute at least 51 % of its equity share capital to public other than shareholders having trading rights on or before the stipulated date, i.e. August 28, 2007. Consequently, in terms of section 5(2) of the Securities Contracts (Regulation) Act of 1956, the recognition granted to HSE got withdrawn with effect from August 29, 2007. **This explains the increasing regulation of SEBI on stock exchanges for corporate governance.**

6 Demutualisation Process

Demutualisation takes place in stages and can take different forms.

- Initially, the members 'rights' are exchanged for shares in the entity and become legal owners of the organisation.
- Entities which plan to raise capital for growth raise it from outside.
- Pursuant to privatisation, demutualised exchanges have two options:
  - Remain private
  - List and remove all restrictions on trading
- For many exchanges, the private placement is an interim activity.

  The Step-by-Step process is described in Chart [19.1](#).

---

[5] http://www.sebi.gov.in/sebiweb/userview/detail/2/388/No%20of%20Stock%20Exchange. Accessed on December 10, 2013

Mutual Exchange	➤ Member Controlled
⇓	
For-Profit Private Company	➤ Member Owned
⇓	
Private Company	➤ Private Placement to Members, listed Companies and Institutional Investors
⇓	
Listed Company (with restrictions)	➤ Restricted shares owned by members and non-members
⇓	
Listed Company (no restrictions)	➤ Widely held shares
	➤ No restrictions

Chart 19.1 Demutualisation procedure

7 Demutualisation to Governance

Exchanges, when run as mutual associations of traders and brokers, allow members exclusive rights of access to trading systems and platforms. They become a monopoly of the brokers who enjoy the entire profits from the intermediation of a common man. As the owners of these mutualised exchanges, they imposed rights to trading and disallowed direct access to the trading floor to any outsiders. They were also not open to any change. This was leading to close-ended market operations with poor governance structure.

With the growing awareness of a common investor about his/her rights and manipulations by brokers, governance of these exchanges became a major issue. As a result, it has generated pressures on these exchanges to adopt demutualisation. Under demutualisation, there is separation of ownership from membership that automatically provides trading rights. This segregation helps in effective corporate governance if there are accompanying improvements in the incentive structure (Steill 2002).

The 1992 Cadbury Report (Cadbury 1992) described corporate governance as 'the system by which companies are directed and controlled'.[6] OECD in order to have efficient corporate governance system across the globe focused on five areas:

---

[6] http://www.ecgi.org/codes/documents/cadbury.pdf. Accessed on August 11, 2012

(1) the rights of shareholders, (2) the equitable treatment of shareholders, (3) the role of stakeholders, (4) disclosure and transparency and (5) the responsibilities of the board (OECD 1999).

Elliot (2002a, b) highlighted that exchanges with public accountability are required to have special focus on corporate governance on account of investors' demand. Investors need sound corporate governance system for better performance of their businesses. It comprises of the composition of the board of directors and key committees, financial reporting requirements for the exchange.

So, the concept and scope of corporate governance, as discussed above, can easily be well extended to the process of demutualisation of stock exchanges. The demutualisation is the result of the need for a transparent and well-regulated stock exchange. It is a step towards ensuring better governance in stock exchanges. Domowitz and Steil (1999), who examined interrelationships between stock exchange automation, governance and quality of markets, have identified several benefits of the demutualised stock exchanges and are of the opinion that the primary driver for such benefits is the favourable governance structure of demutualised exchanges. The genesis of the National Stock Exchange goes to the misgovernance of BSE. It was plagued with a variety of problems, particularly, outdated trading and settlement procedures and lack of investor protection. Therefore, the issue of a well-regulated governance system in the Indian stock exchanges has become all the more relevant in the light of the risk management and surveillance function.

7.1   Corporate Governance in India

Corporate governance in India came out as a post-deco effect to whatever country witnessed in the form of scams in the 1990s. It was introduced by the Confederation of Indian Industry (CII), as a voluntary measure to be adopted by the Indian companies which soon acquired a mandatory status in the early 2000s through 'Clause 49' of the Listing Agreement of SEBI Act of 1992.[7] To stop cases like Satyam, the Ministry of Corporate Affairs released a set of voluntary guidelines for corporate governance in 2009 to address a myriad of corporate governance issues. Companies Act of 2013 is another step in this direction.

7.1.1   Clause 49 of the Listing Agreement

Clause 49 of the Listing Agreement got implemented in 2000 by SEBI on the recommendations of the Birla Committee which got revised on the recommendations of the N. R. Narayana Murthy Committee on Corporate Governance and public comments, vide circular dated August 26, 2003.[8]

---

[7] http://www.sebi.gov.in/circulars/2003/cir2803.html. Accessed on October 24, 2013

[8] http://www.sebi.gov.in/commreport/clause49.html. Accessed on November 10, 2013

Clause 49 is considered as a milestone in the evolution of corporate governance practices in India. It is similar in spirit and in scope to the Sarbanes-Oxley Act in the United States. Clause 49 of the Listing Agreement to the Indian stock exchange came into effect on December 31, 2005.

The key mandatory features of Clause 49 are the following: (1) composition of the board of directors, (2) the composition and functioning of the audit committee, (3) subsidiary companies, (4) disclosures by the company, (5) CEO/CFO certification of financial results (6) reporting on corporate governance as part of the annual report and (vii) certification of compliance of a company with the provisions of Clause 49.

- *Board independence:* Boards of listed companies must have a minimum number of independent directors. Where the chairman is an executive or a promoter, then at least one-half of the board should comprise of independent directors. In other cases, independent directors should constitute at least one-third of the board size.
- *Audit committees:* Listed companies must have audit committees of the board with a minimum of three directors, two-thirds of whom must be independent. In addition, the roles and responsibilities of the audit committee are to be specified in detail.
- *Subsidiary companies:* There should be detailed information about all the subsidiary companies in the parent company's annual report.
- *Disclosure:* Listed companies must disclose periodically the financial and other matters to ensure transparency.
- *CEO/CFO certification*: The CEO and CFO of listed companies must (a) certify that the financial statements are fair and (b) accept responsibility for internal controls.
- *Corporate governance report*: There should be complete disclosure of corporate governance followed by the company under a separate head in its annual report.
- *Compliance reports:* Annual reports of listed companies must carry status reports about compliance with corporate governance norms.

7.2   Improvements in Corporate Governance of Stock Exchanges Post Demutualisation

- Exchanges running as mutual associations of traders and brokers allow members exclusive rights of access to trading systems and platforms. It results in a form of monopolistic trading wherein, they disallowed direct access to the trading floor to any outsiders. With corporatisation, these evils seemed to be perished, and it allowed everyone to have an equal participation in the market.
- Under demutualisation, there is a separation of ownership from membership that automatically provides trading rights and helps in effective corporate governance. Decision-making is based on this new ownership structure, and there is an effective governing board and a company structure.

- In order to decrease broker influence on the board, the exchanges have appointed independent directors or directors that are non-trading owners.
- To ensure that the management of the exchange acts not only in the best interests of the shareholders but also conducts the business in a prudent manner, there is a system of 'board performance evaluation'. The management should be accountable to the board, which would decide the management's appointment and remuneration, supervise the strategic direction, audit the financial and operational results, including risk management and, if needed, execute the removal of management.

7.3 Demutualisation and Performance of Stock Exchanges

It has been established empirically that since demutualisation improves corporate governance of the stock exchange, it impacts the performance of stock exchanges. Hart and Moore (1996) emphasised competition as major factor for the stock exchange to change its organisational structure from mutual to demutual, showing that a for-profit exchange increases social welfare. When there is high competition, a demutualised structure is more socially preferable than a mutual structure. Galper (1999) pointed out that technological advancement enabled the exchanges to go international and reduced the intermediary role of exchange members. This resulted in low trading costs and facilitated investors to trade on more than one stock exchange.

Mendiola and O'Hara (2004) empirically tested the effects of the change in exchange governance on the exchanges' performance. They analysed the accounting data for ten stock exchanges and found out that stock exchange performance, measured by stock exchange returns, improved after the change in governance. Hazarika (2005) examined the impact of demutualisation on trading volumes and costs, taking London Stock Exchange (LSE) and Borsa Italiana (BI) as the sample. Whereas, LSE was demutualised due to competition, BI was demutualised by the government. It was evident that the governance structure of stock exchanges is definitely better for the exchanges, and the investors get a better deal.

8 Case: Indian Stock Exchange Demutualisation

8.1 BSE

BSE Ltd. (formerly known as Bombay Stock Exchange Ltd.) is India's one of the leading exchanges. It was set up in 1875 and is Asia's first stock exchange. BSE is a corporatised and demutualised entity, with a broad shareholder base which includes two leading global exchanges, Deutsche Borse and Singapore Exchange as

strategic partners. Before demutualisation, 790 broker-members held 100 % in the 131-year-old exchange.[9]

BSE provides an efficient and transparent market for trading in equity, debt instruments, derivatives and mutual funds. There are more than 5,000 companies which are listed on BSE, making it the world's No. 1 exchange in terms of listed members. The companies listed on BSE Ltd. command a total market capitalisation of USD 1.32 trillion as of January 2013.[10]

The corporatisation structure and post benefits of BSE are discussed below.

Features

- o Formation of A for-profit company limited by shares under Section 12 of the Companies Act, 1956, as Bombay Stock Exchange Limited (BSE Ltd.) to succeed BSE.
- o Segregation of the ownership and management of BSE Ltd. from the trading rights of the members.
- o Only one class of trading members with similar rights and privileges and uniform standards for all.
- o Trading members in the Governing Board of BSE Ltd. not to exceed one-fourth of the total strength of the Governing Board.
- o Atleast 51% of its equity shares to be continuously held by public other than shareholders having trading rights.

The BSE (Corporatisation and Demutualisation) Scheme, 2005, May 20. *(http://www.sebi.gov.in/press/2005/200579.html)*

Demutualisation stages

- o 20th May 2005

The BSE (Corporatisation and Demutualisation) Scheme, 2005

- o 8th August 2005

Incorporation of Bombay Stock Exchange Limited

- o 12th August 2005

Certificate of Commencement of Business

- o 19th August 2005

BSE becomes a Corportae Entity

(http://www.sebi.gov.in/press/2005/200579.html)

Board structure

- ❖ Non-Executive Chairman –1
- ❖ MD &CEO –1
- ❖ Public Interest Directors –3
- ❖ Shareholder Directors –3
- ❖ Management Team –4 excld. MD &CEO

---

[9] http://www.livemint.com/Home-Page/qQ7KFGKPGzjPToswQkp0XN/BSE-demutualised-May 18 2007. Accessed on August 8, 2013

[10] http://www.bseindia.com/static/about/introduction. Accessed on August 8, 2013

8.2   NSE

The National Stock Exchange (NSE) is India's leading stock exchange and got incorporated in November 1992 as a tax-paying company. It was promoted by the leading financial institutions essentially led by IDBI at the behest of the Government of India to provide a modern, fully automated screen-based trading system with national reach.

NSE has played a catalytic role in reforming the Indian securities market in terms of microstructure, market practices and trading volumes. It has demutualised structure, screen-based trading, dematerialisation and electronic transfer of securities and professionalisation of trading members.

The corporatisation structure of NSE (2001, 2002) is discussed below.

Features

- From day one of incorporation on November 1992, NSE has adopted the form of a demutualised exchange – the ownership, management and trading are in the hands of three different sets of people.
- NSE is owned by a set of leading financial institutions, banks, insurance companies and other financial intermediaries and is managed by professionals, who do not directly or indirectly trade on the exchange.
- Its board comprises of senior executives from promoter institutions; eminent professionals in the fields of law, economics, accountancy, finance, taxation, etc.; public representatives; nominees of SEBI; and one full-time executive of the exchange.
- While the board deals with broad policy issues, decisions relating to market operations are delegated by the board to various committees constituted by it. Such committees include representatives from trading members, professionals, the public and the management. The day-to-day management of the exchange is delegated to the managing director who is supported by a team of professional staff.

Demutualisation

- November 1992, incorporation
- April 1993, recognition as a stock exchange

Board

- Chairman – 1
- Vice-chairman (shareholder director)-1
- MD and CEO – 1
- Public interest director – 5
- Shareholder director – 3

http://www.nseindia.com/global/content/about_us/facts_figures.htm
Accessed on August 8, 2013

8.3   Key Results of Demutualisation

The common outcomes as a part of corporatisation of BSE and NSE are summarised below.

- Increased flexibility in decision-making
- Increased customer focus
- Expansion of activities
- Management service companies
- Most important, *corporate governance*

9   Conclusion

Corporate governance is the need of the hour, and it is equally applicable to stock exchanges. With the changing structure of stock exchanges globally towards corporatisation, for competition and governance, it is hoped that with demutualisation, Indian stock exchanges would also achieve that soon. The cases of BSE and NSE indicate the trend towards successful corporatisation for infusing transparency and fairness in the mind of investors, in particular retail investors, about their trade practices. That is the reason why demutualisation of Indian stock exchanges was regulated after 2004, and therefore, all the new stock exchanges post 2004 automatically fall into this umbrella.

The demutualisation of stock exchanges offers them an ample range of benefits, abolishment of the members' monopoly, better investors' response and higher level of investments. But, the inherent problems and issue related to demutualisation, as discussed above, have to be kept in mind for proper implementation and getting results. Stock exchange organisational structure will only deliver the results if the governance is practised not just preached.

Undoubtedly, demutualisation improves corporate governance of stock exchanges, but it also raises several concerns. These are discussed below.

9.1   Emerging Issues of Demutualisation

1. *Ineffective regulation:* Since demutualisation makes stock exchanges profit-oriented, so it is argued that after demutualisation, stock exchanges might give up effective regulation. The main objective of profit-driven demutualised stock exchanges will be earning maximum profits instead of allocating resources for effective market regulation.
2. *Conflict of interests:* There may be a conflict of interest among the self-regulatory organisations (SROs) and between self-regulatory organisations and the government. In addition, it may arise between public interest directors and shareholder directors. Any such conflict of interest is not good for the growth and development of the stock exchanges, particularly from the investors' point of view.
3. *Misallocation of costs:* Demutualisation may result in costs' misallocation due to multiple regulatory authorities. They are not governed by a single regulator but also have to abide by all concerned regulatory organisations.

References

Boehmer E, Ljungqvist A (2002) On the choice of outside equity: evidence from privately held firms, Working paper

Cadbury A (1992) Report of the committee on the financial aspects of corporate governance: the code of best practice (Cadbury Code), 1 December, The Committee on the Financial Aspects of Corporate Governance and Gee and Co. Ltd., Burgess science press, London. ISBN: 0852589131

Domowitz I, Steil B (1999) Automation, trading costs, and the structure of the trading services industry, Brookings–Wharton Papers on Financial Services

Elliott J (2002a) Demutualization of securities exchanges: a regulatory perspective. International Monetary Fund working paper

Elliott J (2002b) Demutualization of securities exchanges: a regulatory perspective. IMF working paper; WP/02/119. International Monetary Fund. http://www.imf.org/external/pubs/ft/wp/2002/wp02119.pdf

ET Bureau (2012) The Economic Times, Mumbai, India. http://articles.economictimes.indiatimes.com/2012-12-28/news/36036639_1_oldest-bourse-ashish-chauhan-bse-brokers-forum

Galper J (1999) Three business models for the stock exchange industry, working paper, International Federation of stock exchanges

Gupta LC (2013) Demutualisation of Indian stock exchanges: A critical evaluation and some suggestions. http://www.scmrd.org/Demutualisation%20of%20Stock%20Exchanges.pdf. Accessed 7 Aug 2013

Hart O, Moore J (1996) The governance of exchanges: member's cooperatives versus outside ownership. Oxf Rev Econ Policy 12(4):53–69

Hawley A (1968) Human ecology. In: Sills DL (ed) International encyclopedia of the social sciences. Macmillan, New York, pp 328–337

Hazarika S (2005) Governance change in stock exchanges. January, City University of New York, Baruch College

Hughes P, Zargar E (2006) Exchange demutualization, Blake, Cassels and Graydon LLP, May 1. www.blakes.com. Accessed 7 Aug 2013

International Organization for Securities Commissions (IOSCO) (2000) IOSCO discussion paper on stock exchange demutualization. Technical Committee Consultation Draft; Available online, Accessed 20 Apr 2006

Kim W, Weisbach M (2005) Motivations for public equity offers: an international perspective, NBER working paper 11797

Mendiola A, O'Hara M (2004) Taking stock in stock markets: the changing governance of exchanges, working paper, Cornell University, 47

NSE-2001-2002(2013) Indian securities market – a review. http://www.nse india.com/research/dynaContent/ismr.htm

Organization for Economic Co-operation and Development (1999) OECD principles of corporate governance. OECD Publications, Paris

Rameshan R (2002) Issues in demutualization of exchanges, NSE News, June. http://nseindia.com/content/press/jun2002b.pdf. Accessed 10 Dec 2013

SEBI (2002) Report of the group on corporatization & demutualization of stock exchanges, September. http://www.sebi.gov.in

Serifsoy B (2006) Essays on stock exchange efficiency, business models and governance, 2006. http://www.wiwi.unifrankfurt.de/schwerpunkte/finance/wp/1360.pdf

Steill B (2002) Changes in the ownership and governance of securities exchanges: causes and consequence. In: Financial Institutions Center, The Wharton School, University of Pennsylvania (ed) Brookings-Wharton papers on financial services. Brooking Institution Press, Washington, DC

World Federation of Exchanges (WFE) (2005) Annual report and statistics 2005. Available at WFE's website: http://www.world-exchanges.org. Financial Institutions Center, The Wharton School, University of Pennsylvania

Weblinks

http://articles.economictimes.indiatimes.com/2002-01-21/news/27334241_1_demutualisation-trading-rights-brokers. Accessed 7 Aug 2013

http://www.bseindia.com/static/about/introduction. Accessed 8 Aug 2013

http://www.ecgi.org/codes/documents/cadbury.pdf. December 1992. Accessed 11 Aug 2013

http://www.legalcrystal.com/acts/description/51506. Accessed 10 Dec 2013

http://www.livemint.com/Home-Page/qQ7KFGKPGzjPToswQkp0XN/BSE-demutualised-May 18 2007. Accessed 8 Aug 2013

http://www.oecd.org/corporate/ca/corporategovernanceprinciples/31557724.pdf. 2004 Edition, Accessed 11 Aug 2013

http://www.prsindia.org/uploads/media/vikas_doc/docs/acts_new/1167484504_THE__SECURITIES__LAWS.pdf. Accessed 10 Dec 2013

http://www.sebi.gov.in/press/2005/200579.html. Accessed 24 Oct 2013

http://www.sebi.gov.in/circulars/2003/cir2803.html. Accessed 24 Oct 2013

http://www.sebi.gov.in/commreport/clause49.html. Accessed 10 Nov 2013

Chapter 20
Determining the Optimal Price Point: Using Van Westendorp's Price Sensitivity Meter

Sakhhi Chhabra

Abstract Marketers have long acknowledged that the pricing decision is a significant component of the marketing mix; the theoretical attention paid to pricing is certainly not reflected by the wealth of techniques in the field of marketing research. Many authors have identified the importance of pricing as it increases sales, has a major influence on customer loyalty, and also serves as a proxy for quality. Despite the aforementioned significance of pricing, several authors have indicated that pricing is the most deserted element of the marketing mix. The question of pricing new products acts as a key challenge for management. One important reason for the difficulty faced in pricing decisions is the lack of knowledge concerning customer reactions to pricing strategies. The market researcher, who is confronted with new product pricing decisions, could be asked about consumer's perceptions of and reactions to prices.

In this paper an attempt has been made to describe four different methods for obtaining data used to determine prices for new products and then explicitly work on van Westendorp's model to determine the optimum price point of Vivel Cell Renew body lotion (ITC product) for SKUs of 250 ml. With the help of the PSM model, we would attempt to gauge the price point at which the consumers intend to purchase this body lotion.

The methodology has been explained with an example from real life and respondents were recruited purposively with quota sampling. The target segment for the study was females within the age group of 20–35 years, SEC A (based on the SEC classification). A sample of 240 respondents could be collected. The research revealed that the range of low rejection extends from Rs. 170 (what the consumers want) up to Rs. 190 (what the manufacturer can go up to). The optimal price point figured out was Rs. 190 for 250 ml Vivel Cell Renew. There are a multitude of approaches one can take and the exact method depends on the particular circumstances of the request, but with this whole exercise, an attempt was made to model the actual pricing which takes place in the real world and highlight the pricing research as one of the core methodologies in custom research.

Keywords Optimal pricing model • Van Westendorp's price sensitivity meter

S. Chhabra (✉)
Management Development Institute, Mehrauli Road, Sukhrali, Gurgaon 122 007, India
e-mail: sakhhi_chhabra@yahoo.co.in

1   Introduction

From the viewpoint of the classical economist, price allocates goods and services in the marketplace. For the consumer it represents the cost of a purchase in monetary terms. For the seller it motivates a level of supply and acts to allocate economic resources on the production side. Marketers have long acknowledged that the pricing decision is one of the most important components of the marketing mix; the theoretical attention paid to pricing is certainly not reflected by the wealth of techniques in the field of marketing research.

Zeithaml et al. (2006) proposed that price serves as a proxy for quality for customers; therefore, it must be determined very vigilantly. Many authors have identified the importance of pricing for every company's profitability, mainly because it is the only element of the marketing mix that generates revenues for a firm, whereas all other elements of the mix are associated with costs (Kotler et al. 2006). In addition, Shoemaker et al. (2006) suggested that pricing is an overriding force in attracting attention and increasing sales and that it can also have major influence on customer loyalty. Despite the aforementioned significance of pricing, several authors have indicated that pricing is the most deserted element of the marketing mix (Avlonities and Indounas 2006; Hoffman et al. 2002).

The question of pricing new products acts as a key challenge for management (Dean 1969). Research has focused on normative pricing strategies for new products (e.g., Noble and Gruca 1999), essentially skimming and penetration, which are commonly used in practice (Lowe and Alpert 2010). The usage of these pricing strategies for new product success has been investigated rather descriptively on a diffusion level as part of a bundle of other strategic and tactical decisions (e.g., Hultink et al. 1998, 2000). However, in practice, the decision for either strategy is often difficult (Lowe and Alpert 2010) and remains to be a "matter of sophisticated judgment" (Dean 1969, p. 170). One important reason for the difficulty faced in pricing decisions is the lack of knowledge concerning customer reactions to pricing strategies. The market researcher, who is confronted with one or many valid questions, could be asked about consumer's perceptions of and reactions to prices.

Market researchers have developed a number of attitude scales on price consciousness. As noted by Gabor & Granger (1977), the price setter must know the extent of price consciousness to determine the importance of pricing in the marketing mix variable, while price consciousness itself is not measurable, price recall has been used in the past as a reasonable substitute. However, this substitution leads to problems, because price recall is an indicator of price awareness, while price consciousness represents a deliberate effort on the part of buyers to search for lower process (Lilien and Kotler 1983). The difference between actual price and recall price (or price image) is of concern to the seller because it provides insight into the buyers' perception of value, as well as the potential response to actual price adjustments.

Marketing research has long recognized the importance of price optimization. Survey research can help explore those pricing questions. Survey pricing evaluation

can be thought of as a continuum that moves from quick and easy but less precise to complicated but more accurate methods. There are four commonly used research methods for obtaining data used to determine prices for new products:

- The direct approach, where you simply ask a representative sample of their willingness to pay (WTP)
- Indirect methods such as the Gabor-Granger model (GG-model) based on data elicited from respondents on their willingness to pay for a product innovation, a service, or concept at various price points
- Traditional van Westendorp's model (VW model) where you ask a series of questions that target the upper and lower price boundaries
- Product/price mix methods, such as discrete choice, where you ask the sample of respondents to choose between numerous product scenarios varied by feature set, price, and brand

In this work we shall describe these methods briefly and then explicitly work on van Westendorp's model to determine the optimum price point of Vivel Cell Renew body lotion (ITC product) for SKUs of 250 ml.

2   Literature Review

2.1   Direct Price Techniques

Direct methods are based on willingness to pay (WTP) estimation. In this approach a simple open-ended question regarding WTP is asked for a specific product. The respondents answer to the question: What is the highest price you would be willing to pay for product X? This approach only works in special circumstances. Since real money is on the line, respondents have an incentive to give realistic stated WTP. There are advantages associated with this technique such as the data is easy to collect and suitable for new products and little prior knowledge is required from respondents. But this method suffers serious drawbacks. Particularly, it was observed that respondents often overstate their price sensitivity. Also, though a little prior knowledge is typically required, if the new product concept is very unusual, respondents may not have any notion what price range is appropriate.

2.2   Gabor-Granger Indirect Price Models

Indirect methods are generally more precise than direct methods as respondents are confronted with more realistic scenarios. Gabor-Granger technique is a practical and convenient pricing method to determine the maximum price a respondent is willing to pay for a given product (Gabor and Granger 1965). GG-model is suitable for a new product development. It aims to establish the maximum price each respondent is willing to pay for a given product using a series of predetermined price

points (Gabor and Granger 1965). For this method various price levels are set and the product is described to a sample of respondents with a randomly chosen price from the predetermined list attached.

The respondent is asked her willingness to purchase the product at that given price. If the respondent is willing to purchase the product at that price, the product is shown again but this time with a randomly chosen higher price from the predetermined price list and her willingness to purchase asked. If the respondent is not willing to purchase the product at the first price shown, the product is again shown to her but with a randomly chosen lower price from the predetermined list and her willingness to purchase elicited. This pattern is repeated several times with lower and higher prices taken from the predetermined price point list until the highest price point a respondent is willing to pay is determined (Gabor and Granger 1965). The approach is somewhat limited as price is not always a conscious variable, competitive price awareness is not always high, and pricing often varies across distributors (Gabor and Granger 1977). It is best suited for pricing situations that are later in the product development cycle and the company has a clear idea of range of prices they want to use.

2.3 Product/Price Mix Models

General conjoint method and discrete choice method (DCM) classically embrace additional variables like covariates of brands, size, demographics, etc. DCM is best in situations when simulating immediate response to competitive offerings, especially brand and price studies. Decisions are made on the basis of relatively few, well-known, concrete attributes. Consumers make these decisions on the basis of competitive differences among attributes given and the possible interactions between the levels of different attributes of what the company wants to account for. This is a realistic approach imitating actual choices people are faced with in the store.

As described by Akiva and Lerman (1985), DCM studies for pricing are performed by asking a person to choose among competing products at different prices. Alter the prices and/or product attributes and ask the respondent to choose again. After which we can build a model from that data to predict the likelihood that a person will choose a specific product given the relative prices of the products in the test. Through experimental design, balanced (orthogonal) sets of choice tasks are produced (Wedel and Kamakura 1999). The advantages of this approach is that it is reflective of real-world marketplaces with competing products, it can put up conditional variables, brands can be customized to match market reality, it avoids impossible combinations and is easy to administer, and it can capture interactions more efficiently than a full-profile design (Train 2003). The disadvantage of this approach is that it is difficult to handle many attributes and also knotty to truly predict preference share (not market share), this approach assumes some awareness and distribution, and the results are based on calibration which uses several assumptions that may not be realistic (Train 2003).

2.4   Van Westendorp's Price Sensitivity Models

An extension of the Gabor-Granger technique is van Westendorp's (VW) technique created by Dutch economist Peter H. van Westendorp (VW model) in 1976 called the price sensitivity meter. It is focused on finding an acceptable price which is a quality indicator. Pricing and quality have a close association. In the work of Gabor and Granger (1966) and Sowter et al. 1971, the relationship between price and quality is specified via a "limit concept" (this relationship is known in the economic literature as a reservation price). A consumer's intention on purchasing a product in a particular class has two price limits in mind: an upper limit above in which purchase will not be made because the good or service is too expensive and a lower limit below in which purchase will not be made because the quality of the item is suspect. Within the range created by these limits, price does not act as an absolute barrier to purchase, as it does outside the range (Lilien and Kotler 1983). The VW approach takes into account concerns about low prices possibly indicating low quality as well as too high pricing (Lipovetsky 2006).

According to van Westendorp (1976), the PSM is much connected with earlier work and theories, such that it can be compared to psychophysical approaches and techniques, techniques to study absolute thresholds in price, or the theory of reasonable prices. The VW approach is suitable for new product development, and it aims to establish the limits of price thresholds. It is based on the assumption that reasonable prices exist for consumers in every category and for each perceived level of quality within a category (Lipovetsky 2006). Consumer price decisions are made by balancing value against price; and there is an upper and lower bound to the price a consumer will pay for a product or service.

Data elicited in the VW process consists of the answers to four indirect questions to calibrate price from different perspectives: *Too Cheap* **–** at what price does this product become too cheap that you would question its quality and not buy it? *Cheap* **–** at what price does this product start to seem cheap to you, that is, when does it start to seem like a bargain? *Expensive* **–** at what price do you perceive that the product is beginning to get expensive, so that it is not out of the question, but you would have to give some thought to buying it? *Too Expensive* **–** at what price does this product become too expensive that you would not consider buying it?

The PSM technique is most relevant when the product marketer needs the flexibility of evaluating how the product will perform along a range of prices. If the acceptable range of prices, according to the marketplace, fits with the expectation of the marketer, it is interpreted as a sign to move forward with product development (Lipovetsky 2006). Another key advantage of the PSM approach is cost, as fewer respondents are required for further analysis.

Also, it permits to avoid imposing price points on respondents, it is best suited for pricing situations that are very early in the product development cycle, and the company doesn't really have a clear idea of the price range to play in (Lipovetsky 2006). It is simple for both the respondent and the researcher. From a survey administration perspective, only asking four questions to generate pricing information is a

low burden for researcher. On the other hand, there are certain disadvantages as well like respondents often overstate their price sensitivity, results can be unstable as even small changes in the sample can result in large changes in the price curves, and the range of acceptable price can be quite large. Since there is an inherent assumption that price is a reflection of quality, the technique is not useful for a true luxury good. The prices given by respondents are believed to represent the actual out-of-pocket expenses. This permits the product marketer to gain some understanding of the effects of promotional activities (on-shelf price discounts or coupons). The PSM has already been applied by a lot of companies especially with fast-moving consumer goods (coffee, margarine, beer, detergents, toilet tissue, etc.), with services (newspaper subscription, hairdressers' tariffs, etc.), and with durables (electrical razors, sewing machines, men's suits, etc.).

3 Methodology

3.1 Assumptions

The assumption underlying PSM is that respondents are competent of envisaging a pricing landscape and that price is an intrinsic measure of value or utility. Participants in a PSM exercise are asked to identify price points at which they can infer a particular value to the product or service under study. The PSM claims to capture the extent to which a product has an inherent value denoted by price.

3.2 Approach

For each of the four price questions, the cumulative frequencies are plotted against the current price on the same graph. Note that the standard method requires that two of the four cumulative frequencies must be inverted in order to have the possibility of four intersecting points. Conventional practice inverts the cumulative frequencies for "too cheap" and "cheap" (see Fig. 20.1).

The general explanation of intersecting cumulative frequencies varies. A common description of the intersections is that the crossing of "too cheap" and "expensive" can be the lower bound of an acceptable price range (Wildner and Conklin 2003). Some describe this as the "point of marginal cheapness" or PMC. Similarly, the intersection of the "too expensive" and "cheap" lines can be viewed as the upper bound of an acceptable price range. An alternative description is the "point of marginal expensiveness" or PME. The range between these two points shows the area of the price acceptable for most consumers (Westendorp 1976).

An intersection where there is generally more agreement is the point at which the "expensive" line crosses the "cheap" line. This is described as the "indifference

Fig. 20.1 Price sensitivity model
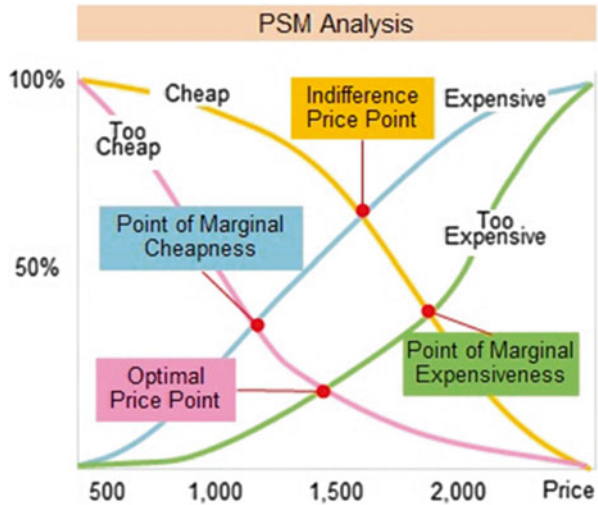
price point" or IPP. The IPP refers to the price at which an equal number of respondents rate the price point as either "cheap" or "expensive" (Westendorp 1976).

Finally, the intersection of the "too cheap" and "too expensive" lines represents an "optimal price point" or OPP. This is the point at which an equal number of respondents describe the price as exceeding either their upper or lower limits. Optimal in this sense refers to the fact that there is an equal trade-off in extreme sensitivities to the price at both ends of the price spectrum (Westendorp 1976).

For the purpose of this study and to meet the research objective for this project, we take a product from ITC's personal care brand Vivel which recently launched Cell Renew – a skin care regimen comprising a Face Moisturizer, Hand Crème, and Body Lotion, targeted towards the mid-premium segment (based on SEC classification) of the market. Currently competing body lotions like Dove, Garnier, Lakme, Lotus, Nivea, and Vaseline are available in the market at between Rs. 130 and Rs. 270 for 250 ml. With the help of the PSM model, we would attempt to gauge the price point at which the consumers intend to purchase the 250 ml bottle of Vivel Cell Renew body lotion.

A two-step quantitative approach was undertaken to understand the pricing of Vivel Cell Renew body lotion – 250 ml (see Appendix A1 for questionnaire). Step 1 is an exercise on price sensitivity meter (PSM) – for understanding the optimal range of price, respondents were exposed to the Vivel Cell Renew pack and then the PSM was conducted. Each respondent evaluated the price for the 250 ml SKU through the PSM. Step 2 is finding out the purchase intention and price perception at various price points. Post-PSM for each SKU, a few price points of VCR (Vivel Cell Renew) were exposed to the respondent and their purchase intention and price perception were gauged using a five-point Likert scale.

Respondents were recruited purposively with quota sampling in and around the areas of Delhi. According to Malhotra (2004), quota sampling is a two-stage

restricted judgmental sampling technique. The first stage consists of developing control categories or quotas of population elements. In the second stage, sample elements are selected based on convenience or judgments. This technique obtains representative samples at a relatively low cost and gives greater convenience to the interviewers in selecting elements for each quota (Malhotra 2004). A sample of 240 respondents could be collected in 2 week's time. The target segment for the study was females within the age group of 20–35 years, SEC A (based on the SEC classification).

4 Analysis

In this study, the PSM model indicates that consumers want the price of the 250 ml SKU at Rs. 165 which marks the intersection of the "too cheap" and "too expensive" lines representing an "optimal price point" or OPP. This is the point at which an equal number of respondents describe the price as exceeding either their upper or lower limits (see Fig. 20.2).

But from the marketers' point of view, the best price is the point at which the "expensive" line crosses the "cheap" line which is between Rs. 175 and Rs. 180. This is described as the "indifference price point" where respondents rate the price point as either "cheap" or "expensive." The upper threshold is between Rs. 190 and Rs. 200, i.e., the point of marginal expensiveness. The lower threshold is between Rs. 150 and Rs. 160, which is the "point of marginal cheapness" (see Fig. 20.2).

Now, to get to know the exact price for the marketer, we calculate the percentage risk of rejection which is calculated as the percentage difference between price points considered too cheap and price points considered too expensive. A price point
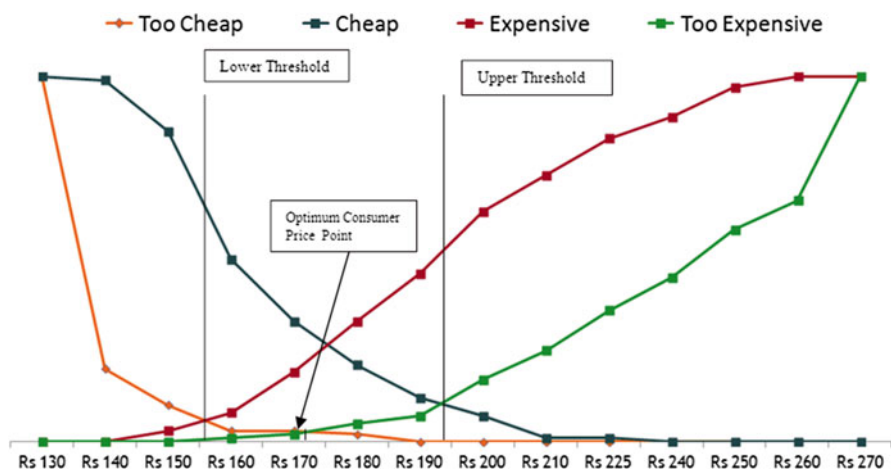
Fig. 20.2 PSM for Vivel Cell Renew body lotion

Table 20.1 Percentage rejection

Price points	Rs. 170	Rs. 180	Rs. 190	Rs. 200	Rs. 210
% rejection*	5.0	6.7	7.1	17.5	25.0

* % Rejection at price points considered too cheap OR too expensive

Table 20.2 Intention to purchase

Intention to purchase	Rs. 170	Rs. 190	Rs. 225
Will definitely buy	94	69	22↓
Will absolutely buy	91	112	47↓

Table 20.3 Price perception

Price perception	Rs. 170	Rs. 190	Rs. 225
Priced just right	80	64	17↓
Priced just right/can be higher	93	63	20↓

of around Rs. 190 is viable for 250 ml VCR. However, price at/above Rs. 200 increases the risk of rejection (see Table 20.1). From Table 20.1, we can see that with a difference for price points between Rs. 190 and Rs. 170, the percentage rejection is just 2.1 %. But with the change in price points between Rs. 200 and Rs. 190, the percentage rejection is 10.4 %, and between price points Rs. 210 and RS. 200, it is 7.5 %. Up to Rs. 190 the incremental rejection is ~2 %. Beyond that it increases significantly.

The intention to purchase data further supports that Rs. 190 as the most viable price point (see Appendix A3). From Table 20.2, it is clear that there is a difference for only 25 respondents for the option of "will definitely buy" between the price points Rs. 190 and Rs. 170, but for the price points between Rs. 225 and Rs. 190, the difference for the same option goes up to 47%. For the option "will definitely/probably buy," the gap increases to 65 respondents for Rs. 225–Rs. 190 (see Table 20.2).

For the price perception (see Appendix A3), Table 20.3 shows two options of "priced just right" and "priced just right/can be higher." The gap between the price points clearly shows that Rs. 190 is the appropriate price as the gap for the option "price just right" decreases from 24 to 47 respondents when the price rises from Rs. 190 to Rs. 225.

Among the profile of rejecters, 156 people rejected at price Rs. 190 who belonged to younger age group of 20–29. Also, the rejecters were mainly Vaseline users followed by Nivea at Rs. 190 (Table 20.4).

Therefore, from the above discussion, we can conclude that the range of low rejection extends from Rs. 170 (what the consumers want) up to Rs. 190 (what the manufacturer can go up to). The proportion of rejection is low and rejecters are predominantly younger and Vaseline users. However, pricing VCR at/over Rs. 200

Table 20.4 Profile for
rejecters

Price points	Rs. 170	Rs. 190
Age group		
20–29 years	78	156
30–35 years	162	84
Most often used brand		
Dove	19	43
Garnier	58	45
Lakme	62	12
Lotus	19	17
Nivea	39	55
Vaseline	43	68

increases the risk of rejection significantly, that is, by 10.4 %. Thus, the 250 ml Vivel Cell Renew SKU can be priced around Rs. 190, but price should be below Rs. 200 (Table 20.5).

5 Conclusion, Limitations, and Future Study

Pricing research is one of the core methodologies in custom research. There are a multitude of approaches one can take and the exact method depends on the particular circumstances of the request. We described different direct and indirect techniques and explained van Westendorp's model with application in practical marketing research for evaluation of optimal prices for products like Vivel Cell Renew body lotion. The optimal price point figured out was Rs. 190 for 250 ml Vivel Cell Renew (Table 20.6).

The classic PSM analysis can provide first indications towards optimal prices. Nonetheless, this traditional analysis method based on intersections needs to be modified and complemented to deduce concrete recommendations for applied price management. While the PSM approach has the nice property of forcing the consumer to think about rational price ranges, it may artificially make them overly price sensitive by forcing internally rational responses. That is, consumers might think that a laptop for Rs. 50,000 is too much, when in reality they might defer payment by using a credit card. The intersections are not linked to the target system of a company. A company intends to optimize either profit or turnover, but none of the intersections have a link with the company's turnover or profit goals (Hoffman et al. 2002; Wildner and Conklin 2003).

Further, this technique works well when testing experience-related products like skin cream or razor, but modifications to the technique may be useful when the product is a new to the world idea and consumers do not have a precedent for determining what price would be reasonable.

Appendices

Appendix A1: Questionnaire

Rs 130
Rs 140
Rs 150
Rs 160
Rs 170
Rs 180
Rs 190
Rs 200
Rs 210
Rs 225
Rs 240
Rs 250
Rs 260
Rs 270

Vivel Cell Renew body lotion

From the given price Range please choose a single appropriate answer for the questions given below:

At what price does this product become too cheap, that you would question its quality and not buy it?

At what price does this product start to seem cheap to you, that is, when does it start to seem like a bargain?

At what price do you perceive that the product is beginning to get expensive, so that it is not out of the question, but you would have to give some thought to buying it?

At what price does this product become too expensive, that you would not consider buying it?

At the given prices points please indicate your intention to buy Vivel Cell Renew

Will not buy it (1) May Or May Not Buy It (2) Will Probably Buy It (3) Will Definitely Buy It (4) Will Absolutely Buy It (5)

Rs 150

Rs 170

Rs 190

Rs 225

At the given prices points please indicate your price perception to buy Vivel Cell Renew

It Should Be Priced Much Lower (1) It Should Be Priced Slightly Lower (2) It Is Priced Just Right (3) It Can Be Priced Higher (4) Priced just right/Can be higher (5)

Rs 150
Rs 170
Rs 190
Rs 225
AGE
MOST OFTEN USED BRAND

Appendix A2: Cumulative Percentage at Different Price Levels

Table 20.5 Cumulative percentage at different price levels

Column 1	Too cheap	Cheap	Expensive	Too expensive
Rs 130	100 %	100 %	0 %	0 %
Rs 140	20 %	99 %	0 %	0 %
Rs 150	10 %	85 %	3 %	0 %
Rs 160	3 %	50 %	8 %	1 %
Rs 170	3 %	33 %	19 %	2 %
Rs 180	2 %	21 %	33 %	5 %
Rs 190	0 %	12 %	46 %	7 %
Rs 200	0 %	7 %	63 %	17 %
Rs 210	0 %	1 %	73 %	25 %
Rs 225	0 %	1 %	83 %	36 %
Rs 240	0 %	0 %	89 %	45 %
Rs 250	0 %	0 %	97 %	58 %
Rs 260	0 %	0 %	100 %	66 %
Rs 270	0 %	0 %	100 %	100 %

Appendix A3: Intention to Purchase
and Price Perception at Different Price Levels

Table 20.6 Intention to purchase and price perception at different price levels

Price points→	Rs. 150	Rs. 170	Rs. 190	Rs. 225
Sample size	240	240	240	240
Intention to purchase				
Will not buy it	6	5	14	65
May or may not buy it	15	10	12	34
Will probably buy it	30	40	34	72
Will definitely buy it	89	94	68	22
Will absolutely buy it	100	91	112	47
Price perception				
It should be priced much lower	5	9	31	67
It should be priced slightly lower	20	48	65	110
It is priced just right	65	80	64	17
It can be priced higher	27	10	17	26
Priced just right/can be higher	123	93	63	20

References

Akiva MB, Lerman SR (1985) Discrete choice analysis. MIT Press, Cambridge

Avlonities G, Indounas K (2006) Pricing practices of service organizations. J Serv Mark 20(5):346–356

Dean J (1969) Pricing pioneering products. J Ind Econ 17(3):165–179

Gabor A, Granger C (1965) The pricing of new products. Sci Bus 3:3–12

Gabor A, Granger CW (1966) Price as an indicator of quality: report on an enquiry. Economics 46:43–70

Gabor A, Granger CWJ (1977) Pricing, principles and practices. Heinemann Educational, London

Hoffman KD, Turley LW, Kelley SW (2002) Pricing retail services. J Bus Res 55(12):1015–1023

Hultink EJ, Griffin A, Robben HSJ, Hart S (1998) In search of generic launch strategies for new products. Int J Res Mark 15(3):269–285

Hultink EJ, Hart S, Robben HSJ, Griffin A (2000) Launch decisions and new product success: an empirical comparison of consumer and industrial products. J Prod Innov Manag 17(1):5–23

Kotler P, Bowen J, Makens J (2006) Marketing for hospitality and tourism, 4th edn. Prentice Hall, Upper Saddle River

Lilien GL, Kotler P (1983) Marketing decision making: a model-building approach. Harper & Row, New York

Lipovetsky S (2006) Van Westendorp price sensitivity in statistical modelling. Int J Oper Quant Manag 12(2):141–156

Lowe B, Alpert F (2010) Pricing strategy and the formation and evolution of reference price perceptions in new product categories. Psychol Mark 27(9):846–873

Malhotra NK (2004) Marketing research: an applied orientation. Prentice Hall, Upper Saddle River

Noble PM, Gruca TS (1999) Industrial pricing-theory and managerial practice. Mark Sci 18(3):435–454

Shoemaker S, Lewis R, Yesawich P (2006) Marketing leadership in hospitality and tourism, 4th edn. Prentice Hall, Upper Saddle River

Sowter AP, Gabor A, Granger CW (1971) The effect of price on choice: a theoretical and empirical investigation. Appl Econ 3(3):167–181

Train KE (2003) Discrete choice methods with simulation. Cambridge University Press, New York, 595

Van Westendorp PH (1976) NSS-price sensitivity meter (PSM)-a new approach to study consumer perception of price. In: Proceedings of the 29th ESOMAR congress (pp. 139–167)

Wedel M, Kamakura WA (1999) Market segmentation: conceptual and methodological foundations. Kluwer Academic Press, New York

Wildner R, Conklin M (2003) Price thresholds and prospect theory. In: The 12th annual advanced research techniques forum of the American Marketing Association, Monterey (pp. 55–60)

Zeithaml V, Bitner M, Gremler D (2006) Services marketing integrating customer focus across the firm, 4th edn. McGraw-Hill, New York

Chapter 21
Do Middle-Level Managers Have a Role in Strategy Formulation and Implementation? Insights into an Indian Public and Private Sector Organization

Meeta Dasgupta

Abstract Purpose: As the Indian economy struggles to recover, the corporate balance sheets have become vulnerable. The challenge before every Indian organization, facing threat from competition, global economic slump, and demand-supply mismatch, is to sustain and take strategic decisions that stop further downward revision of growth forecasts. The key to managing in recovering markets is to get more actors involved in the formulation and implementation of strategic decisions. The structural position of middle-level managers in organizations helps them to be effective in various strategic roles. The purpose of this paper is to explore how middle-level managers contribute to the formulation and implementation of strategic decisions that impact organizational performance. Quest is to find out if the roles differ or are similar in a private and a public sector organization.

Design/Methodology/Approach: Discussions with around 12 middle-level managers in an Indian Power Solution Company (private sector organization) and around 15 middle-level managers in an Indian Power Transmission Company (public sector organization) helped to present a narration of various roles of middle-level managers and draw a comparison.

Findings: Although most of the middle-level managers do not take corporate strategy decisions, in their various roles, they are in a position to influence many decisions. The study brings out the relative importance of the various roles.

Research Limitations/Implications: It being a qualitative study is based on two case studies, one of an Indian private sector organization and the other of an Indian public sector organization. It can be extended to quantitatively test the relationship between different roles and organizational performance.

Practical Implications: The findings support the contribution of middle-level managers in formulation and implementation of strategic decisions. It provides cue to practitioners to leverage the entrepreneurial spirit and mindset of middle-level managers, a spirit that enables organizations to wade through difficult times.

M. Dasgupta (✉)
Strategic Management, Management Development Institute, Gurgaon, India
e-mail: meeta@mdi.ac.in

Originality/Value: The study fills a gap in literature by exploring the role of middle-level managers in an Indian public sector organization and by doing a comparative analysis of the roles in an Indian public and private sector organization.

Keywords Middle-level managers • Strategy formulation • Strategy implementation • Strategic decisions • Public sector organization • Organizational performance • Case study • Recovering markets • Recovering economies • Middle management role

1 Introduction

Although global growth is projected to be slightly higher in 2014, at around 3.7 %, rising to 3.9 % in 2015, the revisions to growth forecasts in some of the economies highlight the impending risk of negative growth. The growth in emerging markets and developing economies is dependent on a strong external demand from the developed economies. The need of the hour is also to push ahead with various structural reforms that uplift the performance of corporate in these economies (World Economic Outlook 2014).[1]

Turbulent environments being dynamically heterogeneous, it is critical to conceptualize strategies that can help the firm to sustain its competitive advantage. Strategic decisions in a globalized era that affects lives beyond business and commerce need to be taken that encompass the breadth and depth of an organization's dynamic competency. Not only the tacit knowledge of individuals becomes important but top-down hierarchical structures have become redundant for creating and harnessing the organizational brain (Subbanarasimha 2001; Mishra and Kar 2013). The key to managing in recovering markets is to get more actors involved in the formulation and implementation of strategic decisions. This helps to gain acceptance from other members of the organization and also makes them understand how a change would benefit the organizational goals (Westley 1990; Moore et al. 2010; Dandira 2011). The structural position of middle-level managers in organizations helps them to be effective in various strategic roles, as implementers of top-management-defined strategic changes and as relationship managers (Shi et al. 2009; Kuyvenhoven and Buss 2011).

The Indian economy in 2013 had shown a growth rate slightly faster than expected, but the corporates are concerned about the high rate of inflation and the high cost of credit that is making their balance sheets vulnerable.[2] Although literature

---

[1] World Economic Outlook Update, Is the Tide Rising? Retrieved from http://www.imf.org/external/pubs/ft/weo/2014/update/01/on February, 14, 2014

[2] Indian Economy Struggles to Recover, Nov 29, 2013. Retrieved from http://www.ft.com/intl/cms/s/0/bb880a94-5902-11e3-a7cb-00144feabdc0.html on February, 14, 2014

brings out the myriad roles played by middle-level managers in an organization's strategy (Embertson 2006; Huy 2011), research exploring the role of **Indian** middle-level managers is scarce. The article endeavors to fill this gap.

2   Middle-Level Managers and Strategic Decisions: Theoretical Model

Although the term middle-level management is understood rather broadly, it extends to managers located below top managers and above first-level supervision in the hierarchy (as cited in Wooldridge et al. 2008). According to Floyd and Wooldridge (1992, 1997), middle-level managers are not just simply implementers of strategy but synthesizers, champions, and information processors. As a *networker* the role of the middle-level manager is to gather, synthesize, and communicate information from/to the top and operational level. In case of emergent strategic models, the contribution of middle-level managers is vital as they are the first to recognize strategic problems and opportunities (Wooldridge and Floyd 1990; Floyd and Lane 2000). As a *negotiator* the role is to sell top management's initiatives to the operational level and debate and discuss the intended business plans of the top management (Currie 1999). As an *entrepreneur* the role of middle manager is to search for new opportunities, identify different problems, and champion new ideas (Lassen et al. 2009; Kuratko et al. 2005). As an *implementer* the role of the middle-level manager is to coordinate different strategic programs, motivate lower-level employees, and monitor activities to support the top management (Mair and Thurner 2008; McCarthy et al. 2010; Savanevicience and Stankeviciute 2011).

A balance of the different roles helps a middle-level manager to contribute to efficient strategy formulation and implementation. This in turn has an impact on organizational performance. Figure 21.1 gives a pictorial presentation of the linkage between the different roles and organizational performance.

3   Research Design

3.1   Case Background

The objective has been to explore and understand the role of middle-level managers in the formulation and implementation of strategic decisions. The endeavor has been to provide a rich description of their role in an Indian private and a public sector organization and not to measure the phenomenon. Therefore, qualitative paradigm of research has been adopted. Because focus is on processes (how something

Role of Middle Level Manager
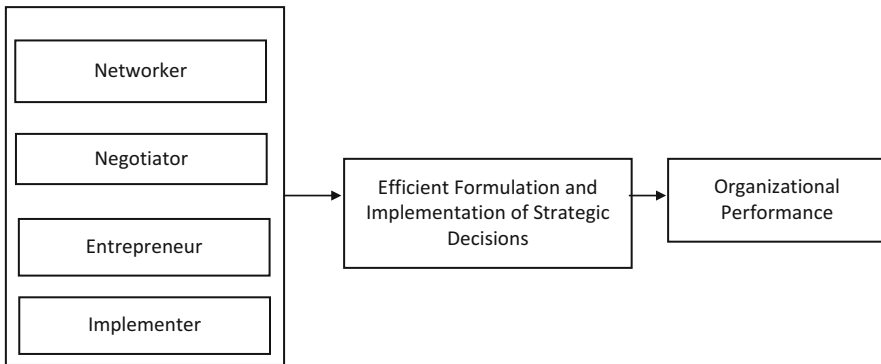
Fig. 21.1 Theoretical model

happens) rather than on the outcomes or results obtained (Patton 1990), positivist case study research strategy has been adopted for the study where the aim is to investigate a contemporary phenomenon within its real life context (Yin 2003; Eisenhardt and Graebner 2007).

Keeping the research objective in mind, a private sector company and a public sector company were chosen as the unit of analysis. Su-Kam Power Systems Limited, India's most admired power solution provider, was selected as the private sector organization, whereas Power Grid Corporation of India Limited, the Central Transmission Utility (CTU) of the country under the Ministry of Power, was chosen as the public sector organization. Apart from power being one of the key pillars in a country's infrastructure, the Indian power industry is also on a growth trajectory. Additionally, it was felt that the organizations were accessible and offered the possibility of analyzing and studying the topic that was the focus of the study (Lavarda et al. 2010).

3.2 *Data Collection and Analysis*

To increase the reliability of the study, a case study protocol was used to collect information. Purposeful and chain sampling (Patton 1990) was done in order to conduct in-depth interviews, based on semi-structured open-ended questionnaire, with chief managers and deputy general managers in the organization, that is, employees who occupy middle-level management position in the organization. Observations and various reports available on the web also provided precious information which was used to triangulate with the responses of the interviews.

The coding procedure suggested by Miles and Huberman (1994) guided in the process of creating "conceptual labels" for the phenomenon observed.

Conceptually clustered matrices (Miles and Huberman 1994), with defined rows and columns, based on the constructs/dimensions appearing in the case were used to display and analyze data. These matrices were analyzed to understand the phenomenon and draw explanations from the empirical evidence. The matrices were also used to identify the relative importance of the distinct roles.

4   Findings

4.1   Case Analysis

The middle-level managers in the private sector organization understood that the strategic priority of the organization was to expand and be known as a complete solution provider rather than as a power backup company. They were unanimous that decisions involving expansion of the company were reserved for the top-level management. This might be due to the fact that decisions involving growth and expansion are considered to be risky decisions which have a major impact on organizational effectiveness, have a relatively high cost, and are difficult to reverse (Bryant and Stensaker 2011). But they also shared that they had played a critical role in the growth story of the organization. The company had its own R&D team which had got more than 70 patents.[3] The company had in the years 2011–2012 and 2012–2013 recorded 700 crores and 1,200 crores of revenues, respectively.[4]

All the middle-level managers interviewed in the public sector organization were unanimous with respect to their understanding of change in the competitive scenario in the power transmission industry and how operational efficiency/costs had become important to win transmission projects. According to them, they help to optimize costs on various projects and help Power Grid to be competitive in the current scenario. Over the years, the financials of the company improved from 2008–2009 to 2012–2013. Profit after depreciation but before tax increased from Rs.2,228.57 crores to Rs.5,644.86 crores, dividends payout increased from Rs. 505.08 crores to Rs.1,273.18 crores, earnings per share increased from Rs.4.02 to Rs.9.15, and net profit to capital employed increased from Rs. 5.95 to Rs. 8.00.[5]

Appendix gives a brief narration, based on interview transcripts, of the role of middle-level managers both in the private and public sector organizations.

---

[3] Su-Kam Power Systems. As retrieved from http://en.wikipedia.org/wiki/Su-kam_Power_Systems on August 6, 2013

[4] Inverter maker Su-Kam plans green energy foray. As retrieved from http://www.business-standard.com/article/companies/inverter-maker-su-kam-plans-green-energy-foray-113011400108_1.html (Retrieved August 12, 2013)

[5] Annual Report 2012–13. As retrieved on November 21, 2013, from http://www.powergridindia.com/layouts/PowerGrid/WriteReadData/file/Investors/Annual_Report/AR%202012_13.pdf

5 Discussion

5.1 Understanding the Roles

The role the middle-level managers play as a networker, both in the public and private sector organizations, is evident from the comments appearing in Appendix. They believe that as middle-level managers, they play an important role with respect to gathering information from different sources, interpreting/analyzing the information, and communicating it to the top-level management. The middle-level managers believe that they play a very important role, both as a link between the top management and the lower-level management and as a link of top management with the market scenario (Raman 2009; Lavarda et al. 2010). This they believe helps them to keep the top management apprised with respect to the latest in technology, financing options, competition, regulations, etc.

Middle-level managers both in the public and private sector company feel that as a negotiator, their role is restricted to convincing top management to change benchmarks, only if time and resources permit. The freedom given to them with respect to questioning top management's intended business plans was minuscule. An overemphasis on the role as a negotiator might lead to conflict of interest between the top management teams and the middle-level managers (as cited in Raes et al. 2011).

As the Appendix exhibits, middle-level managers play an important role of an entrepreneur. Identifying new opportunities/alternative approaches is a critical area of responsibility for them. According to them, they initiate new ideas, identify gaps, and propose new possibilities for approval to the top management. They also evaluate ideas suggested by the operational-level employees. This helps them to come up with various optimum solutions (Kanter 2004; Ren and Guo 2011).

As an implementer, the middle-level managers play the most important role of monitoring implementation activities and tracking performance. They serve as nodal officers who help in coordinating various tasks. Setting internal benchmarks and translating them into action plans, "maintaining quality," again forms an important part of their role as an implementer. Arranging for resources for smooth implementation of various activities and coaching employees as and when required are other important activities done by them (Lavarda et al. 2010; Salih and Doll 2013).

5.2 Comparative Analysis of Public and Private Company

5.2.1 Relative Importance of Different Roles

Interestingly, the findings show that middle-level managers both in the private and public sector organizations agree with respect to the relative importance of their roles in the formulation and implementation of strategic decisions.

Table 21.1 gives a synopsis of the relative importance of the roles in the public and private sector organizations.

As the table exhibits, the two most important roles of the middle-level managers with respect to the formulation and implementation of strategic decisions are that of

Table 21.1 Cross company role comparison

	Networker	Negotiator	Entrepreneur	Implementer
Private	Very important	Less important	Important	Very important
Public	Very important	Less important	Important	Very important

Table 21.2 Networker activities

Activities	Private	Public
Link/interface between top and operational levels	*	*
Gathering information about market, customers, competitors, etc.	*	*
Communicating top management perspective/strategic direction to operational-level managers	*	*
Synthesizing and communicating information across organization	*	*
Link with external stakeholders	*	*

*signifies that the managers exhibit the role (based on analysis and interpretation of data collected).

Table 21.3 Entrepreneur activities

Activities	Private	Public
Search for new opportunities	*	*
Identify different problems	*	*
Propose programs or projects to higher-level managers	*	*
Evaluate the merits of new proposals		
Champion innovative ideas		

*signifies that the managers exhibit the role (based on analysis and interpretation of data collected).

Absence of * signifies that the managers do not exhibit the role.

a networker and that of an implementer. They also give importance to their roles as entrepreneurs.

5.2.2 Exploring Activities Under Different Roles

As the role of middle-level managers as negotiators in the organization is minuscule, Tables 21.2, 21.3, and 21.4 have been used to further detail the different activities performed by middle-level managers in the role of networker, entrepreneur, and implementer. The narration given by middle-level managers of their role in Appendix and literature has been used to derive the respective set of activities.

As is evident from Table 21.2, managers of both public and private sector organizations exhibit similarity with respect to the activities performed by them as a networker.

As is evident from Table 21.3, both sets of managers as entrepreneurs are primarily involved with identifying new opportunities and proposing to the top management. Evaluation of innovative projects and ultimate championing of the ideas is the domain of the top-level management.

Table 21.4 Implementer activities

Activities	Private	Public
Team formation	*	*
Motivating/encouraging employees for performance	*	*
Delegating roles and responsibilities	*	*
Monitoring/tracking performance	*	*
Coaching/training employees		*

* signifies that the managers exhibit the role (based on analysis and interpretation of data collected).
Absence of * signifies that the managers do not exhibit the role.

Table 21.5 Linking roles to organizational performance

Roles	Organizational performance
Networker	Helps the middle-level managers keep the top management, when taking strategic decisions, informed of the latest. This improves organizational performance
Entrepreneur	Helps the middle-level managers identify and propose new opportunities to top management. These proposals when approved help to improve organizational performance
Implementer	Leads to efficient and timely implementation of strategic decisions. Helps to cut cost overheads and improve organizational performance

As is evident from Table 21.4, managers of both public and private sector organizations exhibit similarity with respect to the activities performed by them as an implementer.

5.2.3   Linking Roles to Organizational Performance

The findings from the cases suggest that middle-level managers play a crucial role in the formulation and implementation of strategic decisions. Their involvement has led the company to improve performance with respect to sales targets and cost optimization (Wooldridge and Floyd 1990).

Table 21.5 links the different roles of the middle managers to organizational performance.

Based on the above, the following propositions can be made:

Proposition 1: As networkers in the formulation and implementation of strategic decisions, middle-level managers positively influence organizational performance.
Proposition 2: As entrepreneurs in the formulation and implementation of strategic decisions, middle-level managers positively influence organizational performance.
Proposition 3: As implementers in the formulation and implementation of strategic decisions, middle-level managers positively influence organizational performance.

6   Conclusion and Directions for Future Research

It can be said that although most of the middle-level managers do not take corporate strategy decisions, in their roles as networker, entrepreneur, and implementer, they are in a position to influence many decisions. In the current scenario where the balance sheets of corporate are under risk because of competition, economic slump, and demand-supply mismatch, middle-level managers can be instrumental in bringing about a change. Due to increased training and operational responsibility, the cases exhibit an increased confidence of the middle-level managers to have myriad roles. In interaction with the top management, they have a dual role of implementer/co-designer. In interaction with the subordinates, they have one or more roles as coordinator, motivator, coach, or team developer (as cited in Buss and Kuyvenhofen 2011).

The study has both managerial and theoretical implications. Firstly for the top management, this study serves as an indicator that efforts need to be made to involve middle-level managers at various stages of the strategy process. The middle-level managers' confidence of their role in championing new ideas could be leveraged by top-level management. According to Kanter (2004), middle managers are crucial to bringing in innovation, and successful implementation of changes in an organization is made possible through the use of efficient middle managers. The need to design work practices wherein middle-level managers are given the ownership to design and implement new initiatives is an important practitioner implication of this study. The top-level management in Indian private and public sector organizations needs to work on this. On the other hand, this study can serve as a motivator for middle-level management that their role in the organization is substantial and not nominal. Their active involvement in the strategy process can lead companies to improve performance. The research contributes to literature by exploring the role of middle-level managers in the formulation and implementation of strategic decisions in Indian organizations, public and private sector organizations.

The research, however, suffers from the limitation of being based on two case studies and results; therefore, it cannot be generalized. It can be extended to multiple case studies from different industries and geographies. A longitudinal study can also be conducted to understand if the role of middle-level managers evolves with time. The research can be extended to quantitatively test the relationship between different roles and organization performance.

Note

This study is part of a larger study being conducted by the researcher at Management Development Institute, Gurgaon.

Appendix

	Private sector organization	Public sector organization
Networker	Attending frequent meetings with top management	Taking inputs from site and providing inputs to site
	Communicating sales target to be achieved to lower levels	Intimating top-level management after analyzing information
	Preparing minutes of meeting to be circulated to the top- and operational-level managers	Making funds available at competitive rates after evaluating commercial financing options
	Maintaining a comparative analysis of sales across regions	Interacting with external stakeholders for the preparation of legal documents
	Taking directions from top management compiling data taken from subordinates	Brainstorming with top management giving competitive tariffs after collecting information from various sources
	Maintaining transparency between top management and lower levels	Bringing about awareness in personnel about competition
	Checking credibility of suppliers and giving feedback to R&D/production department	Serving as a nodal point between various departments
	Keeping track of changes in market	Preparing detailed project report after consulting with leading manufacturers and regulators
		Listening to ideas suggested by operational-level employees
		Bringing in awareness on world standards
Negotiator	Floating message to the top management with respect to limitations of a decision	Convincing top management to change benchmarks or relax deadlines in case time and resources permit, usually not entertained
	Giving views whether or not a particular objective can be achieved and also specifying areas where systems might fail	
Entrepreneur	Ensuring proper pipeline of products is maintained	Getting involved in analysis, identifying gaps, and suggesting options
	Taking feedback from customers and proposing changes to top management	Suggesting new options to the boss who might take it to the top-level management
	Introducing attractive offers in cases where market reacts unfavorably to our strategy	Initiating ideas for new contracts, suggesting system improvement procedures
	Suggesting new products to the top management	Putting up cases to the top management for approval
	Proposing new ideas or suggesting changes in policies	
	Identifying and suggesting new supply sources	

(continued)

	Private sector organization	Public sector organization
Implementer	Making teams, assigning roles, and switching responsibilities as required	Serving as the nodal officer and giving delegation of power
	Ensuring proper person is appointed for support in critical areas	Monitoring KPIs based on set targets, trying to get clear outcomes
	Training all employees on the team and telling people who to contact when required to clear doubts	Ensuring adequate delegation of power
	Visiting frequently different regions to keep track of performance	Monitoring project implementation so as to reduce costs of projects
	Monitoring to ensure that strategies are implemented in the correct way	Fixing internal benchmarks/ standards, deciding framework/ scope of work
	Keeping a check of the information being given by operational-level managers to lower-level employees	Informing management and exploring alternative route in case of fallout
	Taking decisions to increase output of people	Maintaining quality and expediting work
		Handling problems raised by site, different departments
		Taking approval from top management with respect to resources
		Constantly providing guidance
		Reviewing and configuring the system; preparing agenda for implementation
		Coordinating with top management for meetings that need to be held with the regulatory body

References

Bryant M, Stensaker I (2011) The competing roles of middle management: negotiated order in the context of change. J Chang Manag 11(3):353–373

Buss WC, Kuyvenhofen RK (2011) Perceptions of European middle managers of their role in strategic change. Glob J Bus Res 5(5):109–119

Currie G (1999) The influence of middle managers in the business planning process: a case study in the UK NHS. Br J Manag 10:141–155

Dandira M (2011) Involvement of implementers: missing element in strategy formulation. Bus Strateg Ser 12(1):30–34

Eisenhardt KM, Graebner ME (2007) Theory building from cases: opportunities and challenges. Acad Manag J 50(1):25–32

Embertson MK (2006) Importance of middle managers in health care organizations. J Healthc Manag 51(4):223–232

Floyd SW, Lane PJ (2000) Strategizing throughout the organization: managing role conflict in strategic renewal. Acad Manag Rev 25(1):154–177

Floyd SW, Wooldridge B (1992) Middle management involvement in strategy and its association with strategic type: a research note. Strateg Manag J 13(5):153–167

Floyd SW, Wooldridge B (1997) Middle management's strategic influence and organizational performance. J Manag Stud 34(3):465–485

Huy QN (2011) How middle managers' group-focus emotions and social identities influence strategy implementation. Strateg Manag J 32(13):1387–1410

Kanter RM (2004) The middle manager as innovator. Harv Bus Rev 60(4):95–105

Kuratko DF, Ireland RD, Covin JG, Hornsby JS (2005) A model of middle level mangers entrepreneurial behavior. Enterp Theory Pract 29:699–716

Kuyvenhoven R, Buss WC (2011) A normative view of the role of middle management in the implementation of strategic change. J Manag Mark Res 8:1–14

Lassen AH, Waehrens BV, Boer H (2009) Re-orienting the corporate entrepreneurial journey: exploring the role of middle management. Creat Innov Manag 18(1):16–23

Lavarda RAB, Giner MTC, Bonet FJP (2010) How middle managers contribute to strategy formation process: connection of strategy processes and strategy activities. RAE 50(4):358–370

Mair J, Thurner C (2008) Going global: how middle managers approach the process in medium sized firms. Strateg Chang 17(3–4):83–99

McCarthy A, Darcy C, Grady G (2010) Work-life balance policy and practice: understanding line managers attitudes and behaviors. Hum Resour Manag Rev 20(2):158–167

Miles MB, Huberman AM (1994) An expanded source book. Qualitative data analysis. Sage, Thousand Oaks

Mishra AJ, Kar S (2013) Broader social implication of the strategies of business corporations. Int J Indian Cult Bus Manag 7(2):213–225

Moore ME, Konrad AM, Hunt J (2010) Creating a vision boosts the impact of top management support on the employment of managers with disabilities. Equal Divers Incl Int J 29(6):609–626

Patton MQ (1990) Qualitative evaluation and research methods, 2nd edn. Sage, Newbury Park

Raes AML, Heijltjes MG, Glunk U, Roe RA (2011) The interface of the top management team and middle managers: a process model. Acad Manag Rev 36(1):102–126

Raman SR (2009) Middle managers' involvement in strategic planning: an examination of roles and influencing factors. J Manag 34(3):57–74

Ren CR, Guo C (2011) Middle manager's strategic role in the corporate entrepreneurial process: attention based effects. J Manag 37(6):1586–1610

Salih A, Doll Y (2013) A middle management perspective on strategy implementation. Int J Bus Manag 8(22):32–39

Savanevicience A, Stankeviciute Z (2011) The interaction between top management and line managers implementing strategic directions into Praxis. Eng Econ 22(4):412–422

Shi W, Markoczy L, Dess GG (2009) The role of middle management in the strategy process: group affiliation, structural holes and tertius lungens. J Manag 35(6):1453–1480

Subbanarasimha PN (2001) Strategy in turbulent environments: the role of dynamic competence. Manag Decis Econ 22:201–212

Westley FR (1990) Middle managers and strategy: microdynamics of inclusion. Strateg Manag J 11(5):337–351

Wooldridge B, Floyd SW (1990) The strategy process, middle management involvement and organizational performance. Strateg Manag J 11(3):231–241

Wooldridge B, Schmid T, Floyd SW (2008) The middle management perspective on strategy process: contributions, synthesis and future research. J Manag 34(6):1190–1221

World Economic Outlook Update (2014) Is the tide rising? Retrieved from http://www.imf.org/external/pubs/ft/weo/2014/update/01/. 14 Feb 2014

Yin RK (2003) Case study research, design and methods, 3rd edn. Sage, Newbury Park

Chapter 22
ERP Business Solutions Acceptance in Companies

Simona Sternad Zabukovšek and Samo Bobek

Abstract Managing in recovering markets is focused on the improvement of business performance. Enterprise resource planning (ERP) business solutions are key enablers for transforming business processes which lead to better business performance. Companies are facing the challenge of how to improve the use of ERP business solutions by its employees, and therefore, understanding of factors that impact ERP acceptance by employees is very important. Technology acceptance model (TAM) is one of the most widely used models for explaining the behavioural intention and actual usage and can improve understanding of how influence on actual usage could help increase efficiency and effectiveness of business solutions and other solutions use. This paper analyses existing extensions of TAM regarding ERP business solutions acceptance in organisations and proposes further factors which are needed for more comprehensive explanations of ERP business solutions acceptance. The cognitive construct of work compatibility is included in the model and the construct of extended use which replaces the construct of actual use is introduced. Furthermore, the impact of cognitive construct of work compatibility, solutions usefulness and solution ease of use on attitude towards using the solution are explained and the construct of extended use of business solution is discussed. Survey data has been collected from ERP business solutions users in companies where the ERP system has been in use for more than 1 year, and therefore, the solutions use can be defined as a mature one. The research model was analysed by using the PLS approach and some key findings are presented.

Keywords Business information solutions • Enterprise resource planning (ERP) • Technology acceptance model (TAM) • ERP acceptance • ERP use • Partial least squares (PLS) • ERP business solutions acceptance in companies

S.S. Zabukovšek (✉) • S. Bobek
School of Economics and Business, University of Maribor, Slovenia,
Razlagova 14, 2000 Maribor, Slovenia
e-mail: Simona.Sternad@uni-mb.si; Samo.Bobek@uni-mb.si

1 Introduction

Modern business information solutions such as enterprise resource planning (ERP), customer relationship management (CRM), supply chain management (SCM) and others are in most cases bought from business information solutions vendors by companies. In most cases they are transforming business processes and how organisations operate. Although the most important contributions of business information solutions are that they significantly reduce the time to complete business processes and help organisations share information (Lee et al. 2010), they also usually offer a better work environment for their organisational workers as they are given more efficient system to work with. It is widely recognised that business information solutions only provide organisations real benefits if users accept and use them extensively during daily tasks. Even more, the users' perceptions play a critical role in determining whether a business solution is implemented effectively and used to its maximum capacity, even that those business solutions are mandated for use.

To improve the efficiency and effectiveness of business solutions use, organisations need to be aware of factors that impact user satisfaction. Technology acceptance model (TAM) is one of the most widely used models for explaining the behavioural intention and actual usage and can improve our understanding of how influence on actual usage could help increase efficiency and effectiveness of business solutions and other solutions use (Shih and Huang 2009).

The purpose of this paper is to discuss TAM in the context of business solutions acceptance with a focus on ERP business solutions. Some extensions to the TAM are presented and explained. Survey data has been collected from ERP business solutions users in companies where the ERP system has been in use for more than 1 year, and therefore, the solutions use can be defined as a mature one. The research model was analysed by using the PLS approach and some key findings will be presented.

2 Technology Acceptance Models (TAMs) and Business Information Solutions

Several theoretical models have been used to investigate the viewpoints of acceptance and use of new information technology (IT) (Venkatesh et al. 2003). The theory of reasoned action (TRA) (Fishbein and Ajzen 1975) is a fundamental theory used to explain human behaviour (Venkatesh et al. 2003). The TRA has been applied into the theory of planned behaviour (TPB) (Ajzen 1991) and into the theory of technology acceptance model (TAM) (Devis et al. 1989). Numerous empirical studies have found that TAM consistently explains a substantial proportion of the variance (typically about 40 %) in usage intentions and behaviour, and the TAM compares favourably with alterative models such as the theory of reasoned action (TRA) and the theory of planned behaviour (TPB) (Davis et al. 1989; Venkatesh and Davis 2000; Legris et al. 2003). TAM has become well established as a robust, powerful and

parsimonious model for predicting user acceptance (Venkatesh and Davis 2000; Lu et al. 2003; Liu and Ma 2006) and so among the theoretical models is most widely used by IS/IT researchers (Davis 1989; Davis et al. 1989; Amoako-Gyampah and Salam 2004; Lee et al. 2010). The key purpose of TAM is to provide a basis for tracing the impact of external factors on internal beliefs, attitudes and intentions (Davis et al. 1989). The two central hypotheses in TAM state that perceived usefulness (PU) and perceived ease of use (PEOU) positively influence an individual's attitude towards using a new technology (AT), which in turn influences his or her behavioural intention (BI) to use it. Finally, intention is positively related to actual use (AU). TAM also predicts that perceived ease of use (PEOU) influences on perceived usefulness (PU), as Davis et al. (1989, p. 987) put it, "effort saved due to improved perceived ease of use may be redeployed, enabling a person to accomplish more work for the same effort".

Business solutions especially ERP business solutions have many characteristics that require extensions of the basic TAM. By definition ERP business solutions are integrated, all-encompassing, complex software designed to support the key functional areas of an organisation (Adam and Sammon 2004). They are high-tech and very complex and they involve large numbers of users – nearly all employees of the company. ERP business solutions implementations almost always require business process reengineering, because of the need to adopt the organisational processes to match the capabilities of the ERP system (Amoako-Gyampah and Salam 2004). The impact of ERP systems on their users and their acceptance and/or refusal have been recognised as two of the key factors of ERP implementation success and later ERP business solutions use.

A literature review of past ERP studies regarding TAM indicates that few studies have investigated ERP user acceptance and usage. Research shows that a small number of researches have been published and all of them expose small numbers of determinants (external factors) or cognitive factors which could have an influence on ERP acceptance and usage in different phases of an ERP system life cycle (see Table 22.1).

But to assess if TAM is suitable for explaining end users' acceptance in the ERP context, we need to expose relationships defined by TAM in the ERP context. TAM has been tested primarily on technologies that are relatively simple to use (e.g. e-mail, word processors) and is not mandatory to use by users. ERP usage is characterised as mandatory (Nah et al. 2004). All researchers who examined ERP acceptance and usage through TAM, except Nah et al. (2004), had focus on external factors which have influence on cognitive constructs (see Table 22.1). Because of that they exclude relations between basic constructs of TAM in the context of ERP which can be seen in Table 22.2.

Regardless of ERP complexity and ERP implementation failure, very few studies have been conducted regarding technology acceptance especially those dealing with autonomous ERP users and including more cognitive constructs. Our study clarifies the importance of factors leading users to extended usage of ERP systems.

Table 22.1 ERP literature review regarding TAM

Reference	Focus	Phase: ERP system life cycle
Nah et al. (2004)	They tested the impact of four cognitive constructs (perceived usefulness, perceived ease of use, perceived compatibility and perceived fit) on attitude towards using ERP system and symbolic adoption	Post-implementation (stabilisation phase)
Amoako-Gyampah and Salam (2004)	Their study evaluated the impact of one belief construct (shared beliefs in the benefits of a technology) and two technology success factors (training and communications) on perceived usefulness and perceived ease of use in one global organisation	Implementation
Shivers-Blackwell and Charles (2006)	They research student readiness for change (through gender, computer self-efficacy and perceived benefits of ERP) on behavioural intention regarding the ERP implementation	Implementation
Bradley and Lee (2007)	They investigate through case study the relationship between training satisfaction and the perceived ease of use, perceived usefulness, effectiveness and efficiency in implementing an ERP system at a midsized university	Implementation
Hsieh and Wang (2007)	They research the impact of perceived usefulness and perceived ease of use on extended use	Post-implementation (routine stage)
Kwahk and Lee (2008)	They examined the formation of readiness for change (enhanced by two factors: organisational commitment and perceived personal competence) and its effect on the perceived technological value of an ERP system leading to its use	Post-implementation (stabilisation stage)
Bueno and Salmeron (2008)	They develop a research model based on TAM for testing the influence of the critical success factors (top management support, communication, cooperation, training and technological complexity) on ERP implementation	Implementation
Uzoka et al. (2008)	They extended TAM to research the selection of ERP by organisations using factors such as the impact of system quality, information quality, service quality and support quality as key determinants of cognitive response, which ERP system to purchase/use	Selection
Sun et al. (2009)	They extended IT usage models to include the role of ERP's perceived work compatibility in users' ERP usage intention, usage and performance in work settings	Post-implementation (routine stage)
Shih and Huang (2009)	Their study attempts to explain behavioural intention and actual use through incorporated additional behavioural constructs: top management support, computer self-efficacy and computer anxiety	Post-implementation (routine stage)

Table 22.1 (continued)

Reference	Focus	Phase: ERP system life cycle
Calisir et al. (2009)	They examine factors (subjective norms, compatibility, gender, experience and education level) that affect users' behavioural intention to use the ERP system based on potential ERP users at one manufacturing organisation	Implementation
Youngberg et al. (2009)	They researched the impact of perceived ease of use (PEOU), result demonstrability and subjective norm on perceived usefulness (PU) and impact of it on usage behaviour	Post-implementation (stabilisation stage)
Lee et al. (2010)	They examined factor organisational support (formal and informal) on original TAM factors	Post-implementation

3 Research Model

To examine organisational users' use of ERP systems, we have combined findings accumulated over the years from TAM and ERP research in the research model represented in Fig. 22.1 where the grey area within the dotted line denotes the basic TAM.

Because our research is focused on the current usage of ERP system in routine stage, measured by the degree of extended use, there is no need to examine the behavioural intention (BI) on extended use. Behavioural intention (BI) originally included in basic TAM was dropped, the same as what Simon and Paper (2007) and Pijpers and Montfort (2006) did.

The role of users' attitude in a mandated environment is important and should not be overlooked (Nah et al. 2004). As noted by Brown and co-authors (2002), excluding the attitude construct would not provide accurate representation of users' acceptance of IT in the mandated contexts so it remains in the model.

According to Davis (1989) and Davis et al. (1989), the perceived ease of use influences perceived usefulness and attitude towards using the system. Research studies on TAM indicate strong empirical support in the direction from perceived ease of use towards perceived usefulness (Heijden 2001; Davis 1989). But in the context of ERP business solutions, empirical researches in some cases support this relationship (e.g. Amoako-Gyampah and Salam 2004; Hsieh and Wang 2007; Bueno and Salmeron 2008; Calisir et al. 2009; Lee et al. 2010), and some researches do not support this relationship (Hwang 2005; Shivers-Blackwell and Charles 2006; Shih and Huang 2009).

TAM was originally conceptualised in the context of personal use and ignored the role of organisational work on IT usage or its predictors (Sun et al. 2009). ERP users generally do not have a choice not to use the ERP system, regardless of their attitude. On the other hand, organisations that implement ERP systems want to use their systems to the fullest potential and realise the promised benefits. Because of all

Table 22.2 Relationship significance through cognitive constructs regarding researches

	Authors	Survey	PEOU ↓ PU	PU ↓ A	PEOU ↓ A	PU ↓ BI	PEOU ↓ BI	AT ↓ BI	BI ↓ Use	AT ↓ use	PU ↓ use	EOU ↓ use
1	Amoako-Gyampah and Salam 2004	Large global organisation that implemented ERP system (SAP, 571 respondents)	***	**	n.s.	n.s.		*				
2	Nah et al. 2004	SAP users of one public institution where ERP was implemented 1999 (229 respondents)		*	**					****a		***a
3	Hwang (2005)	Online survey where 70 % of users use ERP business solutions for more than 1 year	n.s.			***	***					
4	Shivers-Blackwell and Charles 2006	238 students' intention to use ERP system on bases on online newsletter of ERP systems		*	n.s.			*				

	Reference	Description								*b	**b
5	Hsieh and Wang 2007	ERP users in large manufacturing company. They use ERP system for more than 2 years (79 respondents)	**								
6	Bueno and Salmeron (2008)	Potential users during implementation process (91 responses)	**	***	*	***		**			
7	Kwahk and Lee (2008)	Recently finished ERP implementation and had implemented at least two ERP modules (283 usable responses)				*c	*c				
8	Sun et al. 2009	Field survey where the ERP system has been implemented for more than 3 years	**			**	*		**		
9	Youngberg et al. 2009	Potential participants from 4 Utah 2-year college	***			***			n.s.		
10	Calisir et al. 2009	Group of potential users at a manufacturing organisation (75 respondents)	***	***	n.s.			n.s.			

Table 22.1 (continued)

|	Authors	Survey	PEOU ↓ PU	PU ↓ A	PEOU ↓ A	PU ↓ BI	PEOU ↓ BI	AT ↓ BI	BI ↓ Use	AT ↓ use	PU ↓ use	EOU ↓ use
11	Shih and Huang 2009	Implement or use ERP system. 99 % of users have experienced using ERP system at least 12 months (165 respondents)	n.s.			**	**		**		n.s.	
12	Lee et al. 2010	63.2 % of users had experience using ERP system in the past	***									

n.s. not supported

*p<0.05; **p<0.01; ***p<0.001

[a]Symbolic adoption

[b]Extended use

[c]Usage intention

Fig. 22.1 Conceptual
research model
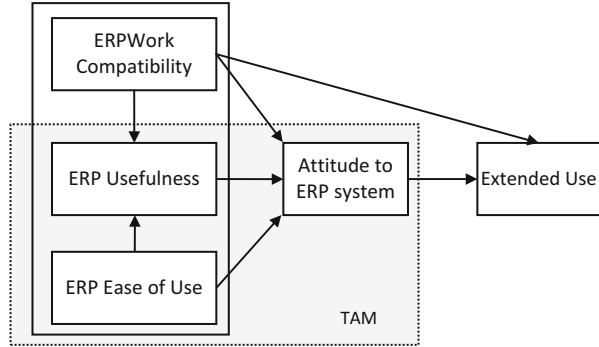
that, for organisations, it is important that ERP users not just use basic functionality of ERP systems but use extended functionality. Hsieh and Wang (2007) have defined extended use as the use of behaviour that goes beyond typical usage and can lead to better results and returns. Extended use captures the breath and frequency of using different ERP features and functions.

In the case of ERP implementations, other cognitive considerations besides usefulness (U) and ease of use (EOU) may become relevant (Nah et al. 2004). In the ERP context, organisations have to adopt business processes of an implemented ERP system. Organisations deploy ERP systems to facilitate organisational work rather than to match users' personal preferences or habits. At this presumed perspective, we view work compatibility (WC) strictly as the fit of ERP to organisational work and not to personal preferences or work habits. ERP work compatibility (WC) refers to the "degree" to which an ERP user can do most of their tasks in ERP system. Work compatibility (WC) influences ERP usefulness (U), and so it demonstrates the importance of incorporating work compatibility in models of IT usage as exposed, i.e. by Sun et al. (2009) and Scott and Walczak (2009). In the context of ERP usage, it is expected that in the relationship between work compatibility (WC) and ERP usefulness (U), the more work is compatible with the ERP system, the more useful it is for ERP users.

We also presume that work compatibility (WC) has a strong direct effect on attitude towards using ERP system (AT) and on extended use (EU), not just indirect effect through ERP usefulness as if ERP users believe that the ERP system is more work compatible with their daily tasks, and they will have more positive attitude towards using that system and also towards extended use of that system.

4   Research Study

Our research model has been tested empirically using a filed survey of ERP users using ERP systems in routine stage. Organisations have been selected using two criteria: (1) the organisations must have implemented one of the two global ERP
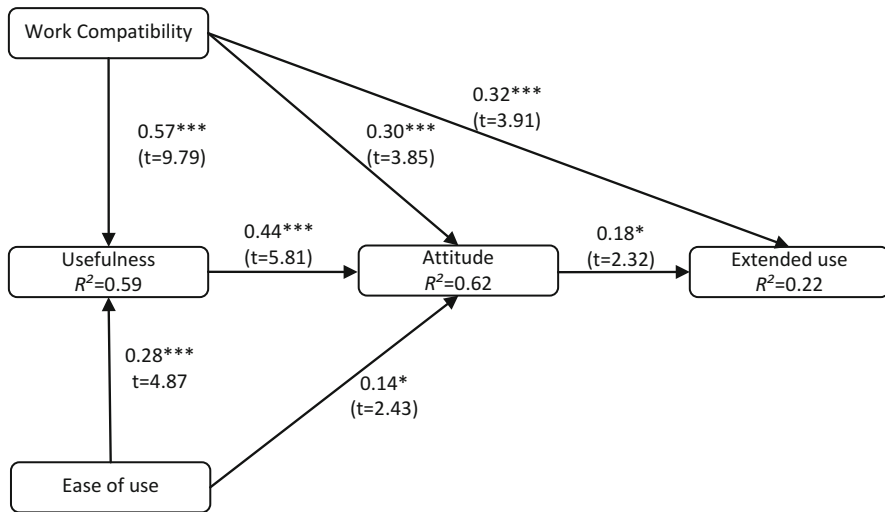
Fig. 22.2 Results of structural model analysis. PLS test (statistically significant: $*p < 0.05$; $**p < 0.01$; $***p < 0.001$. Based on t(499); t(0.05; 499) = 1.967; t(0.01, 499) = 2.591; t(0.001, 499) = 3.320)

business solutions SAP or Microsoft Dynamics and (2) the organisations must have used the ERP system for more the 1 year at the time of the study. Forty-four organisations agreed to participate in the survey and they were asked to distribute the survey questionnaire to their ERP users. All respondents were required to have used ERP system in their daily work. Two hundred ninety-three questionnaires were properly filled by the respondents and used for the purpose of analysis.

All of our hypothesised relationships have been tested significantly for $p < 0.05$, $p < 0.01$, $p < 0.001$ (based on t(499); t(0.05; 499) = 1,967; t(0.01; 499) = 2.591; t(0.001; 499) = 3.320), and the findings support the causal relationships proposed in the research model. All relationships except two are significant at $p < 0.001$ significant level; meanwhile, these two relationships are significant at $p < 0.05$ (Fig. 22.2).

5   Conclusion

A primary outcome expectation from the ERP system is improvement in efficiency. Much of the success of ERP systems implementation lies in operational phase of ERP life cycle, which consists of stabilisation stage and routine stage (Motiwalla and Thompson 2009; Bradford 2008). Stabilisation stage is the time from go-live to about 30–90 days after or until the number of issues and problems has been reduced to a small, manageable number. In the majority of cases, in that stage, operational efficiency drops in productivity. Benefits start to occur as an organisation gains more experience in using the ERP system (Markus and Tanis 2000; Ross and Vitale

2000; Hong and Kim 2002; Gattiker and Goodhure 2005; Saeed et al. 2010). Finally, having mastered the system, the users begin to get creative. This shows that the ERP users have accepted the system and are putting it to extended use.

To improve the efficiency and effectiveness of ERP system use, organisations need to understand the factors that impact user satisfaction. The majority of published research examines few contextual factors that have influence on intention to use ERP system or ERP use in stabilisation stage or earlier stages of ERP life cycle. Only very few studies have been conducted regarding technology acceptance of ERP systems, especially those dealing with autonomous ERP users (i.e. Sun et al. 2009). As reported researchers have recognised that the generality of TAM and researching of small numbers of additional factors that have impact on TAM fail to supply more meaningful information on users' opinions about a specific system especially of ERP system which is considered as a strategic IS in organisations. It is necessary to incorporate additional factors or integrate it with other IT acceptance models for improvement of its specificity and explanatorily utility.

References

Adam F, Sammon D (2004) The enterprise resource planning decade: lesson learned and issues for the future. Idea Group Publishing, USA

Ajzen I (1991) The theory of planned behavior. Organ Behav Hum Decis Process 50:179–211

Amoako-Gyampah K, Salam AF (2004) An extension of the technology acceptance model in an ERP implementation environment. Inf Manag 41:731–745

Bradford M (2008) Modern ERP – select, implement & use today's advanced business systems. College of management, North Carolina State University, Raleigh

Bradley J, Lee CC (2007) ERP training and user satisfaction: a case study. Int J Enterp Inf Syst 3(4):33–55

Brown SA, Massey AP, Montoya-Weiss MM, Burkman JR (2002) Do I really have to? User acceptance of mandated technology. Eur J Inf Syst 11(4):283–295

Bueno S, Salmeron JL (2008) TAM-based success modelling in ERP. Interact Comput 20(6):515–523

Calisir F, Gumussoy CA, Bayram A (2009) Predicting the behavioural intention to use enterprise resource planning systems – an exploratory extension of the technology acceptance model. Manag Res Newsl 32(7):597–613

Davis FD (1989) Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Q 13(3):319–340

Davis FD, Bagozzi RP, Warshaw PR (1989) User acceptance of computer technology: a comparison of two theoretical models. Manag Sci 35(8):982–1003

Fishbein M, Ajzen I (1975) Belief, attitude, intention, and behavior: an introduction to theory and research. Addison-Wesley, Reading

Gattiker TF, Goodhue DL (2005) What happens after ERP implementation: understanding the impact of interdependence and differentiation on plant-level outcomes. MIS Q 29(3):559–585

Heijden H (2001) Factors influencing the usage of websites: the case of a generic portal in the Netherlands. e-Everything: e-Commerce, e-Government, e-Household, e-Democracy in 14th Bled electronic commerce conference. Bled Slovenia

Hong KK, Kim YG (2002) The critical success factors for ERP implementation: an organizational fit perspective. Inf Manag 40(1):25–40

Hsieh JJPA, Wang W (2007) Explaining employees' extended use of complex information systems. Eur J Inf Syst 16(3):216–227

Hwang YJ (2005) Investigating enterprise systems adoption: uncertainty avoidance, intrinsic motivation and the technology acceptance model. Eur J Inf Syst 14(2):150–161

Kwahk KY, Lee JN (2008) The role of readiness for change in ERP implementation: theoretical bases and empirical validation. Inf Manag 45(7):474–481

Lee DH, Lee SM, Olson DL, Chung SH (2010) The effect of organizational support on ERP implementation. Ind Manag Data Syst 110(1–2):269–283

Legris P, Ingham J, Collerette P (2003) Why do people use information technology? A critical review of the technology acceptance model. Inf Manag 40:191–204

Liu L, Ma Q (2006) Perceived system performance: a test of an extended technology acceptance model. J Organ End User Comput 18(3):1–24

Lu J, Chun-Sheng Y, Liu C, Yao JE (2003) Technology acceptance model for wireless internet, internet research. Electron Netw Appl Policy 13(3):206–222

Markus LM, Tanis C (2000) The enterprise system experience: from adoption to success. Framing the domains of IT management: projecting the future through the past. Pinnafex Educational Resources Inc., Cincinnati

Motiwalla LF, Thompson J (2009) Enterprise systems for management. Pearson Prentice Hall, Upper Saddle River

Nah FF, Tan X, Teh SH (2004) An empirical investigation on end-users' acceptance of enterprise systems. Inf Resour Manag J 17(3):32–53

Pijpers GGM, Montfort K (2006) An investigation of factors that influence senior executives to accept innovations in information technology. Int J Manag 23(1):11–23

Ross JW, Vitale MR (2000) The ERP revolution: surviving vs. Thriving. Inf Syst Front 2(2):233–241

Saeed K, Abdinnour S, Lengnick-Hall ML, Lengnick-Hall CA (2010) Examining the impact of pre-implementation expectations on post-implementation use of enterprise systems: a longitudinal study. Decis Sci 41(4):659–688

Scott JE, Walczak S (2009) Cognitive engagement with a multimedia ERP training tool: assessing computer self-efficacy and technology acceptance. Inf Manage 46(4):221–232

Shih YY, Huang SS (2009) The actual usage of ERP systems: an extended technology acceptance perspective. J Res Pract Inf Technol 41(3):263–276

Shivers-Blackwell SL, Charles AC (2006) Ready, set, go: examining student readiness to use ERP technology. J Manag Dev 25(8):795–805

Simon SJ, Paper D (2007) User acceptance of voice recognition technology: an empirical extension of the technology acceptance model. J Organ End User Comput 19(1):24–50

Sun Y, Bhattacherjee A, Ma Q (2009) Extending technology usage to work settings: the role of perceived work compatibility in ERP implementation. Inf Manag 46:351–356

Uzoka FME, Abiola RO, Nyangeresi R (2008) Influence of product and organizational constructs on ERP acquisition using an extended technology acceptance model. Int J Enterp Inf Syst 4(2):67–83

Venkatesh V, Davis FD (2000) A theoretical extension of the technology acceptance model: four longitudinal field studies. Manag Sci 46(2):186–205

Venkatesh V, Morris MG, Davis FD, Davis GB (2003) User acceptance of information technology: toward a unified view. MIS Q 27(3):425–479

Youngberg E, Olsen D, Hauser K (2009) Determinants of professionally autonomous end user acceptance in an enterprise resource planning system environment. Int J Inf Manag 29:138–144

Chapter 23
Exploring the Linkages Between Human Resource Configuration and Knowledge Management Process: A Strategic Human Resource Management Perspective

Bindu Singh and M.K. Rao

Abstract The last decade experienced severe financial turbulence in developed markets and its impact on developing and emerging markets. This turmoil creates market stagnation and dramatic shift from developed and emerging market to recovering markets. In this turbulent environment, scholars and practitioners viewed inward for the sources of value creation and advocated that knowledge is the primary source of value creation. Theories of knowledge-based competition consider knowledge management vital for bringing significant strategic outcomes for the success of the organization – improving competitive position, achieving higher corporate valuation, accelerating business growth, and so on. A systematic review of the literature reveals a significant body of evidence, supporting the role of human resource management in knowledge management to create and sustain competitive advantage. Yet, in previous studies, strategic human resource management perspective towards knowledge management process and their linkages were not fully addressed. To address this gap, this study proposes a theoretical framework and explores the linkages between human resource configuration and knowledge management process drawing on theoretical insights of strategic human resource management. This study presents an apparent understanding of the effect of human resource configuration on knowledge management process, one that is theoretically supported and posits that human resource configuration is the eventual foundation of KM. This study makes a significant contribution to emerging strategic human resource management and knowledge management literature. Further, the managerial implications are also discussed.

Keywords Strategic human resource management • Human resource configuration • Knowledge management process

B. Singh (✉) • M.K. Rao
Department of Management Studies, Indian Institute of Technology, Roorkee, India
e-mail: binduddm@iitr.ac.in; mkraofdm@iitr.ac.in

1   Introduction

Over recent decades, the significant role of intangible assets, to obtain and sustain competitive advantage for the organization, has been widely recognized (Barney 1991; Amit and Schoemaker 1993; Grant 1996). One such intangible asset is organizational knowledge. Intellectuals (Grant 1996; Cabrera and Cabrera 2005; Mundra et al. 2011) have general consensus that managing knowledge is vital for the success of organizations, which can be assessed through the growth of publications in knowledge management (KM) field (Minbaeva et al. 2009), one of the youngest disciplines in the management field which is growing continuously (Serenko and Bontis 2012). This reveals the significance of the KM to the organization and supports further line of inquiry to enhance KM process.

Researchers (Currie and Kerrin 2003; Oltra 2005; Afiouni 2007; Edvardsson 2008; Minbaeva et al. 2009; Jimenez-Jimenez and Sanz-Valle 2013; Minbaeva 2013) cited human resource (HR) as one of the antecedent of KM and highlighted its importance. The basic idea is that human resource management (HRM) is considered instrumental in acquisition, creation, and development of knowledge as they influence knowledge, skills, and behaviors of employees (Currie and Kerrin 2003; Edvardsson 2008; Minbaeva et al. 2009; Kehoe and Wright 2010). Researchers (Oltra 2005; Chen et al. 2011) maintain that in spite of the significant relation between two dominant arenas in management field, early literature neglects HR-related issues; due to this, it is still in its infancy (Oltra 2005; Minbaeva et al. 2009; Minbaeva 2013).

Review of literature on HRM practices reveals that researchers adopted a partial approach while studying HRM and KM and emphasizes on one or some specific HRM practices (Theriou and Chatzoglou 2008; Minbaeva et al. 2009). Oltra (2005) maintains that there is a limited number of researches which initiate to link strategic human resource management (SHRM) perspective and KM process and investigate how strategic perspective towards HRM practices enhances the KM process. Hence, addressing this issue is an important line of inquiry.

The prime purpose of this study is to link strategic HRM perspective especially human resource configuration (HRC) and KM process and study the effect of SHRM practices on KM process. The study draws from and incorporates two streams of literature: SHRM and KM. Based on the review, to support the above cited linkage, the SHRM practices, namely, HR configuration proposed by Youndt and Snell (2004), have been studied which is likely to enhance KM process. The fundamental idea behind HRC is that it has potential to improve the KM. The attempt has been made to propose a conceptual framework which explores the relationship between HRC and KM process. The methodology and theoretical support to the linkage are discussed. Finally, this paper also discusses the implications of the study for practitioners.

2   SHRM Perspective

SHRM has been considered as the planned pattern of HR deployment, and various HR activities envisioned to facilitate attainment of organizational objectives (Wright and McMahan 1992) and enhanced organizational performance through managing

people. Extant of literature has advocated that SHRM links HR practices to business strategy (Ulrich and Lake 1991) and contributes to KM process. Over the last decade, different authors have given various names to these practices that further lead to KM. These practices are HR configuration (Yamao et al. 2009; Soraya and Chew 2010), best HRM practices (Jimenez-Jimenez and Sanz-Valle 2013), and strategic HR practices (Chen and Huang 2009). Further, knowledge is based on people, and due to this, HRM issues are critical for managing knowledge (Robertson and Hammersley 2000; Currie and Kerrin 2003; Edvardsson 2008). Extant of literature confirms the positive linkage of SHRM with KM (Scarbrough and Carter 2000; Robertson and Hammersley 2000; Theriou and Chatzoglou 2008; Soraya and Chew 2010; Jimenez-Jimenez and Sanz-Valle 2013) and advises to integrate the two (Oltra 2005; Svetlik and Costea 2007).

Researchers maintain that HR configuration, also referred to as "HRM system," supports management of knowledge in the organization (Yamao et al. 2009; Soraya and Chew 2010). Further, drawing on theories of SHRM, HRC enhances KM and adds value to the organization through the planned pattern of activities like training and development, and compensation and communication practices encourage individuals to participate and contribute (Wright and McMahan 1992; Yamao et al. 2009; Soraya and Chew 2010).

3   Methodology

To explore the linkages between HRC and KM, a systematic information search was made to cover the majority of literature in management of databases (EBSCO, Proquest, and Scholar Google). According to the objective, theoretical and empirical studies have been reviewed that address SHRM perspective as well as the role and effect of HRC on KM. The keywords used to search in the literature were SHRM, KM, and HRC. There were 43 studies referring to SHRM, HRC, and KM in the period 1991–2013 especially in *The International Journal of Human Resource Management*, *Strategic Management Journal*, *Human Resource Management*, *and Journal of Knowledge Management*.

4   Proposed Framework

With the objective of studying the linkage between the HRC and KM, the relevant literature has been reviewed, and conceptual framework shown in Fig. 23.1, encompassing SHRM practices such as HR configuration and KM process, has been proposed. In this conceptual framework, KM process is considered as a product of SHRM practices (Scarbrough and Carter 2000; Robertson and Hammersley 2000; Chen and Huang 2009; Soraya and Chew 2010; Jimenez-Jimenez and Sanz-Valle 2013), by stimulating attributes in human resources that are rare, inimitable, and valuable (Barney 1991; Pfeffer 1998; Kehoe and Wright 2010). Researchers maintain that acquisition and creation of new knowledge depends on employees' capabilities to
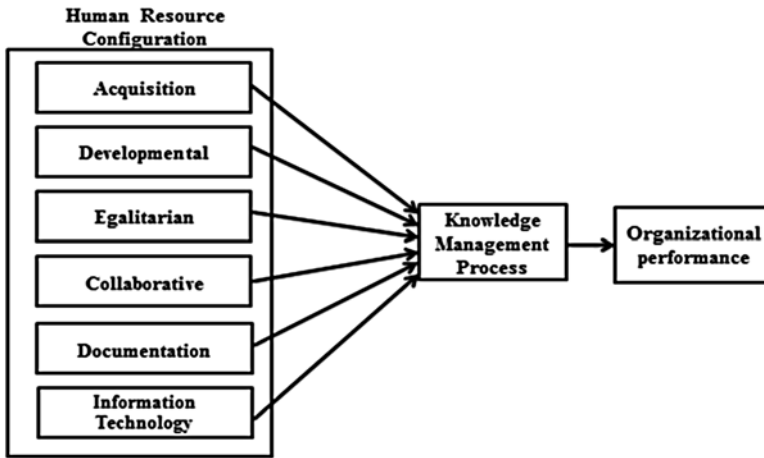
Fig. 23.1 Proposed framework

learn and in their motives and behaviors to use, share, and transfer their knowledge (Kehoe and Wright 2010). The proposed framework will provide answers to the question as how HR managers can manage knowledge effectively by practicing HRC.

5 Theoretical Support

Extant of literature has advocated that SHRM links HR practices to business strategy (Ulrich and Lake 1991) and enhances KM process through specific HRM practices. Researchers maintain that HR configuration, a set of HR management practices (Chien and Lin 2013) also referred to as "HRM system" (combination of HRM practices and HRM strategy), supports management of knowledge in the organization (Yamao et al. 2009; Soraya and Chew 2010).

Researchers maintain that knowledge management has been associated with the development and utilization of the knowledge assets with the purpose of achieving the organizational objectives (Davenpor and Prusak 1998) and enhanced performance. Numerous authors (Huber 1991; Gold et al. 2001) have proposed different models that explained the process of KM. Following Gold et al. (2001) KM process comprises four phases: acquisition, the accumulation of new knowledge; conversion, using existing knowledge; application, actual usage of knowledge to create value; and protection, processes deal with protection of knowledge (Gold et al. 2001).

The researchers highlight the significance of HR in implementing KM (Thite 2004; Oltra 2005; Edvardsson 2008; Theriou and Chatzoglou 2008; Jimenez-Jimenez and Sanz-Valle 2013; Minbaeva 2013) as HRM practices are primary mechanisms to influence individual KSAs (Chen and Huang 2009).

Literature suggest how HR configuration comprised of six dimensions, acquisition, developmental, collaborative, egalitarian, documentation, and information

technology, enhances KM process through staffing, compensation, and reward mechanism and performance appraisal and feedback (Jimenez-Jimenez and Sanz-Valle 2013; Minbaeva 2013), training practices (Chen and Huang 2009; Liu and Liu 2011; Jimenez-Jimenez and Sanz-Valle 2013; Rahman et al. 2013), teamwork (Currie and Kerrin 2003; Cabrera and Cabrera 2005; Chen et al. 2011), flat pay structure (Svetlik and Costea 2007; Yamao et al. 2009), and use of information technology (Cabrera and Cabrera 2005; Svetlik and Costea 2007). Based on the review, the following paragraphs discuss how each one of the configuration has an impact on KM that further leads to enhanced organizational performance.

Acquisition HRC comprising staffing, compensation, and reward mechanisms (also known as ability and motivation enhancing practices) (Kehoes and Wright 2010) recruits competent and outstanding people (Youndt and Snell 2004), enhances their abilities, and motivates them through stimulating remuneration to foster knowledge acquisition, application, and transfer (Yahya and Goh 2002; Kang et al. 2007; Svetlik and Costea 2007; Chen and Huang 2009; Yamao et al. 2009; Soraya and Chew 2010; Jimenez-Jimenez and Sanz-Valle 2013; Minbaeva 2013).

Developmental HRC enhances KM process (Yamao et al. 2009; Soraya and Chew 2010), by developing individual capabilities, enhancing motivation, and fostering learning-oriented culture through training and performance appraisal practices (Yahya and Goh 2002; Chen and Huang 2009; Liu and Liu 2011; Donate and Guadamillas 2011; Jimenez-Jimenez and Sanz-Valle 2013; Minbaeva 2013; Rahman et al. 2013), skill-based pay (Kang et al. 2007), and promotion (Minbaeva 2013).

Egalitarian HRC comprising flat pay structure, division of tasks and responsibilities, employee empowerment, and autonomy (Youndt and Snell 2004) motivates employees to acquire, apply (Yahya and Goh 2002; Cabrera and Cabrera 2005; Theriou and Chatzoglou 2008; Foss et al. 2009; Soraya and Chew 2010), and transfer knowledge (Chen and Huang 2009; Yamao et al. 2009; Jimenez-Jimenez and Sanz-Valle 2013).

Collaborative HRC supports collaborative environment and develops teamwork, trust, and cooperation that enhances employees' motivation and encourages them for cross functional interaction and permeable network structure (Youndt et al. 2004; Kang et al. 2007) to provide opportunity and create willingness among employees to acquire, apply, document, and share knowledge (Yahya and Goh 2002; Theriou and Chatzoglou 2008; Chen and Huang 2009; Foss et al. 2009; Yamao et al. 2009; Soraya and Chew 2010; Donate and Guadamillas 2011; Mundra et al. 2011; Jimenez-Jimenez and Sanz-Valle 2013; Minbaeva 2013).

Documentation HRC supports acquisition, application, and protection of new knowledge by encouraging employees through work redesign, employee suggestion practices (Foss et al. 2009; Lopez-Cabrales et al. 2009; Jimenez-Jimenez and Sanz-Valle 2013; Minbaeva 2013), and documentation of required information as client preferences and feedback and thereby fosters KM (Cabrera and Cabrera 2005).

Information technology HRC comprises of IT practices (Youndt and Snell 2004), facilitates communication medium, and provides an opportunity to the employees for managing, sharing, applying, and transferring knowledge within the

firms (Lopez-Cabrales et al. 2009; Reinholt et al. 2011). Researchers considered IT as an indispensable element (Sher and Lee 2004).

Hence, HRC significantly enhances KM process.

6 Discussion and Managerial Implication

Despite the unquestionable fact that KM and SHRM have made certain advancements, SHRM practices are not fully explored in relation with KM, although researchers accepted the role of HRM practices in the advancement and management of core competencies and strategic resources of the organizations. This study aims to examine the relationship between HRC and KM process from SHRM perspective, emphasizing on each configuration in isolation and exploring the linkages between them.

Based on review of SHRM and KM literature, some important points while proposing conceptual framework are given below:

– The already existed theoretical knowledge about the concepts
– That throw light on the linkages between HRC and KM
– With the aim of contributing towards the SHRM practices that enhance KM

Results provide evidence of the linkages and show that HRC enhances the ability of employees through staffing, compensation, and training and motivates them by providing rewards, incentives, and promotion coupled with opportunities such as performance appraisal, teamwork, work resign, employee suggestion system empowerment, and autonomy, and ultimately fosters KM processes that are consistent with previous literature (Theriou and Chatzoglou 2008; Yamao et al. 2009; Soraya and Chew 2010; Jimenez-Jimenez and Sanz-Valle 2013; Minbaeva 2013). In sum, findings show that HRC enhances KM processes.

The managerial implications for the practitioners are clear. An organization anticipating to enhance KM should concentrate on HRC, as with strategic perspective HRC affects employee's motives and behaviors that have further bearing on KM. Findings suggest that KM requires that organization offers stimulating remuneration, encouragements, communication practices, training, performance appraisal, teamwork, cross functional interaction, flat pay structure, division of tasks and responsibilities, minimizing job levels, documentation of required information, and use of IT. Additionally, the study demonstrates how HR managers can enhance KM through practicing HRC that further leads to enhanced organizational performance.

7 Conclusions

To conclude, this paper contributes to the literature by advocating that linkages between HRC and KM do exist and that HRC enhances KM. Further discussion is required to advance our understanding on the linkages and thereby contributing to the literature. Finally, empirical and longitudinal studies with reference to the Indian

context should be conducted to test and validate the linkages between HRC and KM proposed in this framework to gain greater validity and support in theory building.

References

Afiouni F (2007) Human resources management and knowledge management: a road map towards improving organizational performance. J Am Acad Bus Camb 11(2):124–130

Amit RL, Schoemaker PJH (1993) Strategic assets and organizational rent. Strateg Manag J 14(1):33–46

Barney JB (1991) Firm resources and sustained competitive advantage. J Manag 17:99–120

Cabrera E, Cabrera A (2005) Fostering knowledge sharing through people management practices. Int J Hum Resour Manag 16(5):720–735

Chen CJ, Huang JW (2009) Strategic human resource practices and innovation performance, the mediating role of knowledge management capacity. J Bus Res 62(1):104–114

Chen WY, Hsu BF, Wang ML, Lin Y-Y (2011) Fostering knowledge sharing through human resource management in R&D teams. Int J Technol Manag 53:309–330

Chien MS, Lin CC (2013) Psychological contract framework on the linkage between developmental human resource configuration and role behaviour. Int J Hum Resour Manag 24(1):1–14

Currie G, Kerrin M (2003) Human resource management and knowledge management: enhancing knowledge sharing in a pharmaceutical company. Int J Hum Resour Manag 14(6):1027–1045

Davenpor T, Prusak L (1998) Working knowledge: how organizations manage what they know. Harvard Business School Press, Boston

Donate MJ, Guadamillas F (2011) Organizational factors to support knowledge management and innovation. J Knowl Manag 15(6):890–914

Edvardsson IR (2008) HRM and knowledge management. Empl Relat 30(5):553–561

Foss N, Minbaeva D, Pedersen T, Reinholt M (2009) The impact of autonomy, task identity, and feedback on employee motivation to share knowledge. Hum Resour Manage 48:871–893

Gold AH, Malhotra A, Segars AH (2001) Knowledge management: an organizational capabilities perspective. J Manag Inf Syst 18(1):185–214

Grant RM (1996) Toward a knowledge-based theory of the firm. Strateg Manag J 17(2):109–122

Huber GP (1991) Organizational learning the contributing processes and the literatures. Organ Sci 2:88–115

Jimenez-Jimenez D, Sanz-Valle R (2013) Studying the effect of HRM practices on the knowledge management process. Pers Rev 42(1):28–49

Kang S-C, Morris SS, Snell SA (2007) Relational archetypes, organizational learning, and value creation: extending the human resource architecture. Acad Manage Rev 32(1):236–256

Kehoe R, Wright P (2010) The impact of high-performance human resource practices on employees' attitudes and behaviors. J Manage. Published online before print 8 April 2010. http://dx.doi.org/10.1177/0149206310365901

Liu NC, Liu MS (2011) Human resource practices and individual knowledge-sharing behaviour – an empirical study for Taiwanese R&D professionals. Int J Hum Resour Manag 22(4):981–997

Lopez-Cabrales A, Pérez-Luño A, Valle-Cabrera R (2009) Knowledge as a mediator between HRM practices and innovative activity. Hum Resour Manage 48(4):485–503

Minbaeva DN (2013) Strategic HRM in building micro-foundations of organizational knowledge-based performance. Hum Resour Manag Rev 23:378–390

Minbaeva DN, Foss N, Snell S (2009) Bringing the knowledge perspective into HRM. Hum Resour Manage 48(4):477–483

Mundra N, Gulati K, Vashisth R (2011) Achieving competitive advantage through knowledge management and innovation: empirical evidences from the Indian IT sector. Int Univ Press J Knowl Manag 90(2)

Oltra V (2005) Knowledge management effectiveness factors: the role of HRM. J Knowl Manag 9:70–86

Pfeffer J (1998) Seven practices of successful organization. Calif Manage Rev 40(2):96–124

Rahman AA, Ng SI, Sambasivan M, Wong F (2013) Training and organizational effectiveness: moderating role of knowledge management process. Eur J Train Dev 37(5):472–488

Reinholt M, Pedersen T, Foss NJ (2011) Why a central network position isn't enough: the role of motivation and ability for knowledge sharing in employee networks. Acad Manage J 54(6):1277–1297

Robertson M, Hammersley GM (2000) Knowledge management practices within a knowledge-intensive firm: the significance of the people management dimension. J Eur Ind Train 24(2):241–253

Scarbrough H, Carter C (2000) Investigating knowledge management. CIPD, London

Serenko A, Bontis N (2012) Global ranking of knowledge management and intellectual capital academic journals: 2013 update. J Knowl Manag 17(2):307–326

Sher PJ, Lee VC (2004) Information technology as a facilitator for enhancing dynamic capabilities through knowledge management. Inf Manag 41(8):933–945

Soraya RI, Chew KW (2010) A framework for HRM in knowledge economy building intellectual capital and innovative capability. Int J Manag Sci 3(2):251–273

Svetlik I, Costea ES (2007) Connecting human resources management and knowledge management. Int J Manpow 28(3/4):197–206

Theriou GN, Chatzoglou PD (2008) Enhancing performance through best HRM practices, organizational learning and knowledge management: a conceptual framework. Eur Bus Rev 20:185–207

Thite M (2004) Strategic positioning of HRM in knowledge-based organizations. Learn Organ 11(1):28–44

Ulrich D, Lake D (1991) Organizational capability: creating competitive advantage. Acad Manag Exec 5:77–92

Wright PM, McMahan GC (1992) Theoretical perspectives for strategic human resource management. J Manag 18:295–321

Yahya S, Goh WK (2002) Managing human resources towards achieving knowledge management. J Knowl Manag 6(5):457–468

Yamao S, De Cieri H, Hutchings K (2009) Transferring subsidiary knowledge to global headquarters: subsidiary senior executives' perception of the role of HR configurations in the development of knowledge stocks. Hum Resour Manage 48(4):531–554

Youndt MA, Snell SA (2004) Human resource configurations, intellectual capital, and organizational performance. J Manag Stud 15(3):337–360

Chapter 24
Green Work-Life Balance

Harshita Singh and Jyotsana Bhatnagar

Abstract For the past few years, business world has seen a great deal of emphasis paid on the adoption of environmental management systems by the organizations. However, thinking of such system does not always mean an effective implementation of the same. Researchers argue that employees must be inspired, empowered, and environmentally aware of greening in order to carry out green management initiatives. This article proposes that green management initiatives by companies can meet its full potential if organizations can manage the interface between work and family effectively.

Keywords Work-life balance • Green HRM • Environmental management system • Green work-life balance

1 Introduction

1.1 Environmental Management System (EMS) and Green Strategy

There is a great deal of increase in the level of environmental pollution and waste emerging from industries, which has resulted in increase in implementation of policies by governmental and private sector with the aim of reducing the rapid destruction to the nonrenewable resources and the ultimate negative impact it would have on societal consequences (Martinez-Fernandez et al. 2010). There is enhanced adoption of environmental management systems by the corporate sector (Boiral 2006; Óscar González 2006). This resulted in the emergence of a new strategic maneuver called green management (as cited in Cherian and Jacob 2012). Green management is the organization-wide process of applying practices to achieve sustainability, waste reduction, social responsibility, and a competitive advantage via continuous learning and development and by embracing environmental goals and strategies that are fully integrated with the goals and strategies of the organization (Pane Haden et al. 2009).

H. Singh (✉) • J. Bhatnagar
Human Resource Management, Management Development Institute,
Sukhrali, Gurgaon, India
e-mail: harshita.singh87@yahoo.com

2   Need for Green Management Strategies

Earlier success of a firm was strongly dependent on promotion of economic value. However today, organizations have to consider for the reduction of ecological footprints and give importance to social and environmental factors along with economical and financial factors in order to enable the organization to be successful in the corporate sector. There is a great deal of increase in the level of environmental pollution and waste emerging from industries which has resulted in increase in implementation of policies by government.

The benefits of going green is huge ranging from strengthening of brand image, or social responsibility, or to reduce their footprint on the planet and earn carbon credits and thereby improves firms financial and operational performance (McMahon 2009; D'Souza et al. 2006; Claver et al. 2007; Cooper et al. 2012; Claver-Cortés et al. 2007; Wagner 2011; Molina-Azorín et al. 2009). The necessity of the green path is stronger in third world countries than in the developed world given the rapid growth that many of these economies are experiencing in the last decade (Khandwalla 2008: 137). Indian companies need proper environmental management systems and green strategy implementation. Business and sustainability linkage supported by intense people processes leading to green engagement at the individual, team, and organizational level is needed in India (Bhatnagar and Srinivasan 2013).

3   HR and Green Management

Today, there is debate and uncertainty associated with how green management principles can be implemented effectively in organizations thereby arriving at improved sustainability for the organization. Employees who are actively involved in environmental management principles may play a vital role in arriving at better environmental strategies to be implemented. Employees may feel empowered to adopt specific environmental management principles as a result of promoted human resource policies which present better opportunities for improvements related to reduction of waste and promotion of lean manufacturing (Cherian and Jacob 2012). The HR of the organization plays a major role in making environmental responsibility a part of an organization's mission statement (Prathima and Mishra 2013). Managers need to align the investments in greening with the generic strategy of the company (Bhatnagar and Srinivasan 2013).

4   Green HRM

Human capital and its management are instrumental to the fulfillment of EM objectives. For the purpose of this paper, we define Green HRM as the use of HRM policies, philosophies, and practices to promote sustainable use of resources and prevent harm arising from environmental concerns within business organizations (Zoogah 2011).

5   Role of Green HRM

It is identified that the greater the strength of green human resource policies, the greater the intensity of adoption of environmental management systems (EMS) and policies by the different companies (Bohdanowicz et al. 2011, as cited in Cherian and Jacob 2012). In general terms, it is seen that the personal values that employees demonstrate to EM have not been exploited fully towards achieving corporate environmental initiatives, even though they look to have positive effects for managers and, as such, the personnel function appears underrated and has been seen to need to interact with EM matters (Wehrmeyer 1996: 11–12, as cited in Reinwick 2013).

6   Green HRM Strategies

In order to implement an effective corporate green management system, it is important to promote a great deal of technical and management skills among all employees of the organization (Daily et al. 2000). Organizations look at the development of innovative tools and initiatives of environmental management which will significantly impact sustainability of the firm and promote a competitive advantage (Hart 1997; Lin et al. 2001 as cited in Jackson 2011). Therefore to develop such a framework, it becomes ideal to have effective human resource management practices including presentation of strict recruitment strategies (Grolleau et al. 2009), appraisal and reward systems which include environmental awareness and implementation in their evaluation process (Jabbour et al. 2012), and training and empowerment programs (Unnikrishnan and Hedge 2007) which will enable the development of new set of skills and competencies among the employees of "pro-green" firms (as cited in Cherian and Jacob 2012). HR as a profession requires a deeper exploration and understanding of its own roles and competencies in engaging with Green HRM. In a highly competitive context for talent, where several young people have a heightened appreciation of environment and sustainability, HR professionals in organizations may need to find ways to reconcile the professional and personal value systems of employees to retain them (Bhatnagar and Srinivasan 2013).

7   Limitations to Application of Green HRM: *The Argument of Green Work-Life Balance*

A complex interplay of individual, interactional, situational, cultural, and structural factors influences employees' environmental behavior in the company. Despite the benefits, HR professionals admit that it is not easy for their companies to become and remain environmentally friendly. The most common barrier to creating an environmental program is implementation cost (85 %) followed by maintenance cost (74 %). Other barriers include lack of management support (43 %), lack of employee support (25 %), and concern for workplace inefficiency. HR professionals rank the

top environmentally responsible practices to be encouraging employees to work more environmentally friendly (83 %). Both human resource professionals and employees state that their primary, or number one, motivation for participating in environmentally responsible programs is to make a contribution to society (anonymous, SHRM Green Workplace Survey 2008).

It can be said that companies with environmental management systems are particularly dependent on elaborated green HR policies (Antoni and Bauer 2005; Daily and Huang 2001; Wee and Quazi 2005). They are not immune to gaps between "rhetoric and reality" (Crane 1995). If they have high expectations concerning their environmental performance, it is especially important for them to transform aspirations and good intentions into actual everyday behavior. This is where *our argument of green work-life balance comes into play*.

Up to now, both environmental management and Green HRM have focused exclusively on employees' working role. Employees also learn environmental attitudes and behavior in private life. Employees' private environmental performance is closely attached to their individual ways of living and their everyday behavior. Consequently, it can be argued that the impact of Green HRM on "greening employees" will always be influenced by employees' personal environmental experiences (Muster 2011). As a result, Green HRM might fail in realizing its full potential if they focus merely on employees in their working role. The ability to develop an organizational capability within the firm and offer that capability to the market requires people agility and change agility (Bhatnagar and Srinivasan 2013). For this to happen, it is very important that employees work and family life be coordinated.

Managing the interface between work and home can lead to better implementation of green management. This is where the role of green work-life balance comes into play. Let us see in the next section how.

8 Research Methodology

The use of systemic search methodology is done in writing this article by identifying articles related to green HR practices in EBSCO databases from March 2005 to March 2012 (by using the following keywords: green management, environmental management system, human resource management, training, development, recruitment, work-life balance, green work-life balance). Following this, 19 articles related to the keyword search were identified.

9 Work-Life Balance

Several researches in the past have addressed the ways in which work and nonwork roles might influence one another, building on psychological constructs such as affect, cognition, and values (Rothbard et al. 2005; Baral 2011; Powell and Greenhaus 2010; Greenhaus and Beuttell 1985).

Established approaches that draw on these reciprocal influences include the conflict model, the enrichment model, the spillover model, the border theory, and the compensation model. For the purpose of our study, we have focused mainly on the assumptions of spill over model and enrichment model.

The *enrichment model* says that it is not resource distributions that are the focus, but rather resource accumulation through different roles (Rothbard et al. 2001). It is assumed that different requirements of domains have a positive effect on each other and, in general, that multiple roles enrich peoples' lives (e.g., Barnett and Hyde 2001). Resources and experiences that are generated in one role are supposed to improve or facilitate the role performance in the other life domain (Greenhaus and Powell 2006).

The *spillover model* can be understood as a component of both the conflict and the enrichment model. It can be distinguished between positive and negative spillovers, meaning that transferred effects either enrich or constrain the other domain. The total amount of available resources and their accumulation and distribution are not considered here. Instead, specific transfers between the domains are considered (Edwards and Rothbard 2000). On the one hand, spillovers can change the object of reference (e.g., work satisfaction evolves as satisfaction in relationships), and on the other hand "complete spillovers" (e.g., strengthened self-confidence at work evolves at strengthened self-confidence at home) can occur. Moreover, spillovers are differentiated between spillovers of emotions (moods), attitudes (or values), skills, and behavior (Lambert 1990; Edwards and Rothbard 2000).

9.1 Green Work-Life Balance

The enrichment model and the positive spillover model show that possible interactions between working life and private life can bring about *positive effects*. It can be assumed that learning and practicing environmentally friendly behavior in one domain can stimulate or strengthen similar activities in the other domain. Rashid et al. (2006) have documented that employees' participation in environmental management systems can spill over and influence environmentally responsible attitudes and behavior in employees' private life.

Research on positive life-to-work effects with regard to environmental behavior is still scarce. In this study, we have tried to focus mainly on this life-to-work aspect of Green HRM. Green HRM should focus on how life-to-work enrichment and spillovers can be helpful in the effective implementation of green initiatives by the organizations. Green HRM should deal with these interaction effects and employees' chances to manage their life domains. On the one hand, positive interaction effects need to be facilitated. On the other hand, negative interaction effects need to be prevented.

In the following section, we have tried to show how the green work-life balance concept can be designed to meet the challenges of green strategy implementation. We have assumed green work-life balance to be interactions between working life
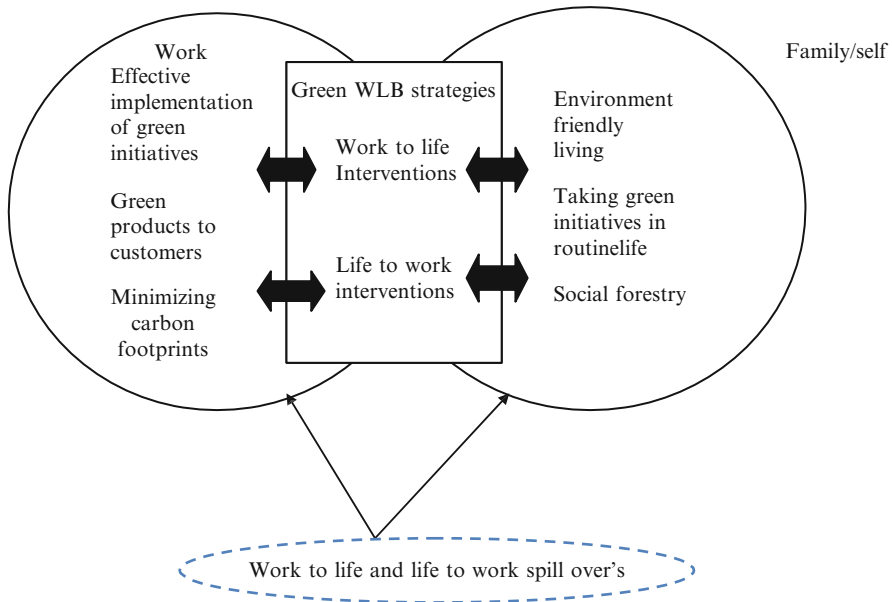
Fig. 24.1 The spillover model of green work-life balance

and family life, with spillover and enrichment effects on each other aimed at mutual enforcement and harmonization of environmentally friendly orientations in private life and working life. Green work-life balance policies focus on employees' twofold role as consumers and producers, because employees learn and practice environmentally relevant behavior in these two roles in particular (Muster 2011) (Fig. 24.1).

Companies should aim at decreasing imbalances in environmentally friendly behavior by promoting positive influences both from work to life and from life to work. On the one hand, a company can promote environmentally friendly consumer behavior in employees' private life, and on the other hand, companies can encourage employees to use environmentally relevant ideas and experiences they have developed in their private life within their working life.

Companies can do this through a number of work-to-life and life-to-work interventions which we will discuss in the next section.

Life-to-work interventions encourage employees to bring in and develop their environmental values, ideas, and private experiences to the workplace. It can be assumed that employees with an interest in environmental issues in their personal life have particular inside knowledge and experiences with, for instance, environmentally friendly practices and products, which can help a company effectively implement its environmental efforts. Employees' involvement and participation in designing, implementing, and evaluating environmental activities in the company are considered particularly crucial to integrate their private experiences (Brío et al. 2007; Fernandez et al. 2003; Ramus 2001, 2002; Renwick 2008).

Work-to-life interventions focus on employees' environmental behavior in private life and support them in consuming in an environmentally friendly fashion. Providing employees with useful information on environmental management at workplace can reinforce such green behaviors in personal life.

For example, if an employee is involved in green management, planting, rainwater harvesting, and other such environment friendly practices in his/her personal life (being a member of a particular resident welfare association RWA, it is a common practice these days), then such an employee will have greater chances of adopting and implementing company's green management initiatives (due to positive spillovers). Not only this, he will also bring his/her personal experiences and ideas on green management to his/her workplace.

Conversely, if an employee practices green management at his workplace as a part of job routine, he/she is likely to reproduce such behavior in personal life also.

Life-to-work interventions	Work-to-life interventions
Invite ideas on green products to consumers, waste management, and water harvesting from employees personal life	Company-wide intranets and newsletters to display information on environmental issues
Establishment of unified green technology learning platforms, blogs, and employee forums where they can share their personal life experiences on green management	Centralized shopping for organic and fair trade products, e.g., vegetable boxes, eggs, coffee
Rewards and recognition to those employees involved in environmental management in their personal life	Car pool and sharing, green canteen, environment concierge services
Employee meetings to share thoughts on how they reduce paper consumption, water management, and other green initiatives in their day-to-day life	Green computing, green infrastructure, and data centers
Praising employee with low household power consumption	Green buildings, solar systems at workplace, social forestry
Engaging employee in green discovery in personal and professional life	Multiple strands of engagement:
	Place-based learning
	Ecological footprint measurement
	Biodiversity and conservation
	Theater in education
E-waste collection centers	Employee assistance programs and counseling

10 Green Work-Life Balance Outcomes: Developing a Testable Relationship

The green work-life balance concept is perceived as an innovative approach for Green HRM. The green work-life balance concept is supposed to bring about positive effects for the environment, employees, and the company (Muster 2011). One outcome of implementing green work-life balance could be green behaviors.

Green behavior is the integration, cooperation, compliance, focus, risk-taking, and creativity role behaviors as important for Green HRM.

These are role behaviors that are concerned with EM advancement and growth. They include integration, creativity, and risk-taking behaviors. Integration behaviors, higher-level actions that enable organizations to function effectively (Lawrence and Lorsch 1967), facilitate the integration of EM to other organizational systems. HR managers interconnect HRM and EM practices and systems in a way that enhances organizational functioning (Zoogah 2011).

Earlier studies have shown a positive effect of green management on firm's performance. Studies where a significant positive relationship between environment and firm performance is obtained are predominant. In fact, 21 studies have obtained a positive impact of environmental management and/or environmental performance on financial performance. Whether they are doing it to improve your bottom line, to strengthen your brand, or out of a sense of social responsibility, there are many good reasons for companies to go green. But one advantage that often goes overlooked could be the most important—at least it involves the most vital part of your institution—your employees (Mc Mahon 2009).

The importance of Green HRM practices is vital to promote employee morale, and this may help in arriving at a great deal of benefit for both the company and the employee.

For example, some of the benefits that an organization can attain as a result of introducing Green HRM principles in EMS include:

1. Improvement in retention rate of employee
2. Improvement public image
3. Improvement in attracting better employees
4. Improvement in productivity and sustainability
5. Reduction in environmental impact of the company
6. Improved competitiveness and increased overall performance

Apart from this, it is to be identified that employees who are actively involved in environmental management principles may play a vital role in arriving at better environmental strategies to be implemented. Employees may feel empowered to adopt specific environmental management principles as a result of promoted human resource policies which present better opportunities for improvements related to reduction of waste (Cherian and Jacob 2012).

However, no such research emerges from present literature that focuses on green work-life balance and its effect on firm performance. Thus, we can develop a model of green work-life balance. Future research can focus on empirically testing this model to establish the importance of green work-life balance as a HRM practice to effective environmental management (Fig. 24.2).

Based on this model and earlier researches, we give the following propositions:

• Proposition 1. Green work-life balance interventions lead to green behaviors in employees.
• Proposition 2. Green work-life balance leads to effective implementation of environmental management systems and green strategy.
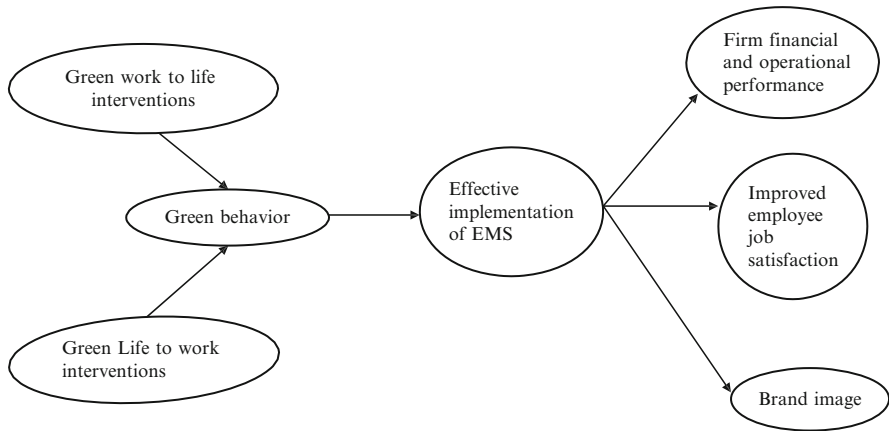
Fig. 24.2 Theoretical research model underlying hypothesis development

- Proposition 3: Green work-life interventions lead to effective implementation of environmental management system which in turn leads to increased firm financial and operational performance.

11   Conclusion and Future Directions

The aim of this paper is to provide a theoretical model of how green work-life balance can help in effective implementation of EMS. The green work-life balance concept is proposed as a new perspective for Green HRM. It is assumed that effective implementation of green policies is only possible if employees are encouraged and motivated to do so in their personal life as well as professional life. Our ideas are only conceptual. Future research needs to provide empirical evidence if a green work-life balance strategy is to deliver on the positive outcomes we have proposed and check for the relevant success factors of such a strategy.

References

Antoni C, Bauer C (2005) Umweltmanagementsysteme und betriebliches Umweltverhalten – mehr Schein als Sein? Zeitschrift für Arbeits- und Organisationspsychologie 49:57–68

Baral R (2011) Examining the moderating influence of gender on the relationships between work-family antecedents and work-family enrichment. J Manag Psychol 26(2):122

Bhatnagar J, Srinivasan V (2013) Building sustainability through people capability: a case study of Wipro ltd. NHRD Netw J 6(6):36–45

Bohdanowicz P, Zientara P, Novotna E (2011) International hotel chains and environmental protection: an analysis of Hilton's we care! programme (Europe, 2006–2008). J Sustain Tour 19(7):797–816

Boiral O (2006) Global warming: should companies adopt a proactive strategy? Long Range Plann 39(3):315–330. doi:10.1016/j.lrp.2006.07.002

Brío JA, Fernández E, Junquera B (2007) Management and employee involvement in achieving an environmental action based competitive advantage: an empirical study. Int J Hum Resour Manag 18(4):491–522

Cherian J, Jacob J (2012) A study of green HR practices and its effective implementation in the organization: a review. Int J Bus Manag 7(21):25–33

Claver E, López MD, Molina JF, Tarí JJ (2007) Environmental management and firm performance: a case study. J Environ Manage 84(4):606–619. doi:10.1016/j.jenvman.2006.09.012

Claver-Cortés E, Molina-Azorín JF, Jorge P, López-Gamero M (2007) Environmental strategies and their impact on hotel performance. J Sustain Tour 15(6):663–667

Cooper G, Green N, Burningham K, Evans D, Jackson T (2012) Unravelling the threads: discourses of sustainability and consumption in an online forum. Environ Commun 6(1):101–118

Crane A (1995) Rhetoric and reality in the greening of organizational culture. Greener Manage Int 12:49–62

Daily BF, Huang S (2001) Achieving sustainability through attention to human resource factors in environmental management. Int J Oper Prod Manag 21(12):1539–1552

Daily et al (2000) The value of nature and the nature of value. Science 289:395–396

D'Souza C, Taghian M, Lamb P (2006) An empirical study on the influence of environmental labels on consumers. Corp Commun Int J 11(2):162–173

Edwards J, Rothbard N (2000) Mechanisms linking work and family: clarifying the relationship between work and family constructs. Acad Manage Rev 25(1):178–199

Fernandez E, Junquera B, Ordiz M (2003) Organizational culture and human resources in the environmental issue: a review of the literature. Int J HRM 14(4):634–656

Greenhaus JH, Beuttell NJ (1985) Sources of conflict between work and family roles. Acad Manag Rev 10:76–88

Greenhaus JH, Powell G (2006) When work and family are allies: a theory of work and family enrichment. Acad Manage Rev 31(1):72–92

Grolleau G, Mzoughi N, Pekovic S (2009) Do quality and environmental-related standards improve french firms' business performance. Presented at 4. ICQME 2009; international conference for quality management and environment, Paris, FRA (2009-08-27-2009-08-28). http://prodinra.inra.fr/record/37900

Jabbour Chiappetta CJ, Jabbou Lopes de Sousa AB, Govindan K, Teixeira AA, Freitas Ricardo de Souza W (2012) Environmental management and operational performance in automotive companies in Brazil: the role of human resource management and lean manufacturing. J Clean Prod. http://dx.doi.org/10.1016/j.jclepro.2012.07.010

Jackson S (2011) State-of-the-art and future directions for green human resource management: introduction to the special issue. Ger J Res Hum Resour Manag 25(2):99–116

Khandwalla PN (2008) Management of corporate greatness: blending goodness with greed. Dorling Kindersley (India) Pvt. Ltd, Patparganj

Lambert SJ (1990) Processes linking work and family: a critical review and research agenda. Hum Relat 43:239–257

Lawrence PR, Lorsch JW (1967) Differentiation and integration in complex organizations. Adm Sci Q 12(1):1–47

Martinez-Fernandez C, Hinojosa C, Miranda G (2010) "Greening jobs and skills: labour market implications of addressing climate change", working document, local employment and economic Development (LEED) Programme, OECD. www.oecd.org/document/32/0,3343,en_2649_34417_43157920_1_1_1_1,00.html

McMahon J (2009) Greening your staff. Credit Union Manage 32(8):22–25

Molina-Azorín JF, Claver-Cortés E, López-Gamero MD, Tan JJ (2009) Green management and financial performance: a literature review. Manag Decis 47(7):1080–1100. doi:10.1108/00251740910978313

Muster V (2011) Green work-life balance: a new perspective for green HRM**. Ger J Res Hum Resour Manag 25(2):140–156

Óscar González B (2006) A review of determinant factors of environmental proactivity. Bus Strategy Environ 15(2):87–102

Pane Haden SS, Oyler JD, Humphreys JH (2009) Historical, practical, and theoretical perspectives on green management. Manag Decis 47(7):1041–1055

Powell GN, Greenhaus JH (2010) Sex, gender, and decisions at the family → work interface. J Manag 36(4):1011–1039

Prathima M (2012) The green revolution in human resource management. Asia Pac J Manag Entrep Res 1(3):227–237

Prathima M, Mishra S (2013) The green revolution in human resource management. Asia Pacific J Manage Entrep Res 1(3):227–237

Ramus CA (2001) Organizational support for employees: encouraging creative ideas for environmental sustainability. Calif Manage Rev 43(3):85–105

Ramus CA (2002) Encouraging innovative environmental actions: what companies and managers must do. J World Bus 37:151–164

Rashid NRNA, Wahid NA, Saad NM (2006) Employees involvement in EMS, ISO 14001 and its spillover effects in consumer environmentally responsible behaviour. In: International conference on environment proceedings (ICENV 2006), 13–15 November 2006, Penang, Malaysia

Renwick D (2008) Green HRM: a review, process model, and research agenda. Discussion paper series. The University of Sheffield from http://www.shef.ac.uk/content/1/c6/08/70/89/2008-01.pdf

Reinwick D (2013) Green HRM: a review, process model, and research agenda. University of Sheffield Management School. Int J Manag Rev 15(1):1–48

Rothbard NP, Dumas TL, Phillips K (2001) The long arm of the organization: work-family policies, employee preferences for segmentation, and satisfaction and commitment. Acad Manag Proc Membersh Dir 8:A1–A6

Rothbard N, Phillips K, Dumas T (2005) Managing multiple roles: work-family policies and individuals'desires for segmentation. Org Sci 16(3):243–258

Unnikrishnan S, Hedge DS (2007) Environmental training and cleaner production in Indian industry a micro level study. Resour Conserv Recycl 50:427–441. 35

Wagner M (2011) Environmental management activities and sustainable HRM in German manufacturing firms – incidence, determinants, and outcomes**. Ger J Res Hum Resour Manag 25(2):157–177

Wee YS, Quazi HA (2005) Development and validation of critical factors of environmental management. Ind Manage Data Syst 105(1):96–114

Wehrmeyer W (1996) Greening people. Human resources and environmental management. Greenleaf Publishing, Sheffield

Zoogah D (2011) The dynamics of green HRM behaviors: a cognitive social information processing approach**. Asia Pac J Manag 25(2):117–139

Chapter 25
Impact of CSR-Driven Internal Employee Motivation on Cordiality of Employee Relations

Sharad Agarwal, Yashwant Singh Yadav, and Abhilash Acharya

Abstract This paper is aimed at finding out the impact of socially responsible behaviour on industrial/employee relations. The research uses employee internal motivation as a proxy for industrial harmony. A survey was administered to 206 working professionals whose organizations were engaged in CSR activities. The research hypothesis was tested using regression and correlation analysis. The findings indicate a positive relationship between CSR and employee internal motivation. The results have immense potential to be utilized by HR practitioners and tailor their social initiatives, particularly local community relations to ensure cordial employee relations.

1 Introduction

Although industrial relations and its upgraded, modern version, employee relations, may seem as a subject best relegated to history to the younger breed of Indian managers, it is a discipline which has resurfaced on the plane of contemporary research as illustrated by the recent incidents of industrial strife in the country's automobile sector. Industrial harmony and cordial employee relations are to a great extent underpinned by high internal motivation amongst the employees who collectively translate it into much coveted organizational citizenship behaviour.

S. Agarwal (✉)
Marketing Area, Indian Institute of Management Ranchi, Ranchi, India
e-mail: sharad.agarwal12fpm@iimranchi.ac.in

Y.S. Yadav
PGDHRM Student, Indian Institute of Management Ranchi, Ranchi, India
e-mail: yashwant.yadav12h@iimranchi.ac.in

A. Acharya
OB & HR Area, Indian Institute of Management Ranchi, Ranchi, India
e-mail: abhilash.acharya12fpm@iimranchi.ac.in

Contemporary research on the theme of motivation suggests the possible use of Corporate Social Responsibility (CSR) as a means of attracting and retaining top talent by organizations. Active deployment of CSR by organizations, both internally and externally, has been found to have a favourable impact on employee commitment, loyalty, retention, performance, turnover and satisfaction (Heslin and Ochoa 2008; Aguilera et al. 2007). Therefore, proactive organizations can suitably use their CSR initiative portfolio as a mechanism for enhancing internal employee motivation and in turn bolstering their employee relations.

This paper aims at harnessing the potential of CSR to foster harmonious employee relations by tapping into employee internal motivation.

2 Theoretical Framework and Hypotheses

2.1 Employee Relations

Industrial relations which has been rechristened as employee relations in the twenty-first century is a multidisciplinary lens that examines the relationship between employers and employees (Ackers 2002). Venkata Ratnam (1995) defines employment relations to be an overarching term for relations between employers and employees in all aspects of work. With the changing character and composition of the workforce, employee relations are being viewed as a further broadening of the HRM itself (Banfield and Kay 2008). The industrial/employee relations policy of organizations is influenced by a variety of factors including the external and internal environment, organizational culture, technology and legislations and together determines the presence of industrial peace. Organizations have to devise and execute their employee relations strategy by taking into account their contextual specificities. Harmonious employee relations assume a critical stature in organizational priorities in a milieu where workplace indiscipline and incivility may range from rudeness to even physical altercations (Bradford 2001). That inadvertently would affect the employees' presence within the internal business environment of the organization and ideally must be avoided in order to maintain the decorum. An employee can be looked upon as a major stakeholder in the co-creation and implementation of innovative business systems and may thus drive him/her to become more involved and establish increased coordination amongst all organizational members. As CSR has developed more into a dynamic and evolutionary process, it currently relies on enhanced employee participation.

2.2 Corporate Social Responsibility

According to the World Business Council for Sustainable Development, 2001, CSR is 'the commitment of business to contribute to sustainable economic development, working with employees, their families, and the local communities'. The Commission

of the European Communities 2001 cites in their green paper one of the most popular definitions of CSR as 'a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis'. It is commonly believed that in the 'developing world', the difference between 'voluntary' and 'mandatory' would almost be difficult to achieve. The Indian government has also legislated a new Companies Bill in the Indian Parliament clause 135(5) of the same bill that prescribes that every company with a net worth of at least Rs. 5,000 million, or turnover of at least Rs. 10,000 million, or a net profit of at least Rs. 50 million will have to spend 2 % of its 3 years' average profit on CSR activities. However, in India, there has been a gradual realization by firms that expanding their scope and ambit of social responsibility is the pertinent need of the hour. Scholars over time have been able to identify the significant roles that tradition, spirituality and respect have played in the evolution of CSR (Balasubramanian et al. 2005; Jose et al. 2003; Sagar and Singla 2004). History of CSR in India suggests that the very concept has previously been dominated by a 'philanthropic approach', which is supposed to be in tune with the age-old tradition of business-related involvement trying to accommodate social development needs. In recent times, CSR as a noble practice has received an impetus from the emergence of non-family business enterprises, 'corporate will' and government and public expectations (Mohan 2001). Researchers are of the opinion that CSR has moved away from being a revenue-focused activity for competitive gains through helping other direct and indirect members/stakeholders of the organization towards a more inclusive model of strategic, sustainable business development.

In the Indian context, Singh and Agarwal (2014) found that most of the CSR activities of the Indian corporations are focused towards external stakeholders (such as community welfare, education, health, environment etc.). The level of employee involvement in CSR activities of the companies is also low, only 10 companies out of top 200 companies in India were found to be involving employees directly in their CSR activities (Singh and Agarwal 2014). In the context of Indian banking industry, Singh and Agarwal (2013), found that the CSR orientation of Indian banks differ based on ownership, number of employees, and date of its incorporation in the areas of Environment & Rural development (for ownership), Community Welfare, Environment, and Rural development (for number of employees), and Environment, and market place (for date of its incorporation). This gives us evidence that corporations in emerging markets are knowingly or unknowingly gearing towards their internal and external stakeholders.

2.3   Internal and External (Community Relations) CSR

CSR and its impact have been considered to be multidimensional and therefore we look at CSR both from an internal and external perspective (Augilera et al 2007). Internal CSR activities and initiatives typically represent the organization's actions such as ensuring quality of work, Safety, Health and Environment (SHE) and pay

parity within the organization (Brammer et al 2007). External CSR on the other hand is concerned with organizational initiatives with respect to its external stakeholders such as customers, local communities and business partners.

Social engagement and CSR initiatives with respect to local communities are the most common and important influence on harmonious industrial relations. A lot of HR managers, particularly in extractive industries, tend to lead charity and philanthropic initiatives such as supporting local art, culture and sporting events as well as making critical infrastructure investments to win the trust and goodwill of local community members (Augilera et al 2007). Indian companies which employ local community members use it as an integral part of their employee relations strategy. Wartick and Cochran's (1985) opined that constantly trying to link business with society necessarily can advance the idea of corporate social performance, which calls for (intrinsically) motivated employees' responsiveness.

2.4   Employee Internal Motivation

Employees are considered to be internally motivated when they seek interest, self-expression, enjoyment and personal challenge (Amabile 1993). In his seminal paper, Deci (1973) argues that it is the employee's need for feeling self-determined and competent that forms the edifice of internally motivated behaviours. Intrinsically motivated employees are an asset every organization strives to acquire and develop. Internally motivated employees are more committed and contribute to cordial workplace relations. Exhibition of socially responsible behaviour by the organizations has a positive impact on employee attitude, commitment, loyalty, retention, turnover and employer image (Aguilera et al. 2007; Heslin and Ochoa 2008). This paper seeks to understand the impact of internal employee motivation developed as a result of socially responsible behaviour of organizations on employee relations. Therefore, it is hypothesized that:

H1: There is a positive correlation between CSR and internal employee motivation.
H2a: External CSR (customers-related) positively correlates with internal employee motivation.
H2b: External CSR (local communities-related) positively correlates with internal employee motivation.
H2c: External CSR (business partners-related) positively correlates with internal employee motivation.

3   Methodology

To test the proposed hypothesis, an online survey was conducted using the *Qualtrics* online platform. The link was distributed to the targeted segment through social media platforms. We received 206 survey responses out of which 186 were

complete and were subsequently used for analysis. The demographic characteristic of the sample is presented in Table 25.2. The scales used in the study were borrowed from Skudiene and Auruskeviciene (2012); details of the scale along with various measures are depicted in Table 25.1. We performed factor analysis and multiple regressions to test our hypothesis, the results of which are presented in the following sections. A 5-point Likert scale is used (1 being 'strongly disagree' and 5 being 'strongly agree') to measure agreement with each item.

The complete list of items of each scale is presented in Table 25.1, along with the loadings on each item, which were revealed through factor analysis with principal component analysis with varimax rotation. We checked for the item total correlation (ITC) for each item and retained only those items which were found to be greater than 0.35; all these items are reported in Table 25.1. Reliability measure, Cronbach's α, was found to be within the acceptable limit, i.e. greater than 0.7 for each of the construct. The factor loadings for each item, along with the results of KMO measure of sampling adequacy and Bartlett's test of sphericity, are within the acceptable limits and are also mentioned in Table 25.1.

4 Results

The data was analysed using SPSS 19.0. The factors retained after factor analysis, along with factor loadings are presented in Table 25.1. Factor analysis revealed only one factor for all the constructs other than internal employee motivation, for which two factors were revealed in our study. The results of regression analysis and correlation analysis are reported in Fig. 25.2 and Fig. 25.3, respectively.

The regression results of the model shown in Fig. 25.1 revealed a statistically significant relationship between internal CSR, various dimensions of external CSR
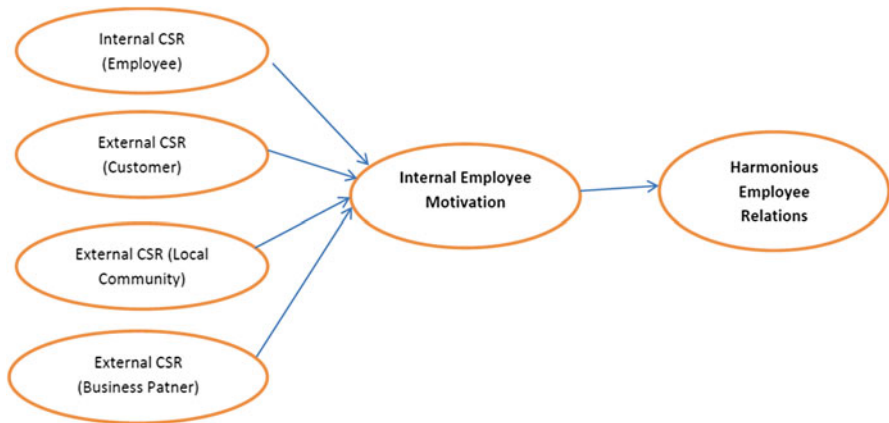
Fig. 25.1 Conceptual framework for factors influencing harmonious employee relations

Regression Results

Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the estimate**
1	0.766	0.587	0.578	7.21595
Predictors: (Constant) CSR_Employees, External_CSR_Community, CSR_Suppliers, CSR_Customers				

ANOVA					
Model	**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig**
regression	13112.253	4	3278.063	62.955	0
Residual	9216.39	177	52.07		
Total	22328.643	181			
Dependent Variable: Internal Employee Motivation					
Predictors: (Constant), CSR_employees, external_CSR_Community, CSR_suppliers, CSR_Community					

Fig. 25.2 The regression results for our study

Correlation Analysis

		Internal_emp_motivation	Esternal_csr_community	Csr_Suppliers	CSr_Customers	Csr_employees
Internal_emp_motivation	Pearson Correlation	1	0.660	0.646	0.689	0.759
	Sig (2 tailed)		0.000	0.000	0.000	0.000
	N	182	182	182	182	182
Esternal_csr_community	Pearson Correlation	0.660	1	0.765	0.725	0.773
	Sig (2 tailed)	0.000		0.000	0.000	0.000
	N	182	195	195	195	195
Csr_Suppliers	Pearson Correlation	0.646	0.765	1	0.838	0.864
	Sig (2 tailed)	0.000	0.000		0.000	0.000
	N	182	195	195	195	195
CSr_Customers	Pearson Correlation	0.689	0.725	0.838	1	0.909
	Sig (2 tailed)	0.000	0.000	0.000		0.000
	N	182	195	195	195	195
Csr_employees	Pearson Correlation	0.759	0.773	0.864	0.909	1
	Sig (2 tailed)	0.000	0.000	0.000	0.000	
	N	182	195	195	195	195

Fig. 25.3 Correlation results

and internal employee motivation with R square value of 0.587. Performance of correlation analysis revealed important findings:

- Internal CSR (related to employees) is found to be related positively to internal employee motivation with Pearson's $r = 0.759$.
- External (customers-related) CSR is also found to be related positively to internal employee motivation with Pearson's $r = 0.689$.
- External (local communities-related) CSR is also correlated positively with internal employee motivation employee motivation with Pearson's $r = 0.660$.
- External (business partners-related) CSR is correlated with internal employee motivation with Pearson's $r = 0.646$.

5   Conclusion/Managerial Implications

The results of this paper indicate a positive correlation between the demonstration of socially responsible behaviour by the organization and the employees' internal motivation. The results reveal a strong correlation between the organization's local community relations and employees' internal motivation. This has far-reaching implications for industrial/employee relations as organizations can and should utilize their CSR initiatives to foster harmonious employee relations. HR practitioners can draw a number of readily implementable takeaways from the results of study. First, both internal and external CSR have a significant and positive impact on the employees' internal motivation. Managers can make use of this insight to ensure greater employee involvement in the organization's CSR initiatives. The employees need to be involved more in local community development and engagement activities to foster increased interaction and rapport between the company and its immediate local community members. Trustful, mutually respectful and good-will-based community relations would in turn yield improved industrial/employee relations as the organization would enjoy the support of local community leaders and members. Secondly, HR managers can effectively exploit CSR to build their credibility and image as an employer of choice. Thus, this paper has sought to understand CSR as a factor influencing harmonious employee relations.

Appendix

Table 25.1 Rotated component matrices (where there were more than one factors), for the principal component analysis (varimax rotation and standard Kaiser Criteria) of items concerning attitudes and preferences

Item	Corrected item total correlation	Factor loadings		KMO	Bartlett's test of sphericity (significance)	Composite reliability (Cronbach's alpha)
		Factor 1	Factor 2			
Internal CSR						
Providing equitable wage system and career prospects for all employees	0.812	0.892		0.9	0.000	0.922
Improving psychological climate at work	0.806	0.884				
Engaging in open, honest and flexible communication with employees	0.825	0.878				
Involving employees into decision- making process	0.79	0.868				
Contributing to the personal and career development of the employees	0.766	0.849				
External CSR (local communities)						
Supporting local sport, cultural or other community activities and projects	0.702	0.724		0.77	0.000	0.807
Donating money to local charities	0.569	0.558				
Investing in the community's development (i.e. investments in roads, schools or hospitals)	0.558	0.561				
Involving into partnership with community-based organizations	0.695	0.724				
External CSR (business partners)						
Engaging in fair trading transactions with suppliers	0.628	0.899		0.69	0.000	0.820
Implementing complaints procedure for the suppliers	0.743	0.855				
Avoiding business partners that do not behave according to the law	0.666	0.825				

(continued)

Table 25.1 (continued)

Item	Corrected item total correlation	Factor loadings		KMO	Bartlett's test of sphericity (significance)	Composite reliability (Cronbach's alpha)	
		Factor 1	Factor 2				
Internal employee motivation							
The more difficult the problem, the more I enjoy trying to solve it	0.635	0.551		0.92	0.000	0.932	
What matters most to me is enjoying what I do	0.762		0.770				
No matter what the outcome of a project, I am satisfied if I feel I gained a new experience	0.483		0.850				
It is important for me to have an outlet for self-expression	0.724		0.758				
I want to find out how good I really can be at my work	0.758	0.744					
I enjoy trying to solve complex problems	0.677	0.822					
I enjoy tackling problems that are completely new to me	0.690	0.821					
I enjoy doing work that is so absorbing that I forget about everything else	0.661	0.723					
I want my work to provide me with opportunities for increasing my knowledge and skills	0.806	0.779					
I'm more comfortable when I can set my own goals	0.761	0.722					
I prefer to figure things out for myself	0.730	0.633					
It is important for me to be able to do what I most enjoy	0.783	0.633					
Curiosity is the driving force behind much of what I do	0.725	0.661					

Table 25.1 (continued)

Item	Corrected item total correlation	Factor loadings	KMO	Bartlett's test of sphericity (significance)	Composite reliability (Cronbach's alpha)	
		Factor 1	Factor 2			
External CSR (ECC)						
Implementing a procedure to handle consumers' complaints	0.730	0.402		0.7	0.000	0.821
Providing truthful and honest information to the consumers	0.625	0.372				
Avoiding false and misleading advertising or sales promotions that use deception or manipulation	0.676	0.389				

Table 25.2 Demographic characteristics of the sample

Measures	Value	Frequency	Percentage
Gender	Male	94	51
	Female	92	49
Age	Less than 25	30	16
	Between 25 and 29	74	40
	Between 30 and 39	21	11
	Between 40 and 49	37	20
	50 and above	24	13
Sector	Retail and wholesale	9	5
	Consultancy	28	15
	Tourism and entertainment	3	2
	Manufacturing	85	45
	Transportation	3	2
	Communication and publishing	4	2
	Construction and real estate	5	3
	Others	36	19
Years in company	Less than 1 year	31	17
	Between 1 and 2 years	47	25
	Between 2 and 4	36	19
	5 years and above	73	39
Department	General administration	49	26
	Marketing	11	6
	Sales	10	5
	HR	18	10
	IT	39	21
	Accounting and finance	5	3
	Others	55	29

References

Ackers P (2002) Reframing employment relations: the case for neo-pluralism. Ind Relat J 33(1):2–19

Aguilera RV, Rupp DE, Williams CA, Ganapathi J (2007) Putting the S back in corporate social responsibility: a multi-level theory of social change in organizations. Acad Manage Rev 32(3):836–863

Amabile TM (1993) Motivational synergy: toward new conceptualizations of intrinsic and extrinsic motivation in the workplace. Hum Resour Manag Rev 3(3):185–201

Balasubramanian NK, Kimber D, Siemensma F (2005) Emerging opportunities or traditions reinforced? An analysis of the attitudes towards CSR, and trends of thinking about CSR, in India. J Corp Citizenship 17:79–92

Banfield P, Kay R (2008) Introduction to human resource management. Oxford University Press, Oxford, p 114

Bradford M (2001) Employers trying new ways to create office harmony. Bus Insur 35(3):3

Brammer S, Millington A, Rayton B (2007) The contribution of corporate social responsibility to organizational commitment. Int J Hum Resour Manag 18(10):1701–1719

Commission of the European Communities (2001) "Promoting a European framework for corporate social responsibility", green paper. European Commission, Brussels

Deci EL (1973) Paying people doesn't always work the way you expect it to. Hum Resour Manage 12(2):28–32

Heslin PA, Ochoa JD (2008) Understanding and developing strategic corporate social responsibility. Organ Dyn 37(2):125–144

Jose PD, Bandi R, Mehra M (2003) Corporate social responsibility in the information and communication technologies sector: discussion. IIMB Manag Rev 15:61–77

Mohan A (2001) Corporate citizenship: perspectives from India. J Corp Citizenship 2:107–117

Sagar P, Singla A (2004) Trust and corporate social responsibility: lessons from India. J Commun Manag 8:282–290

Singh R, Agarwal S (2013) Does CSR orientation reflect stakeholder relationship marketing orientation? An empirical examination of Indian banks. Market Intell Plan 31(4):405–420

Singh R, Agarwal S (2014) Corporate social responsibility in emerging markets: corporate India's engagement with local communities. In: Fukukawa K (ed) Corporate social responsibility and local community in Asia. Routledge, London, pp 65–85

Skudiene V, Auruskeviciene V (2012) The contribution of corporate social responsibility to internal employee motivation. Balt J Manag 7(1):49–67

Venkata Ratnam, C. S. (1995). Economic liberalization and the transformation of industrial relations policies in India. In: Employment relations in the growing Asian economies. London: Routledge, pp 1–3

Wartick SL, Cochran PL (1985) The evolution of the corporate social performance model. Acad Manage Rev 10:758–769

Chapter 26
Improving Efficiency of Emerging Market Banks: A Matter of Ownership, Control, or Getting One's Hands Dirty?

Giang Phung and Michael Tröge

Abstract Under the Vietnamese strategic partnership program, a range of foreign banks have been allowed to take minority participations in local banks. This paper studies the effect of this program on different measures of bank profitability. We demonstrate that the presence of a foreign partner had a positive impact on performance only if the financial participation was also accompanied by an active implication of foreign bankers. We also observe that whereas foreigners on supervisory board seem to boost accounting return on equity (ROE), a more operational involvement of foreigners on the executive board improves fundamental characteristics such as the net interest margin (NIM).

Keywords Foreign investment • Strategic partnership • Board participation • Emerging market • Banking performance

1 Introduction

Transforming a socialist-style centralized banking system into a competitive, efficient, and stable financial market is a major challenge for all transition countries. The disastrous experiments of many Eastern European countries with financial sector reform (Bonin and Wachtel 1999; Bárta and Singer 2006) have demonstrated that the key to a successful transition is to increase the efficiency of local banks without disrupting the human capital and knowledge embedded in the existing structures.

Vietnam has tried to achieve these goals with a policy of "strategic partnerships" where large international banks are allowed to acquire minority stakes in important

G. Phung (✉) • M. Tröge
ESCP Europe, 79, avenue de la République, 75543 Paris Cedex 11, France
e-mail: giang.phungth@gmail.com; troege@escpeurope.eu

local banks. Officially starting in 2007 with investments in seven banks representing roughly 17 % of Vietnam's banking assets, the program has successively expanded to 13 banks in 2013 covering around 40 % of the country's banking assets. Currently the law allows a single foreign owner to own a stake of up to 20 % in a bank, the total non-Vietnamese ownership is limited to 30 % (Vietnam News 2013).

The policy is hotly debated within Vietnam, with the State Bank of Vietnam announcing that they are likely to increase the threshold allowing single entities to hold more than 20 % of local banks' equity but hesitating to give foreign owners the right to own majority stakes (Thuy 2013). Foreign banks are arguing that in order to make their investments in domestic banks profitable, they would either need a controlling stake or at least receive a right to operate the bank, which under the current 20 % ownership is not possible (Talkvietnam 2012).

This paper assesses the success of the strategic partnership policy in improving the profitability of Vietnamese banks. We find that the policy has only been a partial success. In fact neither foreign ownership nor the mandatory representation of foreign shareholders on the supervisory board has an effect on the fundamental profitability of banks, measured by the net interest margin (NIM) or return on assets (ROA). If anything, there is a weak relation between foreign ownership and return on equity (ROE), a flawed and easily manipulated measure of bank performance (Admati and Hellwig 2013) that we know not to be related to shareholder wealth (Moussu and Petit-Romec). What does improve the operating profitability of banks, however, is the presence of a foreigner on the bank's executive board. Banks with foreign managers have significantly higher net interest margins.

These findings add to the growing literature about financial systems in transition countries in Eastern Europe and Asia. In particular, we directly complement the results of Berger et al. (2009) on the Chinese strategic partnership program. They observe that minority foreign ownership is associated with significantly improved efficiency and conjecture that foreigners "*take positions on the board and in the management of Chinese banks*" and "*leverage these positions to improve the corporate culture and management of these banks.*" However, they do not collect data on board membership and therefore cannot directly test this hypothesis. Our results corroborate and qualify their findings, by demonstrating that it is indeed not ownership which leads to better performance but that active management participation is required.

Similar evidence on the positive effect of foreign minority investment and board participation in the context of other formerly nationalized banking sectors is also given in Choi and Hasan (2005) for Korea and Gulamhussen and Guerreiro (2009) for Portugal, corroborating for the banking sector the results obtained for foreign directors of nonfinancial corporations by Oxelheim and Randøy (2003) in Scandinavia. In contrast to these papers, however, we exploit the two-tiered board structure of Vietnamese firms, similar to the study of Firth et al. (2007) of Chinese nonfinancial companies.

Related evidence on the importance of foreign influence comes from the large literature following cross-country study by Demirgüç-Kunt and Huizinga (1999)

demonstrating that foreign-owned or majority-controlled banks perform better than their local counterparts. For example, in a study of Argentina and Mexico, Dages et al. (2000) have found that foreign-owned banks both performed better and were less risky than their domestic counterparts. Bonin et al. (2005a) make this observation for Eastern European transition countries. Note however that with 20 % ownership, the Vietnamese banks with strategic partnership in our sample cannot be considered to be foreign controlled.

Finally our insight that board membership influences reported as opposed to true performance is reminiscent of Beltratti and Stultz (2012) and Minton et al. (2011), who show that financial experts on the board might incite the banks to take higher risk and focus on flawed performance measures such as ROE.

In addition to our principal result, we are able to confirm or contradict for Vietnam a number of additional relationships that have been identified for other countries. For example, there is a large literature on the efficiency of state-owned banks. Micco et al. (2004) show that state ownership decreases bank profitability in developing economies, and Bonin et al. (2005b) and Heffernan and Fu (2008) confirm this observation for Eastern European and Chinese state-owned banks. It should be emphasized however that there is no mechanical relation between state ownership and financial profitability. In Africa (Figueira et al. 2009) and Europe (Micco et al. 2004), bank performance seems to be relatively unaffected by state's ownership. We observe that in Vietnam, state-owned banks even seem to be more profitable than privately owned banks, probably because they benefit from a number of advantages, in particular privileged access to cheap refinancing from the central bank.

There is also a strand of literature arguing that listing in the stock market will improve the efficiency of banks in emerging markets. For example, Luo (2003) finds that in China, publicly listed banks have better asset quality. Wang and Zhu (2008) finds that listing on the stock market makes banks more efficient by reducing NPL ratio, enhancing capital adequacy and improving profitability. A stock market listing can also improve capital ratios (Xue 2007 and Peng 2008) as well as increase efficiency (Shih et al. 2007) that listing makes banks more efficient in improving profit. However, these results are not unchallenged; for example, Heffernan and Fu (2008) do not find increased profitability for listed banks in China. As Lin and Zhang (2009) indicate, some banks might perform better only before being listed but not subsequently, because large capital injection was received to move off NPLs prior to listing but tailed off post listing. Our results point in the same direction: We cannot confirm that the small number of listed Vietnamese banks (from 2 listed banks in 2006 to 13 in 2013) perform better than unlisted banks.

In the next section, we will give a short overview of banking sector reform in Vietnam as well as a detailed description of the "strategic partnership program" and its objectives. We then explain in Sect. 3 the construction of the dataset and provide descriptive statistics for the key variables used in our study. Section 4 presents our principal results, Sect. 5 discusses political implications and robustness, and Sect. 6 concludes.

2 Some Institutional Background

2.1 From a Mono-bank System to a Two-Tiered System: The Transition of Vietnam's Banking Sector

After its reorganization in 1976, the State Bank of Vietnam (formerly the National Bank of Vietnam) became the central bank of the country. As recent as 1988, Vietnam's economy was essentially supported by a "one bank" system with a head office in Hanoi, a division in Ho Chi Minh City, and numerous provincial branches nationwide. The state banking system was essentially operating as a budgetary tool, having no monetary business activities following market principles.

The year of "doi moi" (reform) 1986 marked an important change in the economy as well as in the banking system of Vietnam. In March 1988, the issuance of Decree 53/HDBT directed the banking system towards more business orientation. In May 1990, the State Council then passed two ordinances[1] that officially transformed the banking system in Vietnam to a two-tiered system. The State Bank of Vietnam performs the state managerial function of monetary and banking business activities, that is, it focuses on the tasks of a central bank; commercial banks and credit institutions carry out currency trading and offer credits as well as payments, foreign exchange, and banking services. Today, the State Bank of Vietnam has devolved the commercial activities except the regulatory functions of a central bank to five state-owned banks. The Bank for Foreign Trade (Vietcombank) handles over 80 % of all trade transactions, including foreign exchange. The Bank for Investment and Development of Vietnam (BIDV) focuses on the financing of infrastructure. The two others are the Vietnam Bank for Industry and Trade (VietInBank – formerly Industrial and Commercial Bank, abbreviated Incombank), focusing on financing industry and trade, and the Housing Bank of Mekong Delta. The Bank for Agricultural Development maintains the largest network in the country, corresponding to the needs of an agriculture-dominated economy.

Alongside the state-owned commercial banks, since 1991, Vietnamese joint-stock banks have been gradually founded and come into operation, contributing to the development of the country's banking system. As of December 2010, there were 37 Vietnamese private joint-stock commercial banks, in addition to foreign bank branches, joint venture banks, credit cooperatives, and finance companies.

Today, the State Bank of Vietnam supervises a large network of credit institutions comprising of five state-owned commercial banks (of which, two banks were partially privatized ("equitized"), namely, Bank for Foreign Trade of Vietnam and Vietnam Bank for Industry and Trade), Vietnam Development Bank, 37 joint-stock commercial banks, 5 joint venture banks, 40 foreign bank branches, 5 100 % foreign-owned banks, 16 financial companies, 13 financial leasing companies, 49 foreign credit institutions representative offices, one central people's credit fund,

---

[1] *The Ordinance on the State Bank of Vietnam* and *The Ordinance on banks*, *credit cooperatives and finance companies.*

and 1,030 local people's credit funds. Commercial banks today are diversified in terms of ownership and business focus.

In total, eight banks were listed on the stock market as of 31 December 2012, on either HOSE (Ho Chi Minh City Securities Trading Center) or HaSTC (Hanoi Securities Trading Center). More banks are having been preparing themselves to be qualified for listing.

2.2 The Vietnamese Strategic Partnership Program

Before the official start of the strategic partnership program launched by the government in 2007, five banks had welcomed foreign shareholders with ownership ranging from 5 % to 30 %. Saigon Thuong Tin Commercial Bank (Sacombank) initiated the trend in 2001, receiving a financial contribution from the financial group Dragon Financial Holding (United Kingdom) equal to 10 % of the charter capital.

Today, under Article 4 of the Government Decree 69/2007 dated 04/20/2007, foreign shareholders may own up to 30% of a joint-stock bank; the shareholding of a strategic partnership and its related parties may be up to 15 % of a Vietnamese bank, and in special cases with the Prime Minister's approval, this may be up to 20 %.

The motivation for these partnerships is twofold: They allow Vietnamese banks to increase capital (which was especially true during 2007 when the stock market boomed in Vietnam) but also to exploit the global brands of the foreign partners, to learn from the international practices through knowledge transfer projects. For the foreign partners, they have a chance to probe the market potentials and can utilize the opportunity to export their expertise. As this paper demonstrates, the real benefits of this kind of collaboration are still much open to questions; nevertheless, during the period 2007–2009, the banking system witnessed a wave of strategic partnerships.

It should be pointed out however that since Vietnam joined the WTO in 2007, foreign banks are also allowed to establish 100 % foreign-owned banks in Vietnam. Today five foreign banks are active in Vietnam, which were all were all established in 2008. Interestingly some foreign banks are present in Vietnam through a strategic partnership as well as with an own subsidiary, which predictably has led to problems. As a consequence, a number of strategic partnerships have been dissolved recently (Vietnam Investment Review 2013).

3 The Data

3.1 Indicators of Bank Performance

Measuring bank performance is difficult because information about returns is meaningless without controlling for risk. A very large number of papers have assessed bank efficiency using frontier analysis (see Berger and Humphrey 1997 for a survey of the early literature) and several papers have applied this tool to the Vietnamese

banking sector (Ngo 2012; Sun and Chang 2011; Vu et al. 2010; Phan and Daly 2012; Dinh 2013; Nguyen 2007), however, with sometimes counterintuitive results. For example, Ngo (2012) shows that the efficiency of Vietnamese banks measured with a frontier analysis approach has decreased over time, whereas Vu and Turnell (2010) obtain the opposite result. We therefore follow the approach of Demirgüç-Kunt and Huizinga (1999) and rely on simpler accounting measures of bank performance. In particular we focus on the net interest margin (NIM), return on equity (ROE), and return on assets (ROA).

ROE defined as net profit divided by book equity is obviously the key performance indicator used by most bank managers and financial analyst in developed countries. By focusing on the return for shareholders, this measure aggregates rents earned on the asset side as well as rents earned from the liability side of the bank balance sheet and in particular deposits.

Unfortunately ROE has major flaws as a performance indicator (Admati and Hellwig 2013). In particular it is very sensitive to variations of bank risk taking in particular leverage and therefore often not closely correlated with shareholder value creation (Moussu and Petit-Romec 2013).

In an emerging market context, the flaws of ROE have been evident for a long time, in particular because the level of book equity is highly dependent on accounting choices regarding nonperforming loans. Vietnamese bank managers and financial analysts do not consider it as reliable indicator of bank performance (KPMG 2013). The measure most looked at in Vietnam is indeed the NIM, defined as interest income minus interest expenses divided by the amount of interest-earning assets. As this measure excludes noninterest income which can be substantial for some banks, it is often complemented by ROA defined as net profit divided by total assets.

3.2 Foreign Control and Management

Vietnamese companies have a two-tiered board structure and use a slightly unusual terminology to describe these boards. The term "board of management" is used in Vietnam to refer to what in Europe would be called "executive board." This board is presided by the CEO. The equivalent structure in the United States would be the "executive committee," "operating committee," or "executive council."

The term "board of directors" is used in Vietnam to refer to the "supervisory board" (European terminology) which in US terms would correspond to a board of nonexecutive directors. This board is presided by a chairman who always differs from the CEO. It is worth noting that in Vietnamese banks, there is a third board named "supervisory board" comprised of independent supervisors, whose role is to help the board of directors in controlling the board of management's activities.

Shareholders are entitled to be represented on the "board of directors" (i.e., "supervisory board" using the European terminology), and therefore, the percentage of foreign supervisory board members is basically a rounded value of the percentage of foreign ownership. This is not true for the fraction of foreigners on the

board of management, which is only weakly correlated with the percentage of foreign equity ownership.

For this study we have not used direct information about foreign ownership. We only focus on the fraction of foreign board members in the board of management (BOMF) and the fraction of foreigners on the board of directors (BODF). Obviously the second variable can also be viewed as a direct proxy of overall foreign ownership.

3.3 Construction of the Dataset

The data for this study were hand collected from the banks' annual reports. As required by the State Bank of Vietnam, all the banks in the sample use local generally accepted accounting practices (Vietnamese Accounting Standards – VAS); hence, all the data used for analysis came from the audited standardized financial statements built on VAS. The financial data for all Vietnamese commercial banks in 7 years from 2006 to 2012 are used for calculating the ratios measuring performance. Apart from that, other sources of data were consulted through reference to the library (BankScope) and the review of banks' official websites, different articles, papers, and relevant previous studies.

During the period of our study, the number of Vietnamese commercial banks ranged from 38 to 42 banks; the fluctuation is explained by the creation of new banks and mergers. Among this population of banks (of which five are state-owned), only the data for Vietbank was unavailable for the entire period of our research, some other small banks did not disclose their financial information for some years. Agribank is the only big bank whose data was missing for 2012, explained by its size in total assets and the huge number of branches nationwide (see Appendix A1 for a detailed list of banks included and data availability). In 2011 and 2012, our data covers, respectively, 91.8 % and 79.4 % total Vietnamese commercial banks' assets. For the whole researched period, Vietnamese commercial banks stably accounted for 85–86 % of the total assets of the whole credit institution system in Vietnam (see Appendix A2).

Table 26.1 gives a breakdown of the different types of banks included in our study together with the size of their assets. In particular, Table 26.1 illustrates the impressive progress of privatization in Vietnam over the last years. In 2012, the five state-controlled banks only own slightly more than half of the total banking assets, down from 75 % 6 years earlier.

3.4 Descriptive Statistics

Table 26.2 provides an overview of the variables used in the empirical analysis.

Table 26.3 provides summary descriptive statistics (in Appendix A3 we also provide the correlations). Overall profitability is highly variable with interest margins ranging from −0.59 % to 8.74 %, ROE ranging from −16 % to 43 %, and ROA ranging from −0.39 % to 5.95 %.

Table 26.1 Bank types

Total bank observation	2006	2007	2008	2009	2010	2011	2012	Total
	32	36	39	40	40	36	33	**256**
Observation by ownership								
1. State-owned commercial banks								
Big-Four banks w/ foreign minority	0	0	0	0	1	2	2	**5**
Big-Four banks w/o foreign minority	4	4	4	4	3	2	1	**22**
Non-Big-Four state-owned bank	1	1	1	1	1	1	1	**7**
2. Joint-stock commercial banks (JCBs)								
JCBs w/foreign minority	4	6	10	11	12	12	9	**64**
JCBs w/o foreign minority	23	25	24	24	23	19	20	**158**
Market share of assets by group								
Total assets (bil VND)	961	1,375	1,360	1,742	2,181	2,050	1,650	11,319
1. State-owned commercial banks	75 %	62 %	61 %	54 %	47 %	47 %	42 %	53 %
Big-Four banks w/ foreign minority	0 %	0 %	0 %	0 %	11 %	21 %	27 %	10 %
Big-Four banks w/o foreign minority	73 %	60 %	59 %	52 %	35 %	25 %	14 %	42 %
Non-Big-Four state-owned banks	2 %	2 %	2 %	2 %	1 %	1 %	1 %	2 %
2. Joint-stock commercial banks (JCBs)	25 %	38 %	39 %	46 %	53 %	53 %	58 %	47 %
JCBs w/foreign minority	10 %	16 %	22 %	24 %	30 %	32 %	25 %	24 %
JCBs w/o foreign minority	15 %	22 %	17 %	22 %	23 %	20 %	34 %	22 %

Overall 13 % of our observations are for state-owned banks and 14 % for listed banks. The majority is therefore for privately owned non-listed banks.

4 The Empirical Results

This section presents the regression results. Table 26.4 reports our main regressions of the net interest margin (NIM), return on equity (ROE), and return on assets (ROA) on the independent variables using a random effects model. The presence of

Table 26.2 Summary of the variables

Variables	Definition	Data source
NIM	Net interest margin	Annual reports of banks
ROE	Return on equity	Annual reports of banks
ROA	Return on assets	Annual reports of banks
GDPr	Growth rate of gross domestic product on annual basis	World development indicators of the World Bank
BOMF	The ratio of foreign managers to total managers on the management board	Annual reports of banks
BODF	The ratio of foreign directors to total directors on the supervisory board	Annual reports of banks
GDPr	Growth rate of gross domestic product on annual basis	World development indicators of the World Bank
Logasset	The natural logarithm of total assets (Pathan et al. 2007; Pathan 2009; Azofra and Santamaria 2011)	Annual reports of banks
Leverage	The ratio of bank's total asset over bank's book equity	Annual reports of banks
State	Dummy variable which is 1 in case bank is state-controlled (i.e., the state owns more than 50 % of shares)	State Bank of Vietnam
Listed	Dummy variable which is 1 in case bank is listed	Annual reports of banks

Table 26.3 Descriptive statistics

Continuous variables				
Variables	Mean	Min	Max	SD
NIM	3.09 %	−0.59 %	8.74 %	1.45 %
ROA	1.21 %	−0.39 %	5.95 %	0.82 %
ROE	10.25 %	−15.95 %	43.20 %	6.76 %
GDPr	6.56 %	5.03 %	8.46 %	1.21 %
Logasset	4.26	2.65	5.53	0.61
Leverage	10.41	1.51	92.95	7.89
BOMF	2.80 %	0.00 %	50.00 %	8.72 %
BODF	4.72 %	0.00 %	40.00 %	9.22 %

a foreigner on the board of management (BOMF) has a significant positive effect only on NIM, but not on other variables. The mandatory representation of foreign shareholders on the board of directors (BODF), however, only has a weakly significant effect on ROE but does not impact other performance measures. In particular ROA is not affected by any of the board characteristics. This is likely because of the high volatility of noninterest-related income included in ROA but not in NIM.

A fixed effects regression will lead to qualitatively similar results, however, some of the results, in particular those with ROE as dependent variables will become insignificant. This is not surprising as we do not have many observations and our

Table 26.4 Regression results

	Dependent variables						
	ROE		NIM		ROA		
BOMF	−0.071		0.032	***	0.002		
	−1.37		2.82		0.23		
BODF	0.107	*	−0.009		0.006		
	1.88		−0.69		0.77		
State	−0.028		0.014	**	0.002		
	−1.59		2.49		0.71		
Listed	0.031	**	0.008	***	0.003	*	
	2.48		2.76		1.64		
GDPr	1.548	***	−0.244	***	0.101	***	
	5.51		−4.04		2.77		
Logasset	0.033	***	−0.012	***	−0.005	***	
	3.22		−4.74		−3.52		
Leverage	0.003	***	0.000	*	0.000	**	
	4.90		−1.92		−2.23		
R^2 (overall)	0.3924		0.1945		0.2048		
Wald chi2	117.81		58.85		49.95		
Prob > chi2	0		0		0		
Nr of obs	256		256		256		

Estimations were performed using random effects regression

The numbers in italic are z-statistics

*, ** and *** indicate statistical significance at the 10 %, 5 %, and 1 % level

independent variables do not vary very much over the time. The Hausman test (1978) for testing fixed against random effects results is insignificant, implying that the random effects model will yield more precise errors.

There are several ways to interpret the results of our study. One result is a negative one: Foreign ownership alone makes no difference to performance. This is an important insight because it implies that the strategic partnership program has missed an important objective.

Of course we also want to claim that putting a foreigner on the management board will increase the performance of the bank but this result is more likely to be the outcome of an endogeneity problem. In the following section we will discuss the robustness of our results.

5   Discussion

Governance studies are always plagued by endogeneity problems. We do not have an appropriate instrumental variable to address this problem; however, we want to argue that, when carefully interpreted, our result can nevertheless be used to derive policy implications.

There are two obvious endogeneity problems that could influence our empirical results from the previous section: First, it is possible that foreign investors choose the better-performing local banks or local banks for which they anticipate a better future performance, when deciding about their strategic partnerships. We would then get a relationship not because of causality but because of a selection effect.

Our finding that NIM is not influenced by ownership (or the closely correlated BODF) partially dispels these concerns; however, the relationship between ROE and BODF might be caused by this selection, in particular given that BODF becomes insignificant in the fixed effects regression with ROE as dependent variable. We are nevertheless not much concerned about this because, as explained above, in any case we do not consider ROE as a reliable indicator of bank performance.

The second and potentially more severe concern is that only more reform-minded and innovative banks will seek to bring a foreigner on its management board. It is therefore not obvious whether it is really the presence of the foreigner which makes a difference or whether these banks would have performed better even without foreign management. We think that it is likely that causality runs both ways. Better banks are more likely to ask a foreigner to join the management board, but the presence of a foreigner probably still makes a difference, if only because it reduces agency conflicts and wealth extraction by different interest groups. Indeed reform-minded CEOs might use the presence of foreign member on the management board exactly with the intention to reduce these types of behavior. Anecdotal evidence shows that some of the banks participating in the strategic partnership program viewed the foreign partner solely as financial investors but refused to cooperate in any way with these minority investors, whereas others seized the opportunity to benefit from knowledge and technology transfers.

6   Conclusion

This paper examines the success of the Vietnamese strategic partnership program in improving the profitability and efficiency of local banks. We complement existing literature by differentiating between board of directors and executive (management) board membership. In particular, we show that partial ownership or board of directors membership alone is not sufficient to achieve efficiency improvements in locally managed banks; what is really needed is the active involvement of foreign management.

We think that our research has implications for the design of the Vietnamese "strategic partnership" program. In particular this opens a possibility for the Vietnamese government to attract foreign capital into the banking sector without necessarily allowing foreign banks to own majority stakes. Foreign investors are not interested in control but think they need control to implement the reforms that make sure that their investment will perform. As our results show this is not true.

Performance can also be improved without majority control as long as the Vietnamese banks agree to cooperate with the strategic investor and allow foreign management to participate in operational decisions. It should therefore be possible for foreign banks to make profitable investments even if the foreign ownership threshold is not increased. It might be sufficient to get foreign management actively involved.

Appendices

Appendix A1: Data availability

Banks	2006	2007	2008	2009	2010	2011	2012	Total
ABB	1	1	1	1	1	1	1	7
ACB	1	1	1	1	1	1	1	7
Agri	1	1	1	1	1	1	N/A	6
BacA	N/A	N/A	N/A	N/A	N/A	1	1	2
BIDV	1	1	1	1	1	1	1	7
BV				1	1	1	1	4
DaiA	1	1	1	1	1	1	1	7
DongA	1	1	1	1	1	1	1	7
EIB	1	1	1	1	1	1	1	7
Ficom	N/A	1	1	1	1			4
GP	N/A	N/A	1	1	1	N/A	N/A	3
HBB	1	1	1	1	1	1		6
HD	1	1	1	1	1	1	1	7
KL	1	1	1	1	1	1	1	7
LV			1	1	1	1	1	5
MariB	1	1	1	1	1	1	1	7
MB	1	1	1	1	1	1	1	7
MDB	1	1	1	1	1	1	1	7
MHB	1	1	1	1	1	1	1	7
NA	1	1	1	1	1	1	1	7
NV	1	1	1	1	1	1	1	7
OCB	1	1	1	1	1	1	1	7
OceanB	1	1	1	1	1	1	1	7
PG	1	1	1	1	1	1	1	7
Sacom	1	1	1	1	1	1	1	7
SB	1	1	1	1	1	1	1	7

(continued)

(continued)

Banks	2006	2007	2008	2009	2010	2011	2012	Total
SCB	1	1	1	1	1	N/A	1	6
Sea	1	1	1	1	1	1	N/A	6
SG	1	1	1	1	1	1	1	7
SHB	1	1	1	1	1	1	1	7
Tech	1	1	1	1	1	1	1	7
TN	N/A	1	1	1	1			4
TPB			1	1	1	N/A	N/A	3
Trust	N/A	1	1	1	1	1	N/A	5
VA	N/A	1	1	1	1	1	1	6
VCB	1	1	1	1	1	1	1	7
VIB	1	1	1	1	1	1	1	7
VietCap	1	1	1	1	1	1	1	7
VietIn	1	1	1	1	1	1	1	7

Appendix A2: Bank types in Vietnam

#	Category	2010	2011	Total assets (bil VND) 12/31/2012	Total assets (%) 12/31/2012
1	State-owned commercial banks	5	5	2,201,660	43 %
2	Policies banks	1	1		
3	Development banks	1	1		
4	Joint-stock commercial banks	37	35	2,159,363	42 %
5	Joint-venture banks	5	4	555,414	11 %
6	Foreign banks branches	48	50		
7	100 % foreign-owned capital banks	5	5		
8	Financial companies	17	18	154,857	3 %
9	Financial leasing companies	13	12		
10	Central people's credit funds	1	1	14,485	0 %
11	Local people's credit funds	1,057	1,095		
12	Small-sized financial organization	1	1		
13	Foreign credit institutions representative offices	48	50		
		1,239	**1,278**	**5,085,779**	**100 %**
	Total VN commercial banks	42	40		

Appendix A3: Correlation matrix

	ROE	NIM	ROA	GDPr	logasset	leverage	state	listed	BOMF	BODF
ROE	1 256									
NIM	0.0504 0.4220 256	1 256								
ROA	0.3197* 0.0000 256	0.5905* 0.0000 256	1 256							
GDPr	0.1827* 0.0033 256	-0.1489* 0.0172 256	0.1880* 0.0025 256	1 256						
logasset	0.4751* 0.0000 256	-0.2575* 0.0000 256	-0.3576* 0.0000 256	-0.212* 0.0006 256	1 256					
leverage	0.4505* 0.0000 256	-0.2440* 0.0001 256	-0.3698* 0.0000 256	0.0191 0.7609 256	0.6256* 0.0000 256	1 256				
state	0.2210* 0.0004 256	-0.0353 0.5744 256	-0.2139* 0.0006 256	0.0236 0.7066 256	0.5639* 0.0000 256	0.5521* 0.0000 256	1 256			
listed	0.3154* 0.0000 256	0.0076 0.9041 256	-0.0056 0.9291 256	-0.1519* 0.0150 256	0.3932* 0.0000 256	0.1246* 0.0465 256	0.101 0.1069 256	1 256		
BOMF	0.0026 0.9665 256	0.12 0.0552 256	-0.0078 0.9012 256	-0.2143* 0.0006 256	0.1417* 0.0233 256	-0.0198 0.7520 256	-0.1181 0.0592 256	-0.0193 0.7583 256	1 256	
BODF	0.2505* 0.0001 256	-0.0313 0.6185 256	-0.0006 0.9926 256	-0.1627* 0.0091 256	0.2994* 0.0000 256	0.0733 0.2426 256	-0.1615* 0.0097 256	0.3284* 0.0000 256	0.5873* 0.0000 256	1 256

* indicates statistical significance at the 5 % level

References

Admati AR, Hellwig M (2013) The bankers' new clothes: what's wrong with banking and what to do about it. Princeton University Press, Princeton

Azofra V, Santamaría M (2011) Ownership, control, and pyramids in Spanish commercial banks. J Bank Financ 35(6):1464–1476

Bárta V, Singer M (2006) The banking sector after 15 years of restructuring: Czech experience and lessons. BIS Pap 28:203–212

Beltratti A, Stulz RM (2012) The credit crisis around the globe: why did some banks perform better? J Financ Econ 105(1):1–17

Berger AN, Humphrey DB (1997) Efficiency of financial institutions: international survey and directions for future research. Eur J Oper Res 98:175–212

Berger AN, Hasan I, Zhou M (2009) Bank ownership and efficiency in China: what will happen in the world's largest nation? J Bank Financ 33(1):113–130

Bonin J, Wachtel P (1999) Lessons from bank privatization in central Europe. In: Harvey Rosenblum (ed) Bank privatizations: conference proceedings of a policy research workshop held at the world bank, marche 15/16th 1999

Bonin JP, Hasan I, Wachtel P (2005a) Bank performance, efficiency and ownership in transition countries. J Bank Financ 29:31–53

Bonin JP, Hasan I, Wachtel P (2005b) Privatization matters: bank efficiency in transition countries. J Bank Financ 29:2155–2178

Choi S, Hasan I (2005) Ownership, governance, and bank performance: Korean experience. Financ Mark Inst Instrum 14(4):215–242

Dages BG, Goldberg L, Kinney D (2000) Foreign and domestic bank participation in emerging markets: lessons from Mexico and Argentina (No. w7714). National bureau of economic research

Demirgüç-Kunt A, Huizinga H (1999) Determinants of commercial bank interest margins and profitability: some international evidence. World Bank Econ Rev 13(2):379–408

Dinh L (2013) Foreign banks in Vietnam: determinants of profitability and comparison with domestic banks. In: Proceedings of world business and social science research conference, Bangkok. ISBN: 978-1-922069-33-7160. Accessed 24–25 Oct 2013

Figueira C, Nellis J, Parker D (2009) The effects of ownership on bank efficiency in Latin America. Appl Econ 41(18):2353–2368

Firth M, Fung PM, Rui OM (2007) Ownership, two-tier board structure, and the informativeness of earnings–evidence from China. J Account Public Policy 26(4):463–496

Gulamhussen MA, Guerreiro L (2009) The influence of foreign equity and board membership on corporate strategy and internal cost management in Portuguese banks. Manag Account Res 20(1):6–17

Heffernan S, Fu M (2008) The determinants of bank performance in China. Available at SSRN 1247713

KPMG (2013) Vietnam banking survey. http://www.kpmg.com/VN/en/IssuesAndInsights/ArticlesPublications/Documents/Advisory/Vietnam%20Banking%20Survey%202013%20-%20EN.pdf

Lin X, Zhang Y (2009) Bank ownership reform and bank performance in China. J Bank Financ 33(1):20–29

Luo X (2003) Evaluating the profitability and marketability efficiency of large banks: an application of data envelopment analysis. J Bus Res 56(8):627–635

Micco A, Panizza U, Yañez M (2004) Bank ownership and performance. IDB working paper no. 429. Available at SSRN: http://ssrn.com/abstract=1818718 or http://dx.doi.org/10.2139/ssrn.1818718

Minton BA, Taillard J, Williamson R (2011) Do independence and financial expertise of the board matter for risk taking and performance? Available at SSRN 1787126

Moussu C, Petit-Romec A (2013) RoE in banks: myth and reality. Available at SSRN: http://ssrn.com/abstract=2374068

Ngo DT (2012) Measuring the performance of the banking system case of vietnam (1990–2010). J Appl Financ Bank 2:289–312

Nguyen VH (2007) Measuring efficiency of Vietnamese commercial banks: an application of Data Envelopment Analysis (DEA), Vietnam Development Forum Tokyo. http://www.grips.ac.jp/vietnam/VDFTokyo/Temp/Doc/2007/BookMar07_Tech_EChapter5.pdf

Oxelheim L, Randøy T (2003) The impact of foreign board membership on firm value. J Bank Financ 27(12):2369–2392

Pathan S (2009) Strong boards, CEO power and bank risk-taking. J Bank Financ 33(7):1340–1350

Pathan S, Skully M, Wickramanayake J (2007) Board size, independence and performance: an analysis of Thai banks. Asia-Pacific Financ Mark 14(3):211–227

Peng W (2008) The current income developments of intermediate businesses of the listed commercial banks in China – an analysis based on the annual reports of ten listed banks during the period of 2006–2007 [J]. Finance Econ 9:004

Phan TTM, Daly K (2012) Cost efficiency and risk of Vietnamese banking system. University of Western Sydney, Australia

Shih V, Zhang Q, Liu M (2007) Comparing the performance of Chinese banks: a principal component approach. China Econ Rev 18(1):15–34

Sun L, Chang T-P (2011) A comprehensive analysis of the effects of risk measures on bank efficiency: evidence from emerging Asian countries. J Bank Financ 35:1727–1735

Talkvietnam (2012) Vietnam to lift foreign ownership ratio limit in Vietnamese banks, Talkvietnam. Accessed 5 June 2012

Thuy L (2013) Banking discussions focus on bad debts, foreign ownership, Vietnam Breaking News. Accessed 9 Dec 2013

Xue H (2007) Analysis of practical examples about the causes of Chinese bank listing. Technol Econ Areas Commun 40:116–117

Vietnam News (2013) Banks await lift in foreign ownership, 17 Oct 2013. http://vietnamnews.vn/economy/246338/banks-await-lift-in-foreign-ownership.html

Vietnam Investment Review (2013) Foreign partners ditch local banks. http://www.vir.com.vn/news/en/money/foreign-partners-ditch-local-banks.html. Accessed 12 Oct 2013

Vu HT, Turnell S (2010) Cost efficiency of the banking sector in Vietnam: a Bayesian stochastic frontier approach with regularity constraints. Asian Econ J 24:115–139

Wang X, Zhu J (2008) The empirical analysis of the determinant factors on the capital structure of listed banks in China. Mark Modern 645:7

Chapter 27
Influence of Drivers for Store Choice on Store Selection and Loyalty

Deependra Sharma and Pankaj Madan

Abstract The present research work aims at finding out key drivers that influence store choice. It also aims to study their influence on store loyalty. On analysis it was found that the drivers responsible for store selection are not equally responsible for the selection of store format, i.e., old or new. Besides it is concluded that an average consumer of urban Uttarakhand is not loyal to any type of store format. The results of the present article will give the retailers enough idea about the various dimensions toward which they should be more attentive as the phenomenon of organized retailing is gaining momentum in India.

1 Introduction

Selection of store involves lot of thinking and has been widely researched specially in western economies. Recently, this phenomenon is gaining importance in Indian markets also, the reason being the advent of larger and diverse retail formats by organized players (Sinha and Banerjee 2004). These retailers are making all the efforts to give a new feel, new experience, and more choices to the Indian customers who up to now had little options. Store choice has emerged as new area of study because the retailers as well as shoppers are in the nascent stage with respect to organized retailing. Both of them are not clear as to what drives in reality the customer to shop in a particular store (Sinha and Banerjee 2004). Today the retailers are facing the problem of high footfall but low conversion resulting in high cost of services and lower profitability (Sinha et al. 2002). The present formats have been a successful saga in the western world, but in India they are still struggling (Sinha et al. 2002).

D. Sharma (✉)
Amity Business School, Amity University Haryana, Gurgaon
e-mail: learnerdsharma@gmail.com

P. Madan
Gurukul Kangri Vishwavidyalaya, Haridwar
e-mail: pankaj_mad@yahoo.com

This emphasizes the growing need to evaluate the influence that various drivers for store choice has in store selection. It is important for a store owner (belonging to either of the format) to understand this behavior for developing marketing strategies to attract and retain its customers.

2 Hypothesis Development

Through review of literature, 11 drivers, namely, location (Miu and Perihinn 2003; Mai and Hui Zhao 2004), promotion (Grewal et al. 1998; BMSR group 2010; Sinha and Uniyal 2000), price (Fox et al. 2004), atmospherics (Baker et al. 2002; Gueguen and Petr 2006), sales personnel (Lee and Dubinsky 2003; Mallalieu 2006), services (Khadilkar 2012; Bitner 1990), purpose of visit (Walters and Jamil 2003), self-concept congruity effects (Sirgy et al. 2000; Underwood et al. 2001), product (Fox et al. 2004; Boatwright and Nunes 2001; Dick and Basu 1994), congeniality (Engel et al. 1995), and institutional store reputation (Aydin and Ozer 2005; Ball et al. 2006) were found to be responsible for the store choice. These factors have been taken as the drivers for store choice. The researchers try to find out whether these drivers are considered for store choice by the shopper of both the categories (i.e., old and new format) with the same preference or not. This leads to the development of first null hypothesis, i.e., H_01.

H_01. Drivers for store choice are equally applicable (i.e., there is no difference between the importance of drivers choice) for old (unorganized) and new formats (organized).

Loyalty has been examined from different aspects including its impact on long-term financial performance of a firm (Reichheld 2001). Reichheld (2003) has established the link between loyalty and bottom-line profits. Owing to its managerial relevance, studies in the past sought to determine the drivers of customer loyalty. Emerging from these studies, a list of factors that include location, product range, in-store promotions, frequent buyer/loyalty programs, store operation, store appearance, ambience, spatial layout, relative price, and convenience was identified (Miranda et al. 2005; Noble et al. 2006). This results in H_02.

H_02. There is no significant correlationship between drivers for store choice and store loyalty.

3 Research Methodology

3.1 Questionnaire Design and Measurement

A self-administered questionnaire was designed to collect data. It included 57 measures to collect information on 11 drivers and 7 measurements for loyalty. These drivers and questionnaire items for these drivers were developed from inferences

obtained through the review of literature and exploratory interviews. Each of these items was evaluated on a 5-point Likert scale ranging from *1 (strongly disagrees)* to *5 (strongly agrees)*. Thus, questionnaire before taking to pilot survey contained 64 items. A sample consisting of 30 subjects (who were representative of the main sample) was asked to administer the measures so as to examine its clarity and relevance of constructs/drivers. Researchers have decided that measure with the score of 30 will be discarded. The stores selected included an organized retailer (Vishal Mega Mart, Easy Day, 7/11) and unorganized retailer (local kirana stores of the region). Based upon it, no measure was dropped from the final questionnaire.

3.2   Data Collection

Systematic random sampling (i.e., every tenth shopper coming out from the outlet) was used to select the respondents. Three hundred fifty two shoppers including males and females of all age groups from cities like Dehradun, Kashipur, Haldwani, and Rudrapur participated in the survey. One hundred and two respondents did not provide complete information making them unusable; this resulted in a sample size of 250 yielding a response rate of 71.4 %. Primary data has been collected in the month of July, August, and September of the year 2012. Mall intercept method (Bush and Hair 1985) is used to collect the data so as to assess the latest perception of the customers about the stores (organized as well as unorganized) they have visited. SPSS 16.0 was used for the purpose of analysis.

3.3   Sample Size Adequacy

This sample size has been finalized based upon the standard sampling table for problems involving sample proportions (Lin 1976).

3.4   Data Analysis

To develop an authentic instrument, reliability and validity analysis has been carried out. Further techniques like ANOVA, chi-square test, correlation, and regression are used for the analysis.

3.5   Validity Analysis

To establish content validity, construct validity, and face validity, store managers (06), shopkeepers (10), and senior faculty members (05) of the researcher's institute were asked to compare and evaluate the items included in the questionnaire with the objectives of the research.

3.6   Reliability Analysis

Scales for this study were considered to have good reliability with a Cronbach's alpha value of 0.738 (Clark and Watson 1995).

4   Hypothesis Testing

$H_0 1$. Drivers for store choice are equally applicable (i.e., there is no difference between the importance of drivers of store choice) for old and new formats.

Chi-square test was applied (refer Table 27.1). Shoppers were categorized in three categories, namely, A, B, and C, based upon their relative importance given to store choice attributes in store selection.

As per Table 27.2, test statistics of 0.065 and 155 indicate that the researcher has reduced error rate by 6.5 % and 15.5 %, respectively, over what one could expect by error chance. The researcher has further calculated the value of chi-square for level $\alpha = 0.05$, df $= 2$ the cut off point for the test statistic that comes to be as following:

$$\chi^2_{tab} = 5.992$$

and

$$\chi^2_{cal} = 6.001.$$

Thus, $\chi^2_{cal} > \chi^2_{tab}$.

Hence, the null hypothesis can easily be rejected concluding that there is a significant difference between the importance accorded to these drivers for store choice by the shoppers of old and new format stores.

Table 27.1 Chi-square test (type of store visited and category of shoppers)

	Value	Df	Asymp. Sig.
Pearson chi-square	6.001(a)	2	0.050
Likelihood ratio	5.637	2	0.060
Linear-by-linear association	1.043	1	0.307
No. of valid cases	250		

Table 27.2 Directional measures (type of store visited and category of shoppers)

			Value
Nominal by interval	Eta	Category of shoppers	0.065
		Type of store visited	0.155

Table 27.3 Correlations

		Total drivers	Total loyalty
Total drivers	Pearson correlation	1	0.541**
	Sig. (2-tailed)		0.000
	N	250	250
Total loyalty	Pearson correlation	0.541**	1
	Sig. (2-tailed)	0.000	
	N	250	250

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

Table 27.4 Model summary[a]

Model	R	R square	Adjusted R square	Std. error of the estimate	Change statistics					Durbin-Watson
					R square change	F change	df1	df2	Sig. F change	
1	0.487[b]	0.237	0.234	3.723	0.237	77.155	1	248	0.000	1.831

[a]Dependent variable: total loyalty
[b]Predictors: (constant): total drivers

$H_0$2. There is no significant correlationship between drivers for store choice and store loyalty.

From Table 27.3, it is clear that at $\alpha = 0.01$ relationship between the variables is significant and moderate in nature with $r = 0.541$.

Regression analysis was used to identify statistically significant relationships between variables. Beta and R2 coefficients were used as indicators of the strength and explanatory power of the relationships. In this analysis, R2 indicates the fit of the linear relationship between the drivers for store choice (total drivers) and the loyalty scores. R2 also indicates the proportion of the variation in the dependent variable (loyalty) explained by drivers for store choice (the independent variable). As illustrated in Table 27.4, 24 % (0.237) of the variation loyalty is explained by the drivers for store choice scores. The statistical significance of relationship is also shown in Table 27.4 where relationship was found to be significant.

The value of R square is low, but in some studies, it is entirely expected that R-squared values will be low, specially studies that attempt to predict human behavior. Furthermore, if R-squared value is low but have statistically significant predictors, one can still draw important conclusions about how changes in the predictor values are associated with changes in the response value. Regardless of the R-squared, the significant coefficients still represent the mean change in the response for one unit of change in the predictor while holding other predictors in the model constant. Obviously, this type of information can be extremely valuable (Frost 2013; MacDonnell 2010).

The Durbin-Watson statistic is (refer to Table 27.4) 1.831 (nearly 2) which indicates that there is no first-order autocorrelation. An acceptable range is 1.50–2.50. Secondly, if the Durbin-Watson statistic is greater than R square, it is likely that

Table 27.5 ANOVA[a]

Model		Sum of squares	df	Mean square	F	Sig.
1	Regression	1,069.338	1	1,069.338	77.155	0.000[b]
	Residual	3,437.178	248	13.860		
	Total	4,506.516	249			

[a]Dependent variable: total loyalty
[b]Predictors: (constant): total drivers

Table 27.6 Coefficients[a]

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.
		B	Std. error	Beta		
1	(Constant)	6.056	2.061		2.938	0.004
	Total drivers	0.102	0.012	0.487	8.784	0.000

[a]Dependent variable: total loyalty

autocorrelation exists, but in here Durbin-Watson statistic is lower than R square, indicating the absence of autocorrelation.

The most important part of the Table 27.5 is the F-ratio and the associated significance value of that F-ratio. For these data, F is 77.155, which is significant at $p < 0.01$. This result tells us that there is less than a 1 % chance that an F-ratio this large would happen if the null hypothesis were true. Therefore, we can conclude that our regression model results in significantly better prediction of loyalty than if we used the mean value of loyalty. In short, the regression model overall predicts loyalty significantly well.

According to Table 27.6, regression equation may be drawn as

$$Total\ loyalty = 6.056 + .102\ Total\ drivers.$$

5   Discussions

Results from H_01 testing indicate that these drivers are responsible for store selection made by a shopper visiting either of the formats, but the order in which they are preferred varies.

Results of H_02 show that relationship of significant nature exists between drivers for store choice and store loyalty where it is moderate in nature. It suggests that factors are correlated and do have an impact on each other, but the strength of relationship is not very strong.

The findings that there is a relationship between drivers for store choice loyalty are in congruence with the past studies carried out by Oliver (1999) which have found the variables to be correlated.

6   Conclusions/Implications

The result of $H_0 1$ leads to the conclusion that though same drivers are applicable in the decision-making process of the store selection (i.e., shopper visiting to either type of format was looking for the same type of facilities), the order in which these drivers are being applied by the shopper in store choice varies according to the type of store being visited (organized or unorganized). Therefore, unorganized and organized retailers need to identify and work upon those drivers which are relatively more important from their respective type of stores.

The result of $H_0 2$ indicates that there exists a significant relationship between drivers for store choice and store loyalty, but it is moderate in nature. The retailers need to focus on these drivers to enhance the loyalty which will directly influence its profitability.

References

Aydin S, Ozer G (2005) The analysis of antecedents of customer loyalty in the Turkish mobile telecommunication market. Eur J Mark 39:910–925

Baker J, Grewal D, Levy, Parasuraman A, Glenn B (2002) The influence of multi-store environmental clues on perceived merchandise value and patronage intentions. J Mark 66:120–141

Ball D, Coelho PS, Vilares MJ (2006) Service personalization and loyalty. J Serv Mark 20:391–403

Bitner MJ (1990) Evaluating service encounters: the effects of physical surroundings and employee responses. J Mark 54:69–82

BMSR Group MVA Hong Kong Ltd. (2010) Sales promotion tools in retail sector in Hong Kong and Beijing-2010. Hong Kong

Boatwright P, Nunes JC (2001) Reducing assortment: an attribute-based approach. J Mark 65(3):50–63

Bush AJ, Hair JF Jr (1985) An assessment of the mall intercept as a data collection method. J Mark Res 12:158–167

Clark LA, Watson D (1995) Constructing validity: basic issues in objective scale development. Psychol Assess 7:309–319

Dick A, Basu K (1994) Customer loyalty: toward an integrated conceptual framework. J Mark Sci 22(2):99–113

Engel JF, Blackwell RD, Miniard PW (1995) Consumer behavior, 8th edn. Dryden Press, Orlando

Fox EJ, Montgomery AL, Lodish LM (2004) Consumer shopping and spending across retail formats. J Bus 77(2):25–60

Frost J (2013) How do I interpret r squared? Retrieved 21 Jan 2014 from http://blog.minitab.com/blog/adventures-in-statistics/regression-analysis-how-do-i-interpret-r-squared-and-assess-the-goodness-of-fit

Grewal D, Krishnan R, Baker J, Borin N (1998) The effect of store name, brand name and price discounts on consumers' evaluations and purchase intentions. J Retail 74(3):331–352

Gueguen N, Petr C (2006) Odors and consumer behavior in a restaurant. Int J Hosp Manag 25:335–339

Khadilkar SM (2012) Does services matter in grocery retailing? Golden Res Thoughts 1:1

Lee S, Dubinsky AJ (2003) Influence of salesperson characteristics and customer emotion on retail dyadic relationships. Int Rev Retail Distrib Consum Res 13:21–36

Lin N (1976) Foundation of social research. McGraw Hill, New York

MacDonnell K (2010) How high r-squared? Retrieved 21 Jan 2014 from http://cooldata.wordpress.com/2010/04/19/how-high-r-squared/

Mai L-W, Zhao H (2004) The characteristics of super shoppers in Beijing. Int J Retail Distrib Manag 32(1):56–62

Mallalieu L (2006) Consumer perception of salesperson influences strategies: an examination of influence of consumer goals. J Consum Behav 5:257–268

Miranda JM, Konya L, Havrila I (2005) Shoppers' satisfaction levels are not the only key to store loyalty. Mark Intell Plan 23(2):220–232

Miu A, Perihinn J (2003) Hyper growth for China's hypermarkets. McKinsey Q 2:14–17

Noble SM, Griffith DA, Adjei MT (2006) Drivers of local merchant loyalty: understanding the influence of gender and shopping motives. J Retail 82(3):177–188

Oliver RL (1999) Whence customer loyalty? J Mark 63:33

Reichheld FF (2001) Lead for loyalty. Harv Bus Rev 79:76–85

Reichheld FF (2003) The one number you need to grow. Harv Bus Rev 81:46–54

Sinha KP, Banerjee A (2004) Store choice behavior in an evolving market. I J Retail Distrib Manag 32(10):482–494

Sinha KP, Uniyal DP (2000) Communication @ point of purchase. Unpublished Working Paper, Mudra Institute of Communications, Ahmedabad

Sinha PK, Banerjee A, Uniyal DP (2002) Deciding where to buy: store choice behaviour of Indian shoppers. Vikalpa 27(2):13–28

Sirgy MJ, Grewal D, Mangleburg T (2000) Retail environment, self-congruity, and retail patronage: an integrative model and a research agenda. J Bus Res 49:127–138

Underwood R, Bond E, Baer R (2001) Building service brands via social identity: lessons from the sports marketplace. J Mark Theory Pract 9(1):1–12

Walters RG, Jamil M (2003) Exploring the relationships between shopping trip type, purchases of products on promotion, and shopping basket profit. J Bus Res 56:17–29

Chapter 28
ISFTA: Lessons for Bangladesh

Kumar Gaurav, Nalin Bharti, and Priyanka Sinha

Abstract Global financial crisis has offered many lessons for the developing economies. Regional trade network in South Asia is weak compared to many other regional trading blocs of the world. It is the size of the domestic markets that matter especially at the time of crisis. Trade theorist Michael Porter pioneered that the competitive advantage of nations is created and sustained through a highly localized process: the nature of home market demand for industry's product or service. In the aftermath of the financial crisis, countries need to expand the size of its domestic market with more regional economic integration. Economic integration does provide the solution to enhance and enlarge the size of the domestic markets; like in case of the European Union (EU), economies associated with EU operate as a domestic market. Similar benefits can be attributed in the case of bilateral Free Trade Agreements (FTAs) in South Asian Association for Regional Cooperation (SAARC) region or at the level of South Asian Free Trade Area (SAFTA). This will assist and facilitate economies to recover by means of engaging themselves in regional trading agreements. The recent Revised Sensitive Lists under SAFTA (Phase II) announced on January 1, 2012, by India, Sri Lanka, and Bangladesh is examined here with a special attention to the India-Sri Lanka Free Trade Agreement (ISFTA). In the current context of ongoing negotiations on Bangladesh-Sri Lanka and Indo-Bangladesh bilateral FTA, paper advocates for the gains in reducing sensitive list because it gives fresh impetus in terms of providing new technology, expansion of the international markets, and new opportunities for investment. The local business entrepreneurs in Bangladesh raise the fear of losing local industry and agro-activities, but Bangladesh may also realize the intra-SAARC trade, differently. Instead of trade competition, Bangladesh may look for intra-industry/intra-business compliments as is evident in the case of ISFTA. Sensitive lists are one of the prime reasons for the slow speed of SAFTA and other respective bilateral FTAs. The prime hypothesis of this paper is around the argument that the bilateral FTAs in South Asia are going to move SAFTA ahead which leads to more trade and investment even in the post-financial crisis-damaged markets. The paper adds new dimension in the

K. Gaurav (✉) • N. Bharti • P. Sinha
Department of Humanities and Social Sciences, Indian Institute of Technology, Patna, Patliputra Colony, Patna 800013, India
e-mail: kumargaurav@iitp.ac.in; gauravsharan72@gmail.com; nalinbharti@iitp.ac.in; nalinbharti@gmail.com; priyankasinha04@iitp.ac.in; prnksinha.04@gmail.com

field of South Asian economic integration through examining how boosting trade and investment are linked with the bilateral FTA. It may also pave the ways for Bangladesh to enter into bilateral FTAs with India and Sri Lanka.

Keywords ISFTA • Competitive advantage • SAARC • Bilateral FTA • SAFTA • Sensitive list, Economic integration

1   Introduction

The free trade debate dates back to the times of the founding father of economics, Adam Smith. In his monumental work, *The Wealth of Nations*, he argued in favor of laissez faire policy. This was perhaps the beginning of free trade doctrine. Adam Smith has propounded the absolute advantage theory of international free trade. David Ricardo also favored the policy of free trade through his comparative advantage principle of international trade. A more advanced version of comparative advantage theory of trade is the Heckscher-Ohlin model. Thus, the rationale for free trade is more than two centuries old. Free trade is a policy whereby the government does not intervene in trading between nations by tariff, quotas, or other means (Samuelson and Nordhaus 2007). Free trade allows the maximization of world's output, thus making it possible to increase the consumption basket of consumers than without free trade. There are dynamic gains from free trade. Bhagwati (2002) has stated that Smith-Ricardo analysis of gains from trade via specialization and the associated case for free trade was to win approval since the beginning. Countries impose trade barriers in the forms of tariff and nontariff on different grounds to restrict the free flow of international trade. Import tariff has become the most vibrant means of trade policy instruments. Besides tariffs, nontariff barriers like quota, domestic content requirements, export subsidies, antidumping regulations, and other government policies have also been used in order to restrict free trade. The efficiency case of free trade states that trade restrictions in form of a tariff leads to production and consumption distortions. The cost-benefit analysis provides the theoretical grounds for free trade. Consumer and producer surplus forms the basis for costs and benefits.

Free trade with the imposition of tariff on a country's import has three effects: firstly, reduction in the imports and consumptions; secondly, increase in the domestic price and production of a commodity; and finally, increase in tariff revenue to the government. After imposition of tariff, import reduced from GF to HI and consumers surplus also decreased as in Fig. 28.1. The tariff raises the price in the domestic markets from 0P to 0P2 and domestic production increases from 0Q2 to 0Q2′. Government now receives tariff revenue equal to the area KJIH.

New advancement in trade theory emphasizes on the competitiveness of the domestic markets. It can be found in the works of trade theorist Michael Porter. He pioneered the national competitive advantage theory of trade in the 1990s. The theory of competitive advantage rests on four factors called as the diamond of
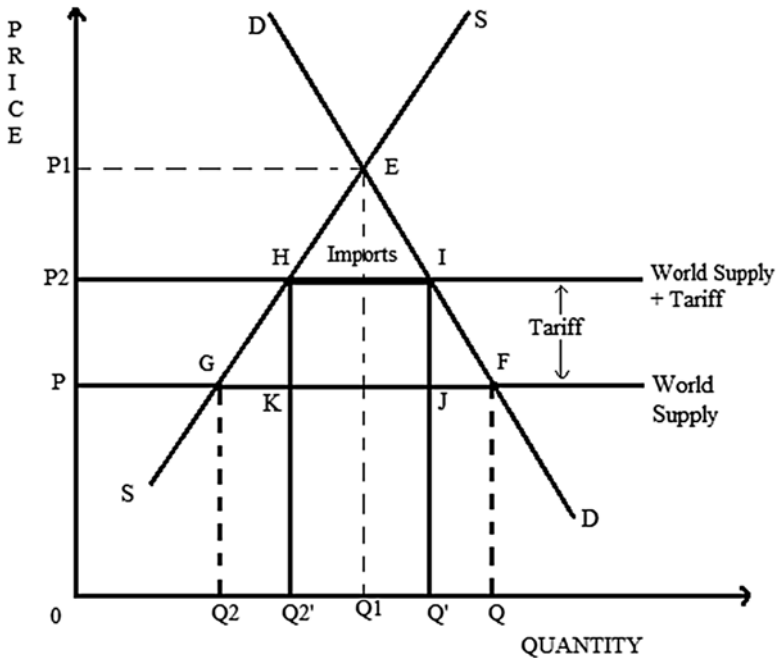
Fig. 28.1 Effect of tariff in a free trading economy

national advantage. These are factor conditions, demand conditions, related and supporting industries, and firm strategy, structure, and rivalry. According to Porter (1990), a nation's competitiveness depends on the capacity of its industry to innovate and upgrade, and it not merely depends on natural endowments, its labor pool, its interest rates, or its currency's value. Countries benefit from having strong domestic rivals, aggressive home-based suppliers, and demand from domestic consumers. Competitive advantage is created and sustained through highly localized process. The need for a strong domestic market is attributed to sustain the economies, especially at the times of crisis. Global financial crisis has offered many lessons for the developing economies in recent past. Regional trade network offers a strong case for enhancing and enlarging the size of the domestic markets. Regional trading agreements (RTAs) can be seen as a strong case for liberalization of the world trade. There are basically three forms of trade liberalization: unilateral, bilateral, and multilateral. When countries remove their trade barriers without waiting for other countries, it signifies unilateral trade liberalization. Unilateral trade liberalization promotes country's competitiveness in the world's markets and encourages comparative advantage. The other involves the reciprocal reduction of trade barriers on a nondiscriminatory basis, as seen in the operation of World Trade Organization (WTO). Finally, the bilateral (or plurilateral) route manifests itself in what economists have come to call preferential trade agreements (PTAs). In the case of PTAs, two or more countries reciprocally liberalize trade with each other but not

to the rest of the world. The process of bilateral or plurilateral reductions in trade barriers among the member countries is commonly known as the process of economic integration. It is the process of eliminating restrictions on trade. It results in the uniting of two or more national economies in a regional trading arrangement (Carbaugh 2008).

Economic integration commences with signing a preferential trade agreement (PTA). It is the first stage of economic integration which gives preferential access to certain products from the participating countries. A PTA is followed by the free trade area (FTA) and is an association of trading nations in which members agree to remove all tariff and nontariff barriers among themselves. Each member, however, maintains its own set of trade restrictions against outsiders. Like a free trade area, a customs union is an agreement among two or more trading partners to remove all tariff and nontariff trade barriers among themselves. In addition to this, all member nations impose identical trade restrictions in terms of common external trade policy against nonparticipants. The next stage of economic integration is common market. It is a group of trading nations that comprises all the features of a customs union. Besides this, it ensures free movement of factors of production across national borders within the economic bloc. The next stage is the economic union in which national, fiscal, taxation, and social policies are harmonized and governed by a unified institution. The final stage may be the monetary union in which national monetary policies and the acceptance of a common currency governed by a supra-national monetary authority takes place.

Viner (1950) introduced the concepts of trade creation and trade diversion which provide the theoretical grounds and rationale for the creation of PTAs. Trade creation is the replacing of relatively high-cost domestic production with lower cost imports from the partner country. Trade diversion takes place when a country switches its source of imports from a more efficiently producing country to a less efficiently producing country. Efficiency gains are captured through the trade creation and efficiency losses through trade diversion in the case of free trade areas and other forms of economic integration. A regional trading bloc enlarges the size of domestic market. The entire bloc serves as a domestic market. Like in case of the European Union, the whole EU is like a domestic market. It is argued that trade liberalization and regional economic integration can help a region increase its intra-regional trade by exploring the size of the market. This may in turn yield efficiency and bring benefits not only by exploration of economies of scale but also by dynamic and upward shifts in production function (Ali and Talukder 2009).

2 Economic Rationale for Free Trade Agreements

Free trade agreement is a form of preferential trading agreement (PTA) which provides the second-best option, the first being the multilateral trade liberalization as is evident in the operation of the WTO. It is worth to mention that regional trade

agreements can complement the free trade process but cannot replace multilateral liberalization (OECD Policy Brief 2003). The theory of second-best proposes that given a distorted system, eliminating one of the distortions does not ensure a better-off overall economic welfare as long as distortions remain unchanged (Plummer et al. 2010). There are static and dynamic effects of an FTA. Jacob Viner provided the theoretical analysis for the assessment of customs union which was extended to analyze an FTA through the theory of trade creation and trade diversion. It is the partial equilibrium model that analyzes the potential effects of an FTA. It is worth to note that welfare changes by the formation of an FTA are the sum of changes in producer and consumer surplus and the government revenue due to tariffs (World Bank 2006). Conventional wisdom argues for the improvement in the welfare because these agreements include a degree of trade liberalization. Viner showed that an FTA can adversely affect the welfare of a country. The major drawback of Vinerian model is that it takes into account the market for just one good ignoring any interaction with multiple goods market. Plummer et al. (2010) assert that one of the departures from this model is the general equilibrium model based on the works of Meade (1955), Lipsey (1970), and Wonnacott and Wonnacott (1981). There are limitations in these models. To overcome these limitations, computable general equilibrium (CGE) and gravity models are used to evaluate the effects of an FTA. General equilibrium analysis provides the sound ground for policy implications as it takes into account the interactions between the markets. To analyze the economic effects of multilateral and bilateral trade agreements, the CGE modeling framework of Global Trade Analysis Project (GTAP) provides one of the best tools of analysis (Sikdar and Nag 2011). On the other side, gravity model is useful in the analysis because it provides better explanation in real-world situations. Dynamic effects of FTAs include scale economies, technology transfer, structural policy reforms, and competitiveness and growth effects.

The latter half of the 1980s to the early 1990s witnessed an explosion of regional trade agreements (RTAs) in the global economy (Weerakoon 2001a). Likewise there arises a need for the countries in the south Asia to form a regional trading bloc to foster the process of economic integration in this region. The establishment of the South Asian Association for Regional Cooperation (SAARC) on December 8, 1985, marked the beginning of economic cooperation in South Asia. In accordance with the sixth SAARC summit, SAARC Preferential Trading Arrangement (SAPTA) was signed on April 11, 1993, much ahead as was agreed and it become functional from December 7, 1995. Article 2 of SAPTA emphasizes on the broad commitments for the promotion of trade in multilateral framework among the member countries. Article 10 of SAPTA grants preferential treatment to LDCs in tariffs, free access to member's market, removal of nontariff barriers, limited removal of para-tariffs, and others. In the year 2004, SAARC took a leap forward when it signed South Asian Free Trade Area (SAFTA). It became operational in the year 2006 (January 1) with broader objectives of facilitation of trade by elimination of trade barriers in a phased-wise manner. It emphasized on enhancing trade in South Asia and economic integration for mutual benefits. As a part of achieving

such goal of SAFTA, it was realized to liberalize trade policy through various reforms. Sensitive list is one of the major issues in trade liberalization and policy reforms in South Asia.

3 Trade Policy Reforms in Sri Lanka, Bangladesh, and India

Export promotion (EP) an outward looking development policy was adopted by Sri Lanka to attract foreign investments. Unilateral trade liberalization process was initiated in 1977 in Sri Lanka which makes it unique in South Asia as it started its reforms early than any other country in this region. The policies included import liberalization, relaxation of exchange controls, facilitating foreign direct investments, and private sector-driven economic strategies.

Bangladesh which lies in close proximity with India started opening its economy in the 1980s but was marked by limited progress, and its scope was also of limited extent. It further started the reform process when it engrossed a deeper and enlarged spectrum of reforms in trade policy in the early 1990s. To cater the needs for rapid and sustained growth and development of the country, Bangladesh reduced its tariffs substantially and rationalized tariff rates to bring about harmonization in tune with other South Asian economies. Further reduction and removal of quantitative restrictions were incorporated. Bangladesh moved from multiple systems of exchange rates to a unification of exchange rates in conformity with world economies. Current account was made convertible as a part of export promotion outward-oriented trade regime. The trade to GDP ratio increased to 18 % in 1990 to 43 % in 2008 (World Bank 2013), as result of these initiated policy measures. Further this ratio increased to 50.4 % on an average in 2009–2011. Bangladesh which was traditionally known for its primary products exports like jute and tea is now well known for ready-made garments (RMG) sector and leather products (Harun 2010). Due to heavy agricultural and nonagricultural import tariff, Bangladesh is still marked as one of the least liberalized regimes in trade policy in the world.

India's trade policy after independence was restrictive for many years after independence. It was reflected in restrictive import policy during period 1947–1952. During 1952–1953 to 1956–1957, liberalization of foreign trade was adopted through liberalizing the import licenses. A very restrictive import policy was adopted from 1956–1957 to June 1966, and the import controls further screened the list of imported goods. To check imports and to boost exports, the government of India undertook devaluation of the rupee in 1966 as a major step. Trade policy was quite successful during fourth plan in restricting imports and promoting exports. This period continued till 1975–1976. During Janata rule (1977–1979), import liberalization was also adopted to augment domestic supply of essential goods and to check rise in price level (Tendulkar and Bhavani 2007).

India embarked on the path of industrial, financial, and external sector reforms in the 1990s which were initiated creating an environment conducive for the expansion of trade (Reserve Bank of India 2003). Trade policy (1991) aimed to reduce administrative controls and barriers which acted as obstacles to the free flow of exports and imports. The basic instrument developed by the policy was the Exim scrip in place Rep licenses. The purpose of this instrument was to permit imports to the extent of 30 % on 100 % realization of export proceeds. Obviously, the purpose was to bridge the BOP gap.

4   Tariff Reduction: India, Bangladesh, and Sri Lanka

WTO explains most favored nation (MFN) tariffs as the normal nondiscriminatory tariff charged on imports. It excludes preferential tariffs under free trade agreements and other schemes or tariffs charged inside quotas. Figure 28.2 shows the average MFN applied tariff rates (unweighted) by India, Bangladesh, and Sri Lanka during 1990–2009. India has 81.8 % tariff rate in 1990, declined rapidly after the economic reforms. In 1991 it stood at 79.2 % and declined to 53 % in 1992. Further in the year 2009, it declined and remained at 10.1 %. Bangladesh on the other hand underwent reforms in the early 1990s. In 1990 average MFN applied tariff rates stood at 94 % and declined to 88.6 % in 1991. In 2008 it stood at 14.8 %. Sri Lanka which is marked by one of the most liberalized economies in South Asia had tariff rate of 28.3 % in 1990. It is the lowest compared to these three economies. In 1992 the tariff rate was at 26.9 % which further declined to 10.1 % in 2009. Thus, the data on average MFN applied tariff rates in these three countries shows a declining trend. Of these three South Asian countries, Bangladesh still remains less liberalized compared to other two countries.
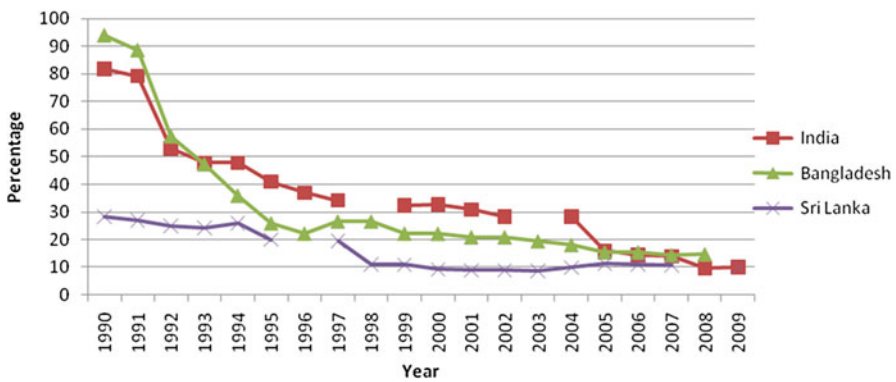

Fig. 28.2 Trends in average MFN applied tariff rates in India-Bangladesh-Sri Lanka (Source: Compiled by Authors from World Bank (2010))

5 India-Sri Lanka Free Trade Agreement (ISFTA)

India and Sri Lanka envisage at establishing a free trade area in accordance with the provisions of the ISFTA and in conformity with relevant provisions of the General Agreement on Tariff and Trade (GATT), 1994 (Article 1 of ISFTA). The ISFTA was signed on December 28, 1998, to promote mutually beneficial bilateral trade. The agreement came into effect on March 2000. It contains different articles and several annexures. Article 1 defines the broad objectives of the agreement. Annexure A of this agreement describes the concessions offered by India and phaseout schedule for elimination of tariffs in 3 years from ISFTA being effective. Concession offered by Sri Lanka is mentioned in Annexure B of India-Sri Lanka Free Trade Agreement. It provides tariff concessions on exports from India in respect of items freely importable into Sri Lanka and phaseout schedule for elimination of tariffs in 8 years time framework from ISFTA being effective. According to ISFTA, a wide range of products are granted free access to exports from these countries. But it also contains list of items which are restricted between these two countries for bilateral trade in Annexure D of the ISFTA. The agreement contains so-called negative list (sensitive list) intended to protect their respective national interests. Additionally, Rules of Origin (ROO) were introduced into the agreement to ensure minimal national content of traded products.

6 The Issue of Reducing Ne gative List

Maintaining respective negative lists does exist in the bilateral or multilateral FTAs. There have been multiple criteria for preparing and maintaining these lists. The major part of these lists includes agricultural products for food security. Along with the most important element of negative list, others like small-scale manufacturing products and noncompetitive domestic industries are also protected in form of inclusion in the list. "There are two distinct features of India-Sri Lanka trade, namely a low volume of bilateral trade and a persistent balance of trade in favor of India" (Weerakoon 2001b). Taneja et al. (2011) have provided an approach and economic rationale to policymakers for pruning the negative lists maintained by India for SAARC countries. There are several other commodities which seem no rationale to be in the negative lists of these countries. These unnecessary items should definitely be removed from the list. The approach of SAFTA is the negative list maintained by all the eight members of this agreement. India is the largest country among the SAARC members in terms of both geographical area and in terms of GDP. India has reduced its items in the negative list for LDCs to only 25 items and 614 items for non-LDCs. It reflects its commitment under the SAFTA. Other contracting states of this agreement have huge respective negative lists. One of the hypotheses for SAFTA being not so effective is the existing negative list. The table that follows gives a quick recap of respective sensitive lists under SAFTA and ISFTA.

Table 28.1 shows the volume of negative list among three of the SAARC countries. As can be seen Table 28.1, items in India's negative list for non-LDCs are 614 which

Table 28.1 Distribution of items in negative list

| Sr. no | Description | No. of items (under SAFTA)[a] | | | | No. of items and % share (ISFTA)[b] | | | |
| | | Bangladesh (for NLDCs) | India (for LDCs) | Sri Lanka[b] | India (for NLDCs) | India | | Sri Lanka | |
		Column 1	Column 2	Column 3	Column 4	No. of items	% share	No. of items	% share
1.	Live animals, animal products	19	0	90	28	0	–	160	13.11
2.	Vegetable products	31	0	204	38	2	0.46	227	18.61
3.	Animal or vegetable fats and oils	3	0	37	21	0	–	40	3.28
4.	Prepared foodstuffs, beverages, tobacco	71	25	165	57	17	3.95	176	14.43
5.	Mineral products	10	0	22	5	0	–	23	1.89
6.	Chemical products or allied	51	0	22	36	0	–	32	2.62
7.	Plastics and rubber	49	0	84	97	100	23.20	86	7.05
8.	Leather products	12	0	25	0	0	–	16	1.31
9.	Wood products	6	0	2	11	5	1.16	5	0.41
10.	Paper products	44	0	49	14	12	2.78	66	5.41
11.	Textile and textile articles	364	0	20	182	295	68.45	20	1.64
12.	Footwear and others	13	0	30	17	0	–	32	2.62
13.	Stone, plaster, cement, ceramic, glass, and glassware	26	0	36	10	0	–	39	3.20
14.	Pearls, precious stones, precious metals	1	0	3	0	0	–	3	0.25
15.	Base metals and articles	89	0	114	60	0	–	113	9.26
16.	Machinery and mechanical appliances, electrical equipment	84	0	69	28	0	–	81	6.64
17.	Vehicles, transport equipment	41	0	37	4	0	–	43	3.52
18.	Optical, photographic equipment	22	0	7	2	0	–	8	0.66
19.	Arms and ammunition	0	0	0	0	0	–	0	–
20.	Misc. manufactured articles	57	0	49	4	0	–	50	4.09
21.	Works of art, antiques	0	0	0	0	0	–	0	–
	Total	993	25	1,065	614	431	100	1,220	100

[a]Source: Compiled from SAARC's Revised Sensitive Lists under SAFTA (Phase 2)
[b]Source: Compiled by authors from Department of Commerce, Sri Lanka

Table 28.2 Results from compression at bilateral level

Bangladesh-India	Sri Lanka-India	Bangladesh-Sri Lanka
Column 1–2	Column 3–4	Column 1–3
India has only 25 items, but Bangladesh has 993 items in the negative list	It suggests that being NLDCs (both India and Sri Lanka), they would have to trade on the basis of SAFTA's respective negative lists	There are 993 sensitive items on Bangladesh side, whereas 1,065 from Sri Lankan side
The common products are in the prepared foodstuffs, beverages, and tobacco items only	But the trade between these two countries is governed on the basis of ISFTA and SAFTA	The common items are huge between these two countries
Bangladesh largely protects its textile sector	These lists suggest that vegetable products of Sri Lanka and textile sector of India are heavily protected	Large volume of common items are in the prepared foodstuffs, plastics and rubber, paper products, base metals, vehicles and transport equipment, misc. manufactured articles
Other sectors which are largely protected by Bangladesh are prepared foodstuffs, base metals, machinery and mechanical appliances, chemical products, and plastics and rubber products	Other common items seems to be live animals category, animal or vegetable fats and oils, prepared foodstuffs, chemical products, plastics and rubber, base metals, machinery and mechanical appliances, etc.	Other common items of significance are live animals and animal product, vegetable products, chemical products, leather items, textiles, footwear, and stone and ceramic items
Thus, India is unilaterally providing opportunities for exports for LDCs like Bangladesh under SAFTA	Thus, both the countries are benefitting from FTA. India being asymmetrical in terms of volume of world trade, it is providing more opportunities to Sri Lanka (lesser items in negative list than Sri Lanka)	Thus, both the countries maintain huge negative list which reduces the opportunities for bilateral trade under SAFTA framework

Source: Authors. Based on the available data in Table 28.1

will be applicable to Sri-Lanka, but due to ISFTA, the operational list includes only 431 items. The negative list of Sri Lanka for India included 906 items under SAFTA, but ISFTA includes 1,220 items. Thus, India on the one hand restricts lesser items, while Sri Lanka maintains not only huge negative list but also maintains bigger list than SAFTA. India thus provides unilateral benefits to Sri Lanka. The list hinders the trade and investment, and thus the South Asian region remains insignificant as far as share in global trade is concerned. During the period from the year 1995 to 2005, the share in world trade of this region increased marginally from 0.9 to 1.2 %. The limited product coverage and the existence of huge negative list effectively reduce the scope of intra-regional trade in South Asia. It has been estimated that almost 53 % of the total import trade in SAFTA has been subject to the negative list of the respective countries (Weerakoon and Thennakoon 2006). The negative list thus significantly limits the scope of the SAFTA. In India-Sri Lanka Free Trade Agreement (ISFTA), each country maintains its negative list. Out of 431 items in Indian side and 1,220 from Sri Lankan side, the number and % share have been shown in Table 28.1. Table 28.2 presents the summary of the data presented in Table 28.1.

7 Trade-Investment Linkages: Benefits from ISFTA

There is a need to recognize the strong trade-investment linkages in South Asia. These links provide the rationale for achieving higher levels of intra-regional trade in regional trading blocs. Trade-creating joint ventures thus become crucial not only because it renders export potentialities of the countries in the regional blocs but also because it enlarges the size of the markets. They also help in creation of employment at mass level by leveraging the productive capacity. An FTA provides avenues for joint ventures to seek the benefits of foreign capital and investment inflows. The trade-creating joint ventures are in a position to take advantage of the regional FTA as in the case of ISFTA. Such agreements can also induce investment flows both between the countries of the bloc and from outside the region (Taneja and Sawhney 2007). The South Asian region is characterized by large asymmetries in terms of their size and GDP. Trade allows smaller countries in this region to specialize and produce a few products at high enough levels of output to reap the economies of scale. Trade and investment integration in the South Asian region is far below its potential due to several policy-induced factors like lack of adequate treatment of nontariff barriers, among others, as well as structural factors like infrastructural bottlenecks and restraints on factor mobility in the region (Dubey 2007). This manifests the need for increasing economic integration in this region.

7.1 Investments and Joint Ventures (JVs)

India has been a major player in terms of investments to Sri Lanka (see Fig. 28.3 for more details). Sri Lankan economy has attracted foreign investments in multiple areas including retail to tourism and petroleum, financial sectors including banking, telecommunications, food processing, vanaspati, cement, copper, tire, glass industry, hospitality, and real estate. Indian investment in Sri Lanka reached a total of US$600 million, making it number four in the world (Doing Business in Sri Lanka 2012).

7.2 Lanka Ashok Leyland

JV investment in Sri Lanka by an Indian company (Ashok Leyland) is Lanka Ashok Leyland in 1982 which has started its production from 1983. This venture is having the objective of reaping the benefits from the expansion of markets locally and further development of ancillary industries domestically.

7.3 Ceat-Kelani

Sri Lankan economy has the benefits as it underwent three-way venture with AMW, Ceat Tyres India, and Kelani Tyres Sri Lanka in 1999. This venture aims to fulfill the twin goals of low-cost manufacturing and larger market access in this island nation.

The venture resulted in Ceat-Kelani Associated Holdings Pvt. Ltd. which is the largest domestic tire manufacturing company in Sri Lanka. According to Mel (2011), this joint venture started operations with one plant in Kalutara. Today it has three plants with a radial tire plant established in 2006. The technology and management inputs are sourced from India. The venture manufactures a varied range of tires for all modes of transport such as light trucks, buses, trucks, vans, cars, motorcycles, and three wheelers as well. The high manufacturing cost was contained after it joined the hands with Indian tire manufacturing giant Ceat. As a result, the average annual production increased manifold as compared to previous production. It stood at 12,800 metric tons currently and was 7,400 metric tons during 1999–2002. With increased production and productivity as a result of investments in technology, the JV now exports to many Asian and European countries including Dubai, Nigeria, and Egypt. The JV also exports to India under ISFTA. It is claimed that economies of scale in tire manufacturing sector in Sri Lanka has brought the cost below the levels of Ceat's plant in India.

7.4   L&T Infrastructure and UltraTech Cement

A joint venture between L&T and National Housing Board of Sri Lanka was concluded to develop the Iconic Diamond Tower Project of Sri Lanka. The land has been secured and required permissions from the Colombo Municipal Corporation have been finalized. Apart from that, UltraTech Cement plant has also been started in Sri Lanka. The current turnover has been $US59 million which is expected to almost double in the coming years.

7.5   Telecommunications

Bharti Airtel Lanka is a subsidiary of Indian Telecom giant Bharti Airtel. It started its commercial operations in Sri Lanka from 2009 and now has distinctive feature of the fastest growing wireless operator in the island nation. Apart from that, Tata Communications Lanka Limited becomes operational in Sri Lanka in 2004. It was able to obtain an External Gateway Operator License in 2003. These provide the global telecommunications needed by the Sri Lankan customers.

Apart from these JVs and investments, many other Indian companies have started investing in Sri Lanka. Indian Oil Corporation (IOC), Taj Hotels, Asian Paints, J.V. Gokal Ceylon Pvt. Limited, Tata Housing, Piramal Glass Ceylon, ITC, and banks like State Bank of India (SBI), ICICI, Indian Bank, Indian Overseas Bank, and Axis Bank are some important investors (Doing Business in Sri Lanka 2012).

7.6   Tourism

Tourism has been an important sector and crucial for foreign exchange earnings for Sri Lanka. Total number of tourists who visited Sri Lanka in 2012 and 2013 was 1,005,605 and 1,274,593, respectively. India accounted for the highest number of tourists' arrival in Sri Lanka. Total number of tourists from India who visited Sri Lanka in 2012 was 176,340 which increased to 208,795 in 2013, a rise of 18.4 % in just 1 year (Sri Lanka Tourism Development Authority 2013). Sri Lanka also is in the top ten countries from where tourist arrivals are registered in India. It stood at fourth position in terms of tourists' arrival in India. In 2009, 2010, and 2011, a total of 239,995 and 266,515 and 305,853 Sri Lankan tourists visited India (Ministry of Tourism 2012). Thus, tourism has become an important area for cooperation between India and Sri Lanka.

8   Lessons for Bangladesh

The potential benefit of an FTA is the large trade creation by shifting manufacturing from high-cost domestic production to low-cost imports from the member country. The India-Sri Lanka Free Trade Agreement (ISFTA) has generated many possibilities and has potential to boost bilateral trade and investments in the South Asian region. Sri Lanka has benefitted a lot in terms of Indian investments and able to explore Indian technology, expanded its markets locally and globally, and explored opportunities for investment in many areas in the form of mutual cooperation and joint ventures (JVs). Sri Lanka has reaped the benefits of low-cost manufacturing in the tire segment and also able to push up labor productivity. This has initiated rising production and brought down the cost of converting raw material to finished products in the manufacturing JVs. Similarly Bangladesh can avail similar and even more benefits (geographical proximity) if it undergoes FTA with India. In the same way, Bangladesh can be benefitted after signing FTA with Sri Lanka.

Bangladesh has comparative advantage in the ready-made garments (RMG), leather, and footwear manufacturing sector. India and Sri Lanka on the other hand may take the advantage of cheap labor in garments sector and leather and footwear by collaborating with Bangladeshi companies through joint ventures. These countries can also avail benefits in the area of oil and gas exploration and in pharmaceuticals and shipbuilding industry as Bangladesh has comparative advantage in shipbuilding. Other potentials in Bangladesh are cooking gas distribution and power stations construction.

Bangladesh is one of the prime destinations for Indian investors. The free trade regime will attract more FDI from India in Bangladesh due to certain key factors such as easier access to India's north eastern region, on the one hand, and abundant availability of low-cost labor as a major incentive for setting up of manufacturing plants, on the other. The main areas where investments will have to flow are energy and power, transportation, urban infrastructure, border infrastructure, information, communication and technology, warehousing and cold storage facilities, education

services and skill development, etc. Some recent investments in Bangladesh from India are highlighted as follows:

- A deal of US$1.5 billion has been signed by Indian power sector giant NTPC with Bangladesh in order to build coal-based plant with a capacity of 1,320 MW to generate electricity. This will be Bangladesh's biggest power project aimed at fulfilling the needs of power shortages in Bangladesh. 250 MW power will be exported to Bangladesh.
- US$300 million has been invested by Indian telecom operator Bharti Airtel in Warid Telecom of Bangladesh in a view to expand the domestic operations. It has thus become the largest Indian investor in Bangladesh.
- A memorandum of understanding (MoU) has been signed with Nitol-Niloy Group of Bangladesh by India's Tata International Limited for manufacturing of footwear and bicycle. A total of US$15 million has been invested by Tata.
- Meru Cabs of Bangladesh and Tata Motors-Nitol Group underwent a memorandum of intent for investing in radio taxis in January 2010.
- Marico has an advantage to become the first Indian company to be listed in Dhaka Stock Exchange in Bangladesh. Now it announced for its expansion by investing Taka 50–60 crores which will lead to a total investment of Taka 100 crores.
- Bangladesh imports 95 % of its domestic tire requirements. Ceat India has thus announced its interest to invest Rs. 250 crores in a view to set up manufacturing plant in Bangladesh. Sixty five tons per day was expected initial capacity of this plant. It will commence production in FY2013 (Acharya and Marwaha 2012).

The level of FDI from India in proportion to the total FDI in Bangladesh shown in Fig. 28.3 is much lesser than the level of FDI from India in proportion to the total FDI in Sri Lanka. This shows how FTA is a reliable base for more FDI.

The Sri Lanka-Bangladesh current trade and investment relations are also showing many positive indications which may be also presented as follows:

- During last 4–5 years, the bilateral trade between Sri Lanka and Bangladesh has marked an improvement. The trade between these two nations at the level of US$48 million in the year 2010 has seen an increase by 73 % in 2012. It crossed the figure of US$80 million and remained at US$83.19 million (Department of Commerce of Sri Lanka 2012).
- More than US$292 million of Sri Lankan investments by 45 Lankan companies is now in Bangladesh. Bangladeshi investments in Sri Lanka, however, are at a low level of US$3 million (only in six projects) due to restrictions on capital and current investment outflows by Bangladesh side.
- This has limited the full potential of mutual investment development and protection capacity for both countries.

Thus, Bangladesh can be benefitted if it signs an FTA with India and Sri Lanka as well. Huge investments in the form of FDI or through other channels can have positive advantage in many ways. Large industries if established in Bangladesh by India may help Bangladesh develop ancillary industries locally. There is also need for diversification and commercialization of agricultural sector in Bangladesh.
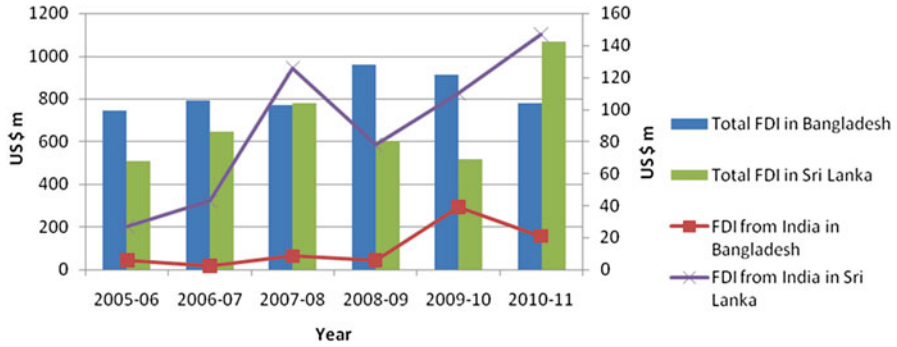
Fig. 28.3 Comparative FDI from India in Sri Lanka and Bangladesh (Source: Compiled by Authors from Acharya and Marwaha (2012) and doing *Business in Sri Lanka*, Handbook for Indian Business (2012), CII)

This sector has potential for the development of agro-based and food processing industries, limited by lack of proper infrastructure. The bottlenecks can be eliminated by reducing negative list and through more regional FDI.

9   Conclusion

ISFTA has generated a strong case for trade creation as is evident from the reduction in the negative list from volume of bilateral trade and investments in the form of joint ventures between India and Sri Lanka. The dynamic gains of an FTA like scale economies, technology transfer, trade and investment policy reforms, and competitiveness have been seen in the case of ISFTA. The scale economies and price competitiveness have been witnessed in the case of Ceat-Kelani and many other industries. India-Sri Lanka FTA has the potential for boosting more economic cooperation. ISFTA offers the conditions for more bilateral FTAs and quick and planned reduction of negative lists. Thus, only the South Asian region has a real, viable, and potential free trade that will ensure benefits as well as development of this region. India-Sri Lanka FTA has the potential for boosting more economic cooperation. It also advocates for similar FTAs with other countries like India-Bangladesh and Sri Lanka-Bangladesh in South Asian region to take the comparative advantage in the form of economic cooperation and investment. The local business entrepreneurs in smaller economies in South Asia raise the fear of losing local industry and agro-activities, but these economies may also think of intra-SAARC trade, differently. Instead of competition, these economies may look for intra-industry/intra-business compliments. Raghavan (1995) also advocates that regional economic cooperation enables the participating countries to exploit the potential of complementarities and also to establish strategic alliances between enterprises with a view to improve their

competitiveness in global markets. Furthermore, trade liberalization and regional economic integration can help a region increase intra-regional trade by exploring the size of the market as advocated by the competitive advantage of nations. Competitive advantage is created and sustained through a highly localized process, and nations can be benefitted from having strong and aggressive rivals at the domestic level and also due to strong domestic demand. Countries will thus be protected at the times of crisis due to enlarged domestic markets in the form of regional trading agreements and regional blocs. Countries would succeed only when their domestic business environment is dynamic and outward oriented. Integration is the key to innovate and upgrade in larger domestic setup. This paper may add new dimensions in the field of economic integration through boosting trade and investment. It may also pave the ways for Bangladesh to enter into bilateral FTAs in this region with India and Sri Lanka. Lack of connectivity, geopolitical issues, and asymmetry between countries of the South Asian region are the main obstacles that hindered the economic connectivity in this region. Thus, these obstacles should be removed to capture the full potentialities and expand the size of domestic markets in South Asia.

References

Acharya L, Marwaha A (2012) Status paper on India-Bangladesh economic relations. FICCI, New Delhi

Ali E, Talukder DK (2009) Preferential trade among the SAARC countries: prospects and challenges of regional integration in South Asia. Retrieved from: http://joaag.com/uploads/5_-_4_1__AliFinal.pdf

Bhagwati J (2002) Free trade today. Oxford University Press, New Delhi

Carbaugh RJ (2008) International economics. Cengage Learning, New Delhi

Department of Commerce, Sri Lanka (2012) Retrieved from: http://www.doc.gov.lk/web/index.php?option=com_content&view=article&id=111&Itemid=113&lang=en

Doing Business in Sri Lanka, Handbook for Indian Business (2012) CII in association with high commission of India, Sri Lanka. Retrieved from: http://www.hcicolombo.org/pdf/A_handbook_for_Indian_Business.pdf

Dubey M (2007) SAARC and South Asian economic integration. Econ Pol Wkly 42(14): 1238–1240

Harun YA (2010) Regional cooperation in South Asia: Bangladesh perspective in promoting economic cooperation in South Asia: beyond SAFTA by Ahmed, Sadiq, Kelegama, Saman and Ghani, Ejaz (edited). Sage, New Delhi

Lipsey R (1970) The theory of customs unions: a general equilibrium analysis. Weidenfeld and Nicolson, London

Mel Sd (2011) Ceat Kelani Holdings: a synergy driven by quality and reliability. Business today. Retrieved from: http://www.businesstoday.lk/article.php?article=3801

Meade J (1955) The theory of customs unions. North-Holland, Amsterdam

Ministry of Tourism (2012) Government of India. Retrieved from http://tourism.gov.in/writereaddata/CMSPagePicture/file/Primary%20Content/MR/FTAs/NATIONALITY-WISE%20FTAs.pdf

OECD Policy Brief (2003) Regionalism and the multilateral trading system: The role of regional trade agreements. OECD Observer, August

Plummer MG, Cheong D, Hamanaka S (2010) Methodology for impact assessment of free trade agreements. Asian Development Bank, Metro Manila, Philippines

Porter ME (1990) The competitive advantage of nations. Harv Bus Rev 68(2):73–93

Raghavan SN (1995) Regional economic cooperation among SAARC countries. Allied Publishers Limited, New Delhi

Reserve Bank of India (RBI) (2003) International trade dynamics: report on currency and finance 2002–2003. RBI, Mumbai

SAARC's Revised Sensitive Lists under SAFTA (Phase 2). Retrieved from: http://saarc-sec.org/areaofcooperation/detail.php?activity_id=35

Samuelson PA, Nordhaus WD (2007) Economics. Tata McGraw-Hill, New Delhi

Sikdar C, Nag B (2011) Impact of India-ASEAN free trade agreement: a cross-country analysis using applied general equilibrium modelling. Working paper series, no 107, Asia-Pacific Research and Training Network on Trade (ARTNet), Canada

Sri Lanka Tourism Development Authority (2013) Retrieved from http://www.sltda.lk/sites/default/files/Tourist%20Arrivals%20by%20Country%20of%20Residence%202013.pdf

Taneja N, Sawhney A (2007) Revitalizing SAARC trade: India's role at 2007 summit. Econ Pol Wkly 42(13):1081–1084

Taneja N, Ray S, Kaushal N, Chowdhury DR (2011) Enhancing intra-SAARC trade: pruning India's sensitive list under SAFTA. Working Paper 255. ICRIER, New Delhi

Tendulkar SD, Bhavani TA (2007) Understanding reforms: post 1991 India. Oxford University Press, New Delhi

Viner J (1950) The customs union issue. Carnegie Endowment for International Peace, New York

Weerakoon D (2001a) Does SAFTA have a future? Econ Pol Wkly 36(34):3214–3216

Weerakoon D (2001b) Indo-Sri Lanka free trade agreement: how free is it? Econ Pol Wkly 36(8):627–629

Weerakoon D, Thennakoon J (2006) SAFTA: myth of free trade. Econ Pol Wkly 41(37):3920–3923

Wonnacott P, Wonnacott R (1981) Is unilateral tariff reduction preferable to a customs union? The curious case of the missing foreign tariffs. Am Econ Rev 71(4):704–714

World Bank (2006) Main report. 1 of India – studies on India-Bangladesh trade: trade policies and potential FTA. World Bank, Washington, DC

World Bank (2010) Trends in average MFN applied tariff rates in developing and industrial countries, 1981–2010. Retrieved from http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/0,,contentMDK:21051044~pagePK:64214825~piPK:64214943~theSitePK:469382,00.html

World Bank (2013) Bangladesh: trade policy and integration, international economics and trade in South Asia. Retrieved from: http://go.worldbank.org/HEAGSVFC00

Chapter 29
Japan's Recovery from the "Lost 20 Years"

Susumu Yamamoto

Abstract Japan has experienced a long-term economic slump, the so-called Lost 20 Years, since the beginning of the 1990s. This paper first reviews some leading economists' diagnosis on the cause of the slump. Based on the review, an alternative view, an industrial approach, is proposed.

Keywords Recovery • Japan's Lost 20 Years • Industrial approach • Semiconductor industry

1 Introduction

When we discuss "recoveries", many in the business world may think about recovery from the global financial crisis triggered by the so-called subprime mortgage crisis. However, for most Japanese, the word "recovery" reminds them of the Great East Japan Earthquake and Tsunami that struck on 11 March 2011, claiming 15,884 lives.

As of the time of writing, 2,640 people are still missing, and 274,088 still live in evacuation shelters outside of their hometowns. Many of these evacuees face serious challenges stemming from psychological and physical stresses of relocation. The number of the so-called disaster-related death has reached 2,916 so far. While Japan should be proud that there was no looting or rioting, many Japanese are still struggling to recover from this calamity.

This being said, the word "recovery" also reminds many Japanese of the recovery from the aftermath of the "bubble economy". In the middle of this fiasco, the Japanese economy was considered invincible or "Japan as the number one" in the world. When the bubble economy finally burst, there was no time for a hangover. The Japanese economy underwent unprecedented "persistent deflation" for more than two decades. Some have called this the "Lost 20 Years". In this paper, I review how Japan's bubble formed and subsequently burst along with the accompanying persistent deflation, and I examine their influence on Japanese industry.

S. Yamamoto (✉)
Ritsumeikan Asia Pacific University (APU), Oita, Japan
e-mail: syamamot@apu.ac.jp

2   Euphoria and the Bubble Economy

It was believed that the Japanese economy was driven by "property standard" instead of the gold standard. Obviously, this relied on an almost religious belief that land price would never fall. Indeed, property price in Japan rose steadily after World War II because of rapid economic growth particularly in the 1960s and the 1970s.

From 1955 to 1985, the beginning of the bubble economy, the average annual increase rate of land price was 14.4 %.[1] The largest jump in land prices was 68.0 % recorded in 1961. Property prices dropped only once – 8.1 % dip in 1975. Consequently, by 1985, property prices had risen to 56.0 times their level in 1955 (Fig. 29.1).

Because of the steady growth of property-based assets during this period, it is no wonder that a large part of the credits that banks issued to individuals and firms was extended with property serving as collateral. Investment in property was a safe and profitable way to allocate assets in Japan. At the same time, bank credit issued to firm against property-based collateral was mostly used to invest in new technologies and to expand production capacity before the bubble economy. The rules of the game changed, however, with the signing of the Plaza Accord in 1985.
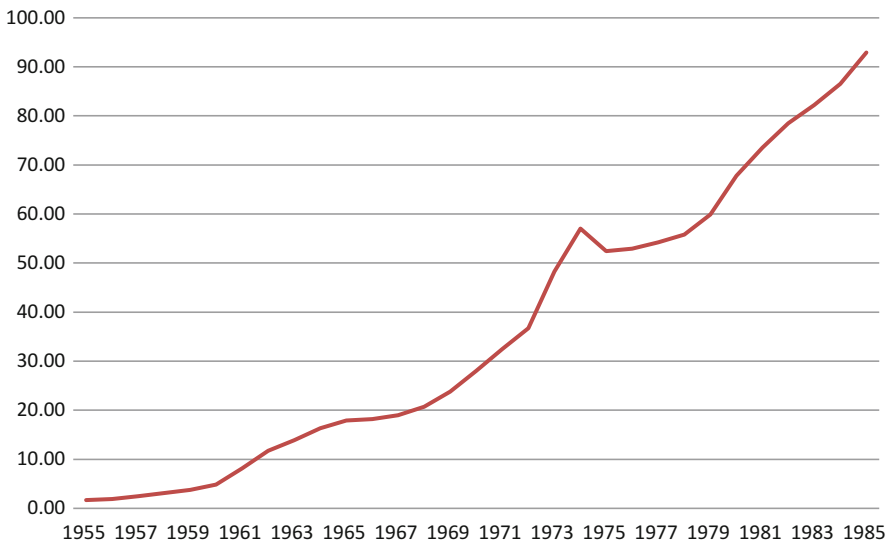

Fig. 29.1   Land price index (six major cities) (*Source*: The Japan Real Estate Institute)

---

[1] Soaring rate is calculated on the land price index of six major cities.

In the first half of the 1980s, the US dollars appreciated against the Japanese yen, German marc, French franc and British pound by almost 50 %. Although US export industries faced difficulties, Wall Street benefitted from the dollar's rise, and the US government needed the currency appreciate to combat domestic inflation. However, exporters pressured lawmakers to do something and the demand for protectionist laws mounted. Meanwhile the Reagan administration was busy dealing with the deficits, the current account deficit (including trade deficit) and the fiscal deficit.

On 22 September 1985, representatives from the G5, i.e. the USA, Germany, France, Great Britain and Japan, met at the Plaza Hotel in New York and signed the Plaza Accord. The main objective of this agreement was to make the five countries intervene in currency markets to depreciate the US dollar against the currencies of the other four countries.

This strong pill had a drastic effect on the Japanese yen which appreciated 27.2 % against the US dollar in just 1 year, from 254 yen in 1985 to 185 yen in 1986. The Japanese yen eventually reached 127 yen in 1988. This steep appreciation brought about a severe downturn in the Japanese economy, the so-called yen appreciation recession. To rescue the Japanese economy from falling into serious depression, the Nakasone administration introduced active and expansionary fiscal and monetary policy, which triggered the bubble economy.

An overabundance of money rushed into the market, particularly the stock market and the property market. People bought pieces of land which they could then use as collateral to borrow money from a bank to buy other pieces of land. Banks in those days extended these kinds of collateral-based loan for more than 100 % of the value of the piece of land. This caused property market speculation to snowball. Those who became successful from speculation did not hesitate to enjoy themselves. Sales of luxurious sports cars hit a record high, and a large number of expensive restaurants opened. The fruits of this booming economy were not evenly distributed among the people, but no one made an issue of this. The atmosphere was one of sheer euphoria.

3   The Bursting of the Bubble and the Aftermath

Alas, the party could not continue forever. After hitting its peak at the end of 1989, the stock market started to gradually decline in 1990. Two years later, in 1992, stock prices dipped to half their peak price and continued to fall. Ten years later, stock prices had fallen to just a quarter of their peak price (Fig. 29.2).

Land prices were no exception. They peaked slightly later than the stock market. The property market slump started in 1991 and continued to decline for more than two decades. The land price index in 1991 was 285.3, but in 2004, more than two decades later, it was only 68.6, less than a quarter of its peak value.
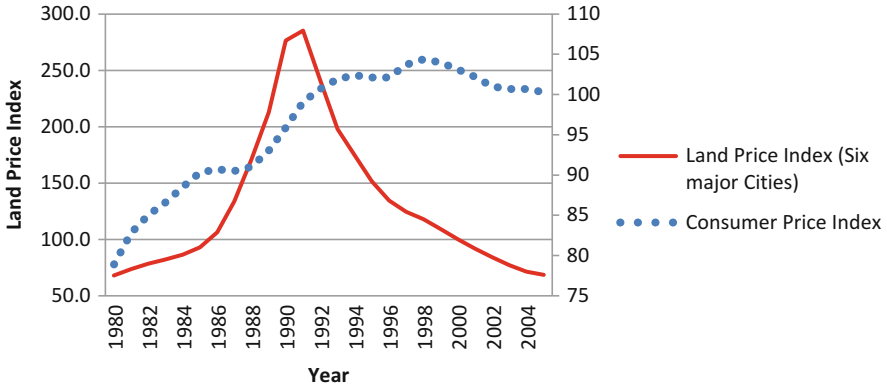
Fig. 29.2 Bubble formation and burst (*Source*: The Japan Real Estate Institute, and the Prime Minister's Office)

The asset market collapses served as a strong recessionary pressure onto the whole economy. As early as 1994, prices stopped rising, which marked the beginning of Japan's persistent deflation.

A standard textbook of macroeconomics teaches us that price adjustments may not take place instantly, but that the economy will eventually reach an equilibrium. However, it makes no mention of how long such an adjustment will take. It might take a few years, perhaps, but surely not 20 years.

4   The Long Persistent Deflation and Japanese Industry

The Japanese economy, as we have seen, has undergone deflation in parallel with stagnation for more than two decades, although there have been a few ups and downs. There are few cases in history of deflation continuing for such a long time, but Japan can still be considered a rare case in that deflation has persisted for more than two decades. We might ask ourselves why the Japanese economy has been suffering from deflation and stagnation for such a long time.

Iwai pointed out that deflation itself worsens the recessions.[2] Deflation causes the debt burden of firms and individuals to be even heavier. If debtors, under mounting pressure from their net burden of debts, postpone repayment, they may default on their loans, which will serve to further reduce demand.[3]

---

[2] Katsuhito Iwai, Nihon Keizai Shimbun, 14 March 2013, 28p.

[3] This is based on Irving Fisher's theory on "Debt based deflation process".

Fukao discussed this "insufficient demand" hypothesis from a longer-term point of view.[4] The productive population, which is the population of those aged 15–64 years old, stopped growing in the 1990s and started to decrease from the new millennium. The decline of new employees led to a substantial decrease in necessary new investment, inevitably pushing up the capital-labour ratio. This brought about a decline in the marginal productivity of capital and consequently a negative impact on aggregate investment. He also pointed that there was a substantial decline in Japan's total factor productivity (TFP), which also acted as negative pressure on investment. On the other hand, Japan has maintained one of the highest saving rates among industrialised countries. These widened the investment-saving (IS) gap and then "insufficient aggregate demand".

In fact, according to Yoshikawa,[5] firms' saving far surpassed their borrowing while the government continued to be a large borrower. This is entirely a peculiar phenomenon that goes against common sense. The main motives of running business are first to find a business opportunity and second to maximise profit by borrowing money to make an investments. The cause of this stagnant investment, he argues, is lack of innovation.

The Japanese government and the central bank repeatedly introduced expansionary monetary policies in the post-Bubble Economy decades, but these did not succeed in rescuing the Japanese economy from the doldrums. Krugman's research[6] on the liquidity trap in Japan offered some interesting suggestions. Under the liquidity trap where monetary policy becomes ineffective because the nominal interest rate is practically zero, he suggested that the central bank should make "a credible announcement to seek higher future price level". However, his model is based on a stable price rather than deflation. It might have limited applicability to the case of persistent deflation in Japan.

Having viewed these discussions, there does not seem to be any satisfactory explanation from an industrial point of view. In fact, the transformation of industrial structure and competitive environments might be one cause for the lack of innovation pointed out by Yoshikawa.

5   Changing the Rules of the Game and Business Models

In the 1970s, the American semiconductor manufacturers held more than 50 % of the global market share. In 1971, Intel launched the world's first micro-processor unit (MPU). However, by developing an integrated quality control system, the Japanese DRAM (dynamic random access memory) manufacturers became

---

[4] Kyoji Fukao, "The Lost 20 Years" and the Japanese Economy (in Japanese), Nihon Keizai Shimbun Press, 2013.

[5] Hiroshi Yoshikawa, Nihon Keizai Shimbun, 15 March 2013, 33p.

[6] Paul Krugman, It's Baaack: Japan's Slump and the Return of the Liquidity Trap, Brookings Papers on Economic Activity, 2:1998, 137–187p.

dominant players in the semiconductor market. At one point, NEC, Hitachi and Toshiba were the three largest semiconductor manufacturers in the world. In 1990, for example, six out of ten largest semiconductor manufacturers in the world were Japanese firms.

During the 1980s and the early 1990s, it was crucial for any semiconductor manufacturer to keep its yield rate as high as possible to achieve higher cost competitiveness. The Japanese manufacturers achieved higher yield rates and exported a large percentage of their products to the USA. In the face of increasing competitive pressure, American semiconductor manufacturers lodged a complaint with the US government. Given the large trade deficit with Japan, the US government demanded that Japan start trade negotiations. The result of these negotiations was the USA-Japan Semiconductor Agreement in which Japanese semiconductor manufacturers "voluntarily" restricted their export to the USA and purchased "foreign-made" semiconductors.

There seem to be two major consequences of this agreement. First, many Japanese electronics manufacturers started to import foreign-made semiconductors to fulfil the "voluntary purchase obligation". This provided Korean and Taiwanese semiconductor manufacturers with prime business opportunities. Second, the agreement was almost equivalent to an internationally authorised cartel between the two largest semiconductor manufacturing countries. Semiconductor prices kept stable and high enough to let semiconductor manufacturers enjoy lucrative business.[7]

This strong dose of medicine had a serious side effect. The agreement drastically deteriorated the competitive environment in the semiconductor market and weakened motives for R&D. In addition, the comfortable situation blinded Japanese semiconductor manufacturers to the fundamental change in the rules of the game in the semiconductor industry.

In the early 1980s, it took a few hundred million dollars to build a semiconductor manufacturing factory. However, as semiconductor technology advanced, the required investment for semiconductor factory construction rose drastically.[8]

The phenomenon in which the number of transistors on a chip increases exponentially is known in the semiconductor industry as Moore's Law. In parallel with this, economy of scale and learning-by-doing play dominant roles in determining the cost competitiveness of a semiconductor manufacturer. These imply that a company that makes a decision on a very large investment first and takes advantage of economy of scale and learning-by-doing will dominate the competition in the market.

Korean and Japanese semiconductor manufacturers are significantly different from each other. Samsung is a family-owned conglomerate where the owner exhibits strong leadership. On the other hand, Japanese manufacturers are public companies where decentralised governance prevails. In one of the largest Japanese semicon-

---

[7] "The Rise and Fall in the Semiconductor Industry Part 2", Nihon Keizai Shimbun, 12 January 2014, 11p.

[8] Hiroyuki Chuma, "Searching for Factors Deciding the Weakening Process of the Competitiveness of Semiconductor Production System", May 2006, RIETI Discussion Paper Series 06-J-043.

ductor manufacturers, Hitachi, for example, the semiconductor manufacturing business was merely one of the company's many major segments. Under these circumstances, it became increasingly difficult to obtain permission from the top management board to make huge investments in risky business ventures.[9]

After almost a quarter century, the world semiconductor market is now dominated by two giants, Intel and Samsung.

6 Conclusion

When we discuss Japan's recovery from the Lost 20 Years, the image of the country's declining semiconductor industry inevitably comes to mind. In fact, this decline coincides almost perfectly with the stagnation of the Japanese economy. This was caused by a drastic change of competition in the market and has raised questions about how quickly Japan's industries can adapt. A real sustainable recovery from the Lost 20 Years might require companies to not only forge into new business fields but also to rethink Japanese style management systems.

References

Benhabib J, Schmitt-Grohe S, Uribe M (2002) Avoiding liquidity traps. J Polit Econ 110(3):535–563

Chuma H (2006) Searching for factors deciding the weakening process of the competitiveness of semiconductor production system, May 2006, RIETI discussion paper series 06-J-043 (in Japanese)

Fukao K (2013) The lost 20 years and the Japanese economy. Nihon Keizai Shimbun Press (in Japanese)

Iwai K (2013) Essence of deflation (1). Nihon Keizai Shimbun, 28p (in Japanese)

Kobayashi Kei-ichiro (2013) Mystery of long term deflation. The Keizai Seminar, Nihon Hyoronsha, pp 24–29 (in Japanese)

Krugman P (1998) It's Baaack: Japan's slump and the return of the liquidity trap. Brook Pap Econ Act 2:137–187

Yoshikawa H (2013) Essence of deflation (2). Nihon Keizai Shimbun, 33p (in Japanese)

---

[9] "The Rise and Fall in the Semiconductor Industry Part 1", Nihon Keizai Shimbun, 5 January 2014, 11p.

Chapter 30
Crisis Communication in the Digital Era

Gita Bajaj, Anandan Pillai, and Rajen Gupta

Abstract In times of economic turmoil, companies may have to go through crisis more often than otherwise. Needless to say, PR practitioners have to manage communication during these crises. Communication among stakeholders has undergone paradigm change owing to fast-paced development of communication media technologies. Citizen-generated content is attaining prominence, and it has been observed that traditional media tends to capture news from the citizen-generated content. The high interactivity feature of new media has tremendously increased the participation of external stakeholders in the organizational conversations in public domain. This high interactivity may cause positive or negative consequences for the organization, and hence, public relations managers have to worry about the implications of this wider, faster and unmediated communication.

This research paper presents an exploratory study conducted to understand how practitioners have leveraged various digital media channels to combat crisis situations. An in-depth interview was conducted on ten senior-level corporate communication executives from varied industries. They were asked to rank 13 digital media channels in the order of their preference that they would choose to control a crisis situation. They were also asked to elaborate on advantages and disadvantages of each medium they chose. This paper presents the findings and draws up guidelines for practitioners to manage crisis communication in the digital era and directions for future research in this domain for researchers to take up.

Keywords Crisis communication • New media • Digital communication

G. Bajaj (✉) • A. Pillai • R. Gupta
Management Development Institute, Gurgaon, India
e-mail: gitabajaj04@gmail.com; rgupta@mdi.ac.in

1   Introduction

In times of economic turmoil, companies may have to go through crisis more often than otherwise. Needless to say, PR practitioners have to manage communication during these crises. Crisis communication studies have been largely descriptive in nature with focus on post-crisis situations (Avery et al. 2010). A need for prescriptive research in crisis communication was established in literature (Avery et al. 2010). Due to the increasing penetration of Internet and digital media, organizations have started adopting these media to manage crisis situations irrespective of the organization size and the crisis type (Perry et al. 2003). The citizen-generated content is attaining prominence due to easily available new media technologies, and it has been observed that traditional media tends to capture news from the citizen-generated content (Wigley and Fontenot 2011). The high interactivity feature of new media has tremendously increased the participation of external stakeholders in the organizational conversations in public domain. This high interactivity may cause positive or negative consequences for the organization, and hence, public relations managers have to worry about the implications of this wider, faster and unmediated communication (Ann Mei et al. 2010). Considering that the rhetoric is of much importance for image safeguarding or restoration during and after crisis, it is important to study the impact of new media on crisis communication.

There exist two well-established streams of research: (1) new media technologies and (2) crisis communications. However, hardly any research exists that addresses how new media technologies are leveraged by organizations to communicate during crisis situations. Hence, we decided to address this void with the help of our contribution. In this research paper, we have attempted an exploratory study to understand how practitioners have leveraged various digital media channels to combat crisis situations. An in-depth interview was conducted on ten senior-level corporate communication executives from varied industries. They were asked to rank 13 digital media channels in the order of their preference that they would choose to control crisis situation, and secondly, they were asked to elaborate on advantages and disadvantages of each medium they chose. It was found that SMS (short messaging service) was a prominent choice among respondents followed by email, mobile telephony and corporate websites. New media channels were used by few of them; however, it did not emerge as a unanimous choice among all. This paper is an attempt to draw up guidelines for practitioners to manage crisis communication in the digital era and directions for future research in this domain for researchers to take up.

2   Literature Review

Crisis Management and Communication: Crisis is a natural part of an organization's lifecycle and development (Seeger et al. 2005; Ulmer and Sellnow 2002; Weick 1988). Some scholars (Stern 1997) highlight it as part of an organization's

learning process. Studies on crisis management delve on management of the various stages of crisis and the rhetoric that accompanies it.

Crisis Management Stages: Common models depicting life cycle of a crisis are Fink's (1986) four-staged model and Mitroff's (1994) five-staged model. However, the most common and regularly used model is the three-staged model, which divides a crisis into the precrisis, crisis and post-crisis stages. But, in real life, a crisis is like a process which cannot be divided into clear-cut stages, raising questions on the applicability of these theoretical models. However, their importance cannot be disregarded because to a certain extent these models have a pedagogical and analytical value. Scholars have traditionally focused on the last stage and viewed the crisis as an anomaly, but the biased interest in this stage is a rather reactive and defensive stance (Falkheimer and Heide 2009).

Rhetoric and Crisis Management: The other construct that has received extensive attention is the management of rhetoric. Image recreation discourse is influenced by context, media, genre and text (Johansen and Frandsen 2005) (see Fig. 30.1). According to agenda setting research (Scheberle 1994), media coverage is determined by factors such as causality, responsibility and blame. The amount of media coverage and the vividness of the information shape the perception of risk or damage (Walberg and Sjoberg 2000).

Traditionally rhetoric has been managed on a mass communication paradigm. Sender-oriented perspectives and rational message distribution through traditional media has been the practice. The authenticity was judged by the type of medium used (González-Herrero and Smith 2008).

The new media influencers are different. For instance, bloggers could be important influencers and blogs can be used for crisis communication (Valentini and Romenti 2011) to address varied audience – people who blog about organizations, critics, people who are exposed to blogs of influential bloggers, media that covers blogposts and people who follow blogs for information (Jin and Liu 2010).
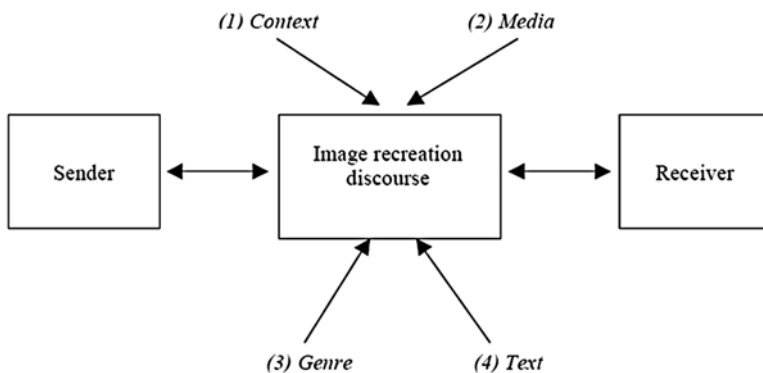

Fig. 30.1 Image recreation discourse (Source: Johansen and Frandsen 2005)

Message Strategy: Another crucial aspect of crisis communication research is the need for different **technical explanations to the diverse stakeholders**. An organization's choice of message strategy affects both how people perceive the crisis and the organization in crisis. There might be places where consistency actually decreases legitimacy if some stakeholders fail to understand the technical nature of crisis. Prior research suggests that the public wants more technical translation (Roger 2005), and the organizations are not providing those details. Augustine (2000) warns organizational leaders that during crisis, organization stakeholders often have a special need for information. They should not be abandoned by the organization and expected to get information elsewhere. The question here is if or how do organizations direct specific message strategies to different stakeholder groups during crisis.

Crisis Communication and Digital Medium: With increasing use of ICT, importance of relationship with community at large has increased substantially, communication has become a strategic element rather than just tactical message broadcast activity, media relations have become complex, Internet is not just a tool but a strategy which needs to be planned and executed carefully, communication speed has increased manifold and crisis might arise from any part of the digital economy (Goodman 2001). An effective crisis communication through a digital medium should be credible, committed, efficient, responsible and resolving in nature (Segars 2003). Organizations have understood the importance of digital medium, and irrespective of the size of the organization, they have started adopting them during crisis situations (Perry et al. 2003).

However, still very little is known about organizations' use of ICT in crises (Taylor and Perry 2005). And it still seems that organizations are generally missing the interactive potential of ICT (Taylor et al. 2001). Earlier research indicates that the need for an audience orientation to crisis communication has not been addressed properly.

The new media platforms are replacing traditional 'one-to-many' communication to 'many-to-many' model, which has brought dimensions of trust and transparency as key criteria of consideration (González-Herrero and Smith 2008) (see Fig. 30.2).

The benefits of new media over naïve one-way online communication through Internet are it allows organizations to include expertise in crisis response, allows interaction with varied stakeholders at same time, allows organization to track conversations and understand their stakeholder sentiments and provides organization an opportunity to uncover true perceptions (Fjeld and Molesworth 2006).

Thus, there exists a vast audience with the ability of multidirectional communication. Hence, the importance of sender-oriented perspective is not as vital in the new media (Falkheimer and Heide 2009). B**oth the advices – sender-oriented and rational message distribution – may not work in the new paradigm.** Therefore, there is a need for greater theoretical and practical work in this new context.

Argenti (2006) argues that technology has fundamentally changed the dynamics among corporations. As insiders and outsiders disseminate and collect information about companies at will, there is new sense of entitlement. This medium is not limited to 'business-to-consumer' conversations but is increasingly used in 'consumer-to-consumer' conversations (Hearn et al. 2009, p. 49). The users are empowered to express their views, and this has created a 'new equality in communication'.
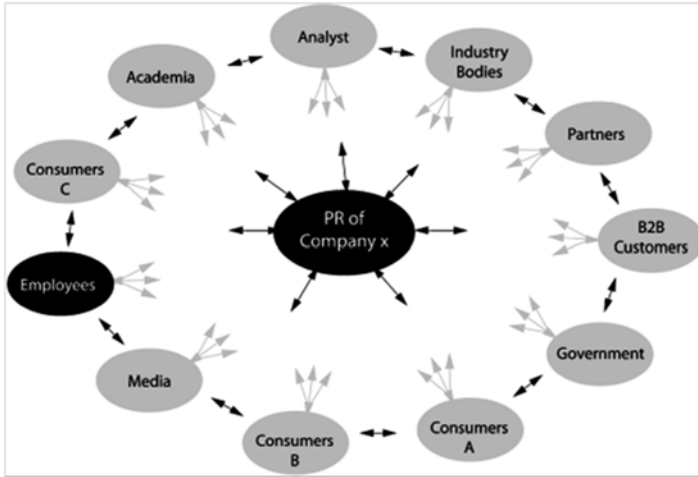
Fig. 30.2 Many-to-many model of public relations (Source: Gonźalez-Herrero and Smith 2008)

Further, the viral nature of new media platforms could be a boon or curse in crisis situations as they possess the capability to bring crisis situation under control, and alternatively the same viral capability might create a crisis situation with a just a small information. It is vital for the organizations that they understand the role of processing information and continuing interactivity in times of crisis.

The new media comprise three key layers of communication – social, content and technology (Hearn et al. 2009). These layers are evolving and in turn are continuously improvising the richness of communication between stakeholders of a firm. Thus, there is a need to understand the new media technology for seamless communication among various stakeholders like employees, customer and suppliers (Hearn et al. 2009). Ann Mei et al. (2010) suggest New Media Communication Model (Fig. 30.3) to prescribe guidelines for managing crisis on new media. The focus of the recommendations is broad and the next level of understanding would require practitioners to distinguish between the nuances of the several technologies to have distinct approaches for each.

2.1   Will These Guidelines Work for New Media?

Martin and Boynton (2005) advised five practical guidelines for organizations in dealing with press: (1) prompt response, (2) truth/avoidance of absolutes, (3) constant flow of information, (4) concern for victims and their families and (5) choice of appropriate spokesperson(s). But these guidelines advise organizations in dealing with the press rather than communicating directly with the public (Taylor and Perry 2005). A recent trend is to use the Internet for unmediated and interactive communication with the public. As above guidelines were relevant mostly for the press, and
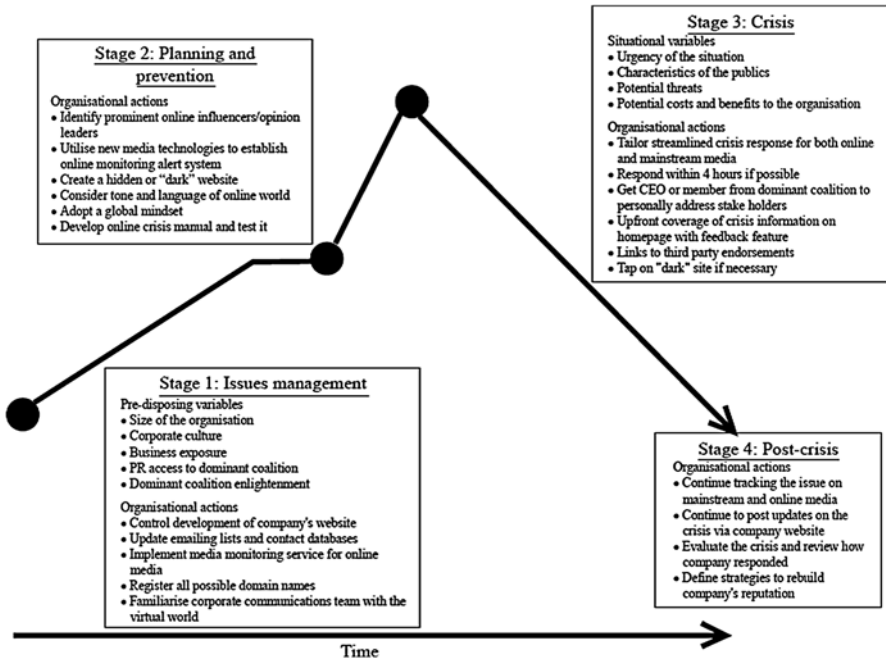
Fig. 30.3 New media crisis communication model (Source: Ann Mei et al. 2010)

not for the end user who, because of the Internet, are better informed, guidelines are needed to address the end user. Hence, this research paper attempts to understand how crisis communication could be managed with new media technologies especially from the perspective of the end user. The lack of adequate research as a background motivated us to attempt an exploratory design of research, where the focus was mainly to understand the phenomenon on a larger scale rather than build relationships or prove with any inferential statistics.

3 Research Gap

Previous crises communication literature has highlighted the importance of new communications technologies. However, rarely any research has developed a systematic method to identify which new media technologies are used or to assess their application across various crisis situations. Although, there are many relevant individual studies, there is no systematic body of research about crisis communication on new media.

4   Research Objectives

The prime objective of this research paper was to identify the new media technologies that were applied in practice by organizations to address crisis situations. Secondly, we intended to understand the differential advantage or disadvantage that one particular technology had over other available technologies. Thirdly, we tried to identify probable course of actions that practitioners could adopt in future while facing crisis situations, and finally, we attempted to identify some research areas that crisis communication researchers could target in future studies.

5   Research Methodology

Unit of Analysis and Data Collection: The unit of analysis for our research was an organization. Crisis communication decisions are made by senior-level corporate communication executives in an organization. Hence, we decided upon such senior-level executives as unit of data collection. The basic assumption was that these executives were aware of new media technologies that were prevalent in the media industry and had used some of them in past few years. The basic purpose of interviewing these respondents was threefold – (1) to understand their experience of new media technologies, (2) to understand the concerns and challenges that they faced while using new media technologies and (3) ways in which they have dealt with those challenges. Our objective was to capture live experiences of these respondents and present key learning which could be helpful for future practitioners. Our secondary objective was to identify research questions which could be of interest to future researchers.

   Data Collection: Owing to the little literature that exists in this domain, a detailed understanding of the topic was essential. Hence, we adopted the interpretative approach. We attempted phenomenological interviewing method (Roulston 2010). This interviewing method enabled us to examine respondents' live experiences with the crisis situations and the response actions that they took in those situations. The major motivation of interviewing senior-level executives was to understand their feelings, perceptions and understandings in their own words. We conducted in-depth unstructured interviews of ten senior-level corporate communication heads of leading organizations. In order to have a broader understanding of the topic, we decided to have representatives from varied industry sectors (see Table 30.1).

   Respondent Profile: As we were attempting an exploratory study, we focused on diversification of respondents to ensure we captured varied perspectives. The intention was not to aim for generalization of results, which is not an objective in exploratory studies (Yin 2011). Hence, we chose senior-level communication executives from varied and major industries like banking, automobiles, retail, oil and gas, financial bodies, etc. (see Table 30.1 for details). Initially, these respondents were asked to rank the importance of impact of the 13 new media technologies/applications on

Table 30.1 Respondent profile

Respondent identity	Designation	Industry
R1	Head, Corporate Affairs	Financial regulatory body
R2	CEO	Organized retail
R3	CEO	PR agency
R4	Head, Corporate Communication	Oil and gas
R5	Head, Corporate Communication	Banking
R6	Head, Corporate Communication	Conglomerate
R7	Head, Corporate Communication	Stock exchange
R8	Head, Corporate Communication	Automobiles
R9	Sr. Manager, Corporate Communication	Banking
R10	VP, Corporate Communication	Banking

crisis communication (Appendix A1). For communication applications that they ranked as the top 5, in-depth questions were asked to unravel what were the concerns of the practitioners, regarding these applications and what these practitioners were struggling to handle.

6 Findings

The rankings of all respondents are provided in Appendix A1.

Ranking of New Media Technologies: The initial ranking data were subjected to descriptive analysis to understand which new media technologies scored importance among the corporate communication executives. As the number of respondents was less for an inferential statistics, we settled with just the descriptive analysis. Each new media technology that gained position in top 3 ranks for a respondent was calculated, and the most widely preferred technology was inferred. It was found that 70 % of respondents consider SMS to have major impact in crisis situations and ranked it in top 3 positions. Secondly, 60 % of respondents considered emails to be of importance. Thirdly, 40 % of respondents ranked mobile telephony as important medium in crisis situations. About 30 % of respondents voted for websites and blogs as relevant mediums during crisis situations.

Analysis of Interview Data: The recorded interviews were first converted into transcripts. Thereafter, interviews were read and analysed by two of the authors, and interpretations were matched with each other's to gain consistency. The thematic analysis (Roulston 2010) was performed on the interview transcripts, where the focus was to generate themes, which captured the description of events and actions taken by respondents in those situations.

SMS/Mobile Phone: From the practitioners' responses, SMS and calls through mobile phones have emerged as the prime and the third most critical IC applications, respectively. One of the prime concerns in their regard is that in case of a malevolent

SMS/MMS, it is difficult to trace who all have been informed and therefore difficult to reach the right audience. For obvious reasons, the two-pronged approach that any company adopts is (1) to reach out and respond to the relevant audience that has read the SMS/MMS and (2) to track where the SMS/MMS originated. The second activity requires communication practitioners to have links with mobile companies that are to finally track the originator. Also, considering the tight privacy regulations that mobile companies have to follow, the communication professionals have to go through the Cyber police to lodge an FIR and get the desired information. However, SMS had some benefits as respondent R2 mentioned:

> SMS is most important because of following reasons, 1. Reach is very large, 2. Mind space occupation is high i.e. it definitely gets the personal attention and 3. The attention is received instantly

It requires special attention in addressing the information receiver's concerns. For instance, it would have been fairly easy for an organization to reach the same target audience with a common message to all through a newspaper or television. The SMS/MMS audience spread is however viral and uncontrolled, and therefore, it is difficult to find out who all have received the message. Thus, ensuring that the message traces the path of the original message seems undoable. What could a practitioner do in such circumstances?

One of the practitioners shared that reaching the target audiences is possible if the audience is known (e.g. the client database). One could send an SMS and have a call centre set up to respond to further queries. The challenge here is the training of the call centre executive 'who may end up parroting the response rather than responding'. Thus, one of the critical aspects is writing the SMS to be communicated and training/handing the client queries.

Another source of worry was the credibility and emotion that an SMS or mobile conversation from a known person evokes. Practitioners felt that when a person you know confirms the news, people associate with it better, they act on it and it gets propagated through a viral network. The respondent R7 emphasized relative importance of SMS vis-à-vis telephone call as he expressed:

> During crisis, I stop taking telephone calls because it is impossible to respond to so many journalists who wish to reach out to me. So, I don't take anyone's calls and focus first on website and emails. This also ensures fast and correct dissemination of information. Then I respond to the SMSes. Thereafter I take calls of the media. This is because not everyone is in online at that moment and therefore all mediums have to be kept updated.

Online marketing professionals have been using this opinion to their advantage but during crisis when negative message spreads through this application, implications are opposite. Practitioners need to learn how they can use this association to their advantage during crisis. Also, practitioners need to keep track of cyber policies, telecom regulations and accordingly adapt themselves.

Email: Respondent R1 clearly highlighted the benefits of email as he mentioned:

> Email has made it very convenient to share complex technical information. It has also ensured that more accurate information is made accessible to the journalists

With email as the channel of communication, a journalist's query along with the date and time lands in the mailbox of the communicator. It is therefore impossible for the latter to avoid a journalists' query which in yesteryears was on telephone and could be avoided. The communicator is thus bound to respond, and with responses over emails, it is not possible for a communicator to even deny a quote. The liberty is much less than when the questions were asked verbally.

Every country would have some or other information dissemination/transparency laws (for instance, Right To Information Act in India), to which an organization should abide and respect the laws. Corporate Communicators must now respond at a much faster pace, with accurate information, and therefore, the internal communication and approval mechanisms have to be extremely robust and nimble to respond effectively. *Practitioners must now review the organizational communication mechanism to enable smooth flow of correct information from varied channels and levels to make the response effective.*

Crisis situations always demand quick response. Researchers can study how much more paced up it is expected to be now and what implications it would have on organizational structure and communication in this context.

Key concern that relates to malevolent chain emails is same as that for viral SMS except for that mass SMS costs more to the sender than mass emails. For instance, respondent R1 who was associated with the Reserve Bank of India shared his experience of malevolent email and how RBI responded immediately to avoid future damage. He said:

> Emails announcing non-existent lotteries have been able to cheat many people. In one of the fraud chain emails, an authentic looking letter from the RBI Governor substantiated a lottery. After sending the email, a lady called Kangana Kapoor who claimed to represent RBI called the recipients. When it came to RBI's notice, it uploaded announcements on its website and the announcement ticker was running all the time in 13 Indian languages to inform people of this cheating.

Thus, implications for practitioners and researchers are similar. One of the respondents felt that email chains are not credible, and therefore, their company does not bother to respond to malevolent chain emails. Yet, email emerged as the third highest concern among practitioners.

The other side of the argument is that with emails it is possible for anyone to reach any key influencer, say the authority, the stock exchange, the newspaper, etc. and thereby cause major implications for the target company which may be unaware of the same and therefore unable to respond.

Thus, three key concerns of communicators were (1) if a journalist sends an email posing a question, Corporate Communicators are bound to respond. This response is also bound by a deadline. (2) If there is a chain email spreading among stakeholders, it is difficult to trace the origin. (3) Consumers and offenders now have more access to authorities, regulatory bodies, grievance cells etc.

Websites: A newspaper is read in specific regions depending on its circulation; a TV channel may be available in one region and not in another, again depending on the coverage rights. However, anything posted on the Internet is accessible across the globe. Be it a journalist, a stockbroker, a competitor, a consumer or any other

stakeholder, the access is instant. This could be a threat because all stakeholders have access to a medium that allows them to broadcast their views, opinions, grievances etc. On the other hand, companies now have a choice of voicing their response on their websites and thus reaching larger and wider audiences instantly. As respondent R7 mentioned:

> Why we consider website first is because a lot of people log on and try to see the information. Communication has to be controlled during a crisis & website is a space where you do have control on what's being communicated

Thus, websites can be a great relief because there is universal access. So in times of crisis, one can post one's response on their own websites and on related websites that drive traffic to their websites. This may circumvent the need to respond to multiple perpetrators.

But, this too comes with a caveat. If a company responds on the website, it goes on record. Record is archived forever. Second, a company has to ensure legal compliance before responding. Third, if it also has to construct a response, for instance, a video, an audio, etc., and that takes time. This again has paced up race against time, once the exposure has happened. One of the practitioners shared experience of a server crashing due to traffic overload. This can be another challenge as a failing server can further pique or irritate the audience. Moreover, there could be other issues as respondent R1 mentioned:

> The other side of the coin is the possibility of hacking the website which can have very damaging effects

and according to respondent R2:

> The negative side is that this means is passive or one way communication only

Hence, some of the key issues that practitioners need to address are to understand and adapt to legal rules related to websites and to establish a seamless process within organization to collate information from various departments and disseminate it through website.

Social Networking Websites (SNWs): With most social media networks coming into existence towards the turn of the century (year 2000), SNW is a more recent development among all the IC applications and users, and researchers are exploring the huge and yet to be tapped potential of this medium. Still it has emerged as the fifth major concern among practitioners. The increasing popularity of Facebook, Orkut, LinkedIn and many others has created unprecedented connects among friends, professionals and strangers. Some have emerged as a network of friends and others as a network of professionals. Just like websites, here too the access is not regional; it is much wider, viral, but unlike a website it cannot be controlled. The personal touch or association attached with the source can possibly increase the credibility and readability of the information as respondent R8 emphasized:

> There is absence of authority and everything is transparent there. One has to be present there. The modus is ask me or tell me. I am actively promoting this initiative but one needs resources. People to support and publicize it. This requires offline promotion.

Further, respondent R10 highlighted the network effect as she mentioned, '*SNWs have a force multiplier effect. Complete transparency is there and therefore cannot be ignored'*.

Online marketers are already employing these characteristics of SNWs to promote their cause. When the message spreading on this medium is negative, the implications are opposite. Crisis communicators have to deal with these implications and explore how they could use it to change the crisis into an opportunity. Moreover, communicating through SNWs requires adequate quantity of relevant content that could convey the message an organization intends to, which is a huge challenge as respondent R10 highlighted:

> It requires rich media like audio, video etc. which takes time to produce and it is often a race against time to contain damage, once exposure occurs.

Hence, organizations need to understand the needs of target audience and accordingly match the social object. Also, its key to understand the privacy and regulations related to data sharing on social networking websites.

Consumer Forum Websites (CFWs): CFWs are focused and mostly domain centric as respondent R10 mentioned:

> Its focused and domain centric to a particular class of product and business so requires a high level of technical, product awareness and knowledge.

They also have a force multiplier effect as the complaints may get picked by print, TV and/or radio, thereby increasing the criticality of the issue. But today consumer forums are an agenda on TV, print, radio, etc. also. However, TV and radio are one time access. Unless the TV and radio companies air the message again and again, access is not unlimited. Accessing archives requires money and effort. In case of CFWs however, the voices get archived and these archives are easily accessible to all. So gathering momentum when a crisis hits may be more feasible here than in any other space.

Podcasting: Audio and video have higher impact than text. With applications like YouTube, everyone has the option of uploading videos to broadcast. With option of podcasting available now, larger number of interested people can get relevant digital audio and video files with very little effort and time lag. Thus, the access to these files is increased but the screening of content broadcasted is missing. Thus, anyone can voice whatever they wish to, and whoever is ready to listen can join the group. In the absence of screening, the test of authenticity and credibility of information is missing, and it is difficult to segregate news from fiction, and hence, there exists a challenge in using this medium as respondent R6 mentioned:

> Create negative noise across the world, make an issue a larger issue than required.

Lack of this distinction can become important in times of crisis when the victims of crisis, competitors and media have access to the medium, but the reader is not aware of who is sharing the information and what could be the agendas behind the information.

Blogs: Blogs emerged as the fourth dreaded IC application among the practitioners. Anyone can start his/her blog. But only a persistent blogging with thought and

marketing capability has followers. There are debates on credibility of blogs, but a blog with large following/readership cannot be ignored, as respondent R2 highlighted:

> They too are important because they are real time. They are becoming powerful as they have a wide audience and the message can be managed.

Some practitioners shared that bloggers pick up stuff from each other, and therefore, quotes around the world can damage reputation. The challenge for a practitioner starts from knowing what has been written when and where. Many companies have official blogs to communicate with people. However, not all companies are ready to invest into blogs, and many are anxious about the implications of the same, as respondent R5 shared her insight:

> It is an unconventional communication; people are shrill; they use it as a last resort; customer complaints only when the case is extreme; during crisis tracking the source is difficult.

Twitter has introduced the option of microblogging and increased by many folds the participation of people. Everyone is welcome to share what they are doing. Experiences of Shashi Tharoor, Chetan Bhagat and Amitabh Bachchan are examples of crisis that large fan following can throw on you. The larger the number of followers, the larger is your access to people. But not everyone has large number of followers.

Online Surveys and Newsletters: Online surveys and newsletters have surfaced as low concern areas of the practitioners. However, one may argue that surveys and many interactive newsletters engage the readers more than plain text news. Online surveys are extensively used by television and print medium and do seem to have an impact. However, considering the low concern of the practitioners, it may be worthwhile for researchers to study the impact of surveys and newsletters.

The insights shared by practitioners helped us understand uniqueness of using a particular new media technology in crisis situation. We have suggested a few guidelines for practitioners based on our interview data which would be helpful for them in preparing themselves for crisis situations (Appendix A2).

7 Summary

The literature review helped us understand that there is a need for a process-oriented theoretical as well as practical development rather than a stagelike explanation of crisis because in reality crisis cannot be segregated into stages. The review of literature also suggests that scholars have largely focused on the last stage of crisis, but in today's age of virally networked communication, it becomes very essential for practitioners and organizations to be prepared for any kind of crisis. Hence, it is important to study crisis as a process so that quick and effective communication strategies can be employed at any stage of the crisis. Secondly, in the past researchers have largely concentrated on dealing with the traditional media but have had less orientation towards the audience who possess the power of content creation in the new age media.

This research paper helps one understand (1) insights on practitioner experiences and perceptions and (2) guidelines for practitioners and research agenda for researchers.

8 Conclusion

This research paper establishes the need for awareness of the legalities associated with new media technologies. It is necessary to scan, monitor and manage communication on new media in a perpetual manner. These new media technologies have enhanced the scope of both coverage and vividness of information, and hence, it has become inevitable for organizations to develop an expertise to use these technologies and communicate effectively with their stakeholders during crisis situations. The critical part of new media technologies is to sustain the communication in a dialogic manner rather than one-sided information dissemination process. Organizations should plan accordingly to prepare and equip themselves in precrisis stage. Precrisis stage may assume greater importance in the new age as reactive strategies may be more difficult to implement on these new media technologies.

Finally, this paper suggests an agenda for researchers and guidelines for practitioners to better understand the new media technologies for effective use in crisis situations when conversation in real time becomes a necessity to save an organization from much harm.

9 Future Directions of Research

The potential of new media usage would increase on a larger scale in the future, and hence, end users would be better informed than they were in the era of traditional media. This research clearly establishes the necessity to leverage new media technologies during crisis situations. However, it is surprising to note very sparse literature exists in this intersection domain of new media technologies and crisis communications. We based on our interaction with the respondents have identified potential research areas that researchers could attempt in future with respect to each new media technology.

It has been noticed that there is insufficient direct information available about the information-seeking behaviour of individuals during a crisis (Seaton 2005). This could be a potential domain of research, where researchers focus on understanding end users' information-sourcing behaviour from new media technologies during crisis situations.

Also, we have suggested few research arenas that future researchers could pursue in the integrated research domain of crisis communication and new media technologies (Appendix A3).

10   Limitations

This paper provides researchers an agenda for future research and practitioners learning from peer experiences. However, the conclusions may not be exhaustive as the findings are based on interviews of a small number of practitioners from India. But, we believe the insights presented in this research paper would be relevant to organizations based in developing countries and emerging economies. A larger set of interviewees could have revealed more areas of research and could have lent itself to quantitative inferences. Practitioner guidelines are also based on analysis of peer experiences. Interviews were conducted only of senior-level executives; however, communication decisions in an organization may get affected by thoughts from various team members. So, it would be advisable for future researchers to interview multiple members from each team to have a comprehensive perspective.

Appendices

Appendix A1: Ranking of New Media Technologies by Respondents

New media technologies	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10
SMS	3	1	7	1	3	1	2	–	2	9
Mobile telephony	1	–	10	1	2	9	–	–	3	13
Email	2	–	8	5	1	2	1	3	5	1
Websites	4	4	13	9	4	3	1	–	10	2
SNS	6	3	1	13	10	4	–	4	4	3
Microblogging	–	3	4	10	9	8	–	–	13	10
CFWs	–	–	6	8	6	10	–	13	6	4
Podcasting	–	–	3	5	11	5	–	–	12	6
Blogs	–	3	2	8	5	7	–	2	1	5
Online news channels	5	2	5	7	7	12	–	–	7	8
Online newsletters	–	–	11	7	8	13	–	1	9	12
Online surveys	–	–	12	13	12	11	–	–	8	7
MMS	–	–	9	3	13	6	–	–	11	11

Note: The '–' indicates that a particular respondent did not use that new media for any purpose.

Appendix A2: Agenda for Practitioners

Medium	Agenda
SMS/mobile phone	Understand cyber policy and regulations
	Be updated about mobile service provider procedures
	Possess access to skilled and trained call centre executives
	Develop skills of appreciating and using messaging through this medium
Email	Scan each email as part of continuous process to avoid crisis at very early stage
	Be aware of cyber policy and regulations
	Have sufficient knowledge of Internet companies' procedures and people involved in tracking mechanisms
	Hone the skill of appropriate messaging through email
	Identify appropriate key influencers who could be leveraged as spokesperson during crisis situation
Website	Ensuring systems for quick legal vetting
	Expertise in constructing media-friendly messages such as video, audio etc.
	How do online news channels function?
	What is the organizational structure and method of collecting news in case of online channels?
Social networking websites (SNWs)	Match the social object that a particular SNW offers with that of the characteristics of target audience
	Understand the individual privacy and data sharing rules on these SNWs
	Execute relevant content strategy that ensures more positive engagement with the stakeholders
Consumer forum websites (CFWs)	Identify popular CFWs in respective domain
	What are the operating and success parameters of CFWs?
Podcasting	Continuously scan all pertinent/relevant podcasts
	Develop the skill of quickly making audio/digital footage
	Have clear understanding of the IC companies' policies of uploading, removing and podcasting. Have clear understanding of legal policies on the subject
Blog	Identify leading and influential bloggers in the respective domain
	Arrange for blogger meets and build long-term relationship with them
	Identify the widely discussed topics during crisis situation, address them and prepare to be ready with a response strategy for any explanations expected by blog readers
Online surveys and newsletters	Possess expertise in developing effective online surveys
	Should have capability to come up with relevant content in newsletters at regular intervals

Appendix A3: Agenda for Researchers

Medium	Agenda
SMS/mobile phone	Establish the differential advantage of using SMS compared to other traditional mediums like newspaper, TV etc.
	Compare the relevance of message content communicated by this medium to respective stakeholders and its effectiveness vis-a-vis if it was done by print or television
Email	Identify appropriate proactive/reactive strategies that can be applied to handle crisis situations through email
Websites	Establish relationship between hierarchy within organizations and readiness to follow an appropriate crisis communication process
	What attributes a company should consider before disclosing an official statement on third party websites?
	Establish impact of credit ratings of websites on information sharing decisions during crisis situations
Social networking websites (SNWs)	What would be the impact of reach and virality of a particular SNW on effectiveness of messaging?
	Establish SNW content characteristics that result in effective control of crisis situation
Consumer forum websites (CFWs)	Establish entry and exit barriers of users for CFWs
	What would be the implications of differences in the governing laws in different countries?
Podcasting	Establish impact of rich media communication such as podcasting platforms, in containing crisis situation
	How would the image of a person featured in the podcast influence the ability to control a crisis situation?
Blog	What blogging strategies should firms follow during crisis?
	What methods should be developed to verify credibility, tone and pitch, description and other evaluative detail of messages posted on blogs?
Online surveys and newsletters	Is it critical to monitor all surveys/newsletters/channels or should the follow-up be limited to the prominent ones in relevant domain? Is it critical to build relationships with online hosts? Does it matter?

References

Ann Mei JS, Bansal N, Pang A (2010) New media: a new medium in escalating crises? Corp Commun Int J 15(2):143–155

Argenti P (2006) How technology has influenced the field of corporate communication. J Bus Tech Commun 20(3):357–370

Augustine NR (2000) Managing the crisis you tried to prevent. Harvard Business Review on Crisis Management. Harvard Business School Press, pp 1–32

Avery EJ, Lariscy RW, Hocke T (2010) A quantitative review of crisis communication research in public relations from 1991 to 2009. Public Relat Rev 36:190–192

Falkheimer J, Heide M (2009) Crisis communication in a new world: reaching multicultural publics through old and new media. Nordicom Rev 30(1):55–66

Fink S (1986) Crisis management: planning for the inevitable. AMACOM, New York

Fjeld K, Molesworth M (2006) PR practitioners' experiences of and attitudes towards, the internet's contribution to external crisis communication. Corp Commun Int J 11(4):391–405

Gonźalez-Herrero A, Smith S (2008) Crisis communications management on the Web: How internet-based technologies are changing the way public relations professionals handle business crises. J Conting Crisis Manag 16(3):143–153

Goodman MB (2001) Current trends in corporate communication. Corp Commun Int J 6(3):117–123

Hearn G, Foth M, Gray H (2009) Applications and implementations of new media in corporate communications: an action research approach. Corp Commun Int J 14(1):49–61

Jin Y, Liu BF (2010) The blog-mediated crisis communication model: recommendations for responding to influential external blogs. J Public Relat Res 22(4):429–455

Johansen W, Frandsen F (2005) Crisis communication and the rhetorical arena – a multi-vocal approach. In: Conference on corporate communication, Wroxton

Martin, Boynton (2005) From liftoff to landing: NASA's crisis communications and resulting media coverage following the Challenger and Columbia tragedies. Public Relat Rev 31:253–261

Mitroff II (1994) Crisis management and environmentalism: a natural fit. Calif Manage Rev 36(2):101–113

Perry DC, Taylor M, Doerfel ML (2003) Internet-based communication in crisis management. Manag Commun Q 17(2):206–232

Roger B (2005) Crisis management plans and systems of exporting companies: an empirical study. J Eur Mark 17:7–30

Roulston K (2010) Reflective interviewing: a guide to theory and practice. Sage Publications Ltd., London

Scheberle D (1994) Radon and asbestos: a study of agenda setting and casual stories. Policy Stud J 22(1):74–86

Seaton J (2005) Carnage and the media: the making & breaking of news about violence. Allen Lane, London

Seeger MW, Ulmer RR, Novak JM, Sellnow T (2005) Post-crisis discourse and organizational change, failure and renewal. J Organ Chang Manag 18(1):78–95

Segars AH (2003) Effective communication of corporate crises through the internet. Bus Strategy Rev 14(3):44–48

Stern E (1997) Crisis and learning: a conceptual balance sheet. J Conting Crisis Manag 5(2):69–87

Taylor M, Perry DC (2005) Diffusion of traditional and new media tactics in crisis communication. Public Relat Rev 31(2):209–217

Taylor M, Kent ML, White WJ (2001) How activist organizations are using the internet to build relationships. Public Relat Rev 27(3):263–284

Ulmer RR, Sellnow TL (2002) Crisis management and the discourse of renewal: understanding the potential for positive outcomes of crisis. Public Relat Rev 28(4):361–365

Valentini C, Romenti S (2011) Blogging about crises – the role of online conversations in framing Alitalia's performance during its crisis. J Commun Manag 15(4):298–313

Wahlberg A, Sjoberg L (2000) Risk perception and the media. J Risk Res 3(1):31–50

Weick KE (1988) Enacted sensemaking in crisis situations. J Manag Stud 25:305–317

Wigley S, Fontenot M (2011) The Giffords shootings in Tucson: exploring citizen-generated versus news media content in crisis management. Public Relat Rev 37:337–344

Yin RK (2011) Qualitative research from start to finish. The Guilford Press, New York

Chapter 31
Mutual Impacts of Human Resources Management and Knowledge Management: Issues of Functions and Effective Factors

Jelena Horvat and Samo Bobek

Abstract Knowledge management (KM) and human resources management (HRM) are increasingly regarded as key leveler of competitive advantage and are one of key areas for management in recovering markets especially in knowledge-based economies. Combination of KM process and organizational skills and intellectual capital as a strategic organizational asset enables the increases of organizational effectiveness. Human resources, employees and their effective managing are essential for the company, and the people's most valuable resource is knowledge; therefore, HRM and KM are closely interrelated. In this paper, mutual impacts between knowledge management and human resources management are explained based on theoretical findings, and as a result, a preliminary model assessing the impact of human resources issues on knowledge management is presented. In the model, HRM is observed from two aspects: (1) *functions* which are derived from the 'best fit' among 'recruitment and selection of employees, training and development and performance appraisal' and (2) *effective factors* which are 'empowerment, quality of work, culture, individual factors and learning'.

J. Horvat (✉)
Faculty of Organization and Informatics, University of Zagreb,
Pavlinska 2, HR 42000 Varaždin, Croatia
e-mail: jelena.horvat@foi.hr

S. Bobek
School of Economics and Business, University of Maribor, Slovenia,
Razlagova 14, 2000 Maribor, Slovenia
e-mail: samo.bobek@uni-mb.si

1   Introduction

In today's shift to a knowledge-based and highly complex business environment in order to achieve sustainable competitive advantage, organizations are trying to facilitate collection, storage and distribution of knowledge. Human resources are key components in every organization representing total knowledge, talent, attitude, creative ability, aptitude and belief of an individual involved in an organization (Dhamija 2012). New and essential asset of companies resides in the minds of employees; therefore, organizations have to convince and motivate their workers to create and share their knowledge. Knowledge management (KM) and human resources management (HRM) are increasingly regarded as key leveler of competitive advantage in global, dynamic and complex business environment (Brewer 2010) through which a company can enhance performance, innovation and practices (Wang and Wang 2012). The two concepts, people and knowledge, considering from the context of knowledge work, are inextricably joined (Oltra 2005). The contribution of HRM to KM is at the high end of value chain as it is primarily used to create and sustain a culture that fosters innovation, creation, creativity and learning (Chivu and Popescu 2008).

Combining these two areas of management, various researchers have analysed segments of their mutual impacts. Based on previous research, this paper aims to explain several important findings on the mutual impacts between knowledge and human resources management and to propose a preliminary model based on theoretical analysis and research activities.

2   Theoretical Background

Knowledge, as the most important intellectual property and asset of the company (Collins 2010; Chan et al. 2011), is conceptualized as codified information and enhances the companies' value and achievement of its objectives (Anand and Singh 2011). Its importance has been recognized in the 1990s and after that literature began to publish research and analysis regarding knowledge and management (Jengard 2010). Authors deliver different definitions of knowledge and knowledge management, but they all have income that knowledge in organizations is an essential element in defining career success of employees and it combines all of their skills (Fong et al. 2011). The term knowledge management does not imply just a set of technologies or methodologies, but also a practice and discipline which involves interaction of people, processes and technology. Importance of knowledge management lies in the fact that it could result in empowerment of individuals and an organization itself to accomplish activities effectively through organizing of knowledge (Jantz 2001). It is defined as creating, acquiring, storing, sharing, transferring and utilizing both explicit and implicit forms of knowledge at individual, group, organizational and community level through harnessing of people, process and technology (Madhoushi et al. 2010). Generally, it relates to unlocking and leveraging the knowledge of individuals to gain appropriate knowledge from appropriate individuals in appropriate time (Hutchinson

and Huberman 1994). Iske and Boersma (2005) identified ten different approaches of knowledge management: strategic and human resources management approach, learning organization and intellectual capital approach, knowledge technology, ICT and organizational approach, innovation approach and network and quality control approach. Territory and aspects of knowledge management lately have been dominated by two main factors – the supporters of information and communication technology (ICT) and the human resources management (HRM) views.

Human resources management includes decisions that affect the success of business, with aim of achieving long-term company strategy (Noe et al. 2000 p. 4). This specific area of management has been explored throughout the last few decades, and various authors have defined range of classification and functions of HR management. Renuka and Venkateshwara (2006) defined seven practices of HRM, whereas Fombrun et al. (1984) summed up five 'generic' HRM functions which are performed by different HRM practices in organization, and Foot and Hook (2008) defined 17 main areas of human resources management activity. Human resources practices and functions differ from industry to industry as well as from size of the organization. Exploratory analysis and overview of the meaning of HRM in 104 empirical articles published in internationally refereed journals (1994–2003) has been done by Boselie et al. (2005). Based on content analysis, their findings have revealed that majority of the studies define HRM in terms of HR practices or bundles of practices. There is no fixed list of generally applicable HR practices that defines HRM. Taking in consideration that there is no universal prescription for HRM policies and practices and everything lays on the organization's context, culture and its business strategy, it is important for every company to find the 'best fit'. In addition to HR functions, literature defines several effective factors that lead to enhancement of HR productivity: employee empowerment (Greasley et al. 2005), quality of work, (Cole 2005; Lin 2007), culture (Özbebek and Toplu 2011; Hussock 2009), individual factors (Attafar et al. 2012; Lin 2007) and learning (Dicke et al. 2006). These factors have impact on HR productivity and can be influenced by internal and external elements in HR process.

One way of HRM to reinvent itself is through contribution to effective linkages between human capital and knowledge management within organizations (Gloet and Berrell 2003). The aim of knowledge management is to support and enhance the employees' knowledge processes, and therefore, it is important to identify different knowledge management initiatives that HR practices need to support. Below, the mutual impacts between knowledge management and human resources management will be explained based on theoretical findings, and as a result, a preliminary model assessing the impact of human resources issues on knowledge management is presented.

3 Linking HRM to KM

The role of HR is to be a human capital steward, knowledge facilitator, relationship builder and rapid-deployed specialist, whereas the knowledge management has the capacity to significantly expand the role of professional human resources

management (Gloet 2002). The HR view in KM is increasingly gaining more attention in recent years (Brewer 2010; Ahmed and Ahmad 2012), also various researchers (Davenport and Völpel 2001; Hussock 2009; Ishak et al. 2010; Lin 2007; Oltra 2005; Özbebek and Toplu 2011; Theriou and Chatzoglou 2008; van den Hooff and de Ridder 2004; and many others) have been interested in the area of knowledge management and employees, combining it with perspectives of strategic, project management and information technology.

Significate impact on the research in fields of KM and HRM had Gloet (2002). With the model of relationship between KM and HRM, Gloet (2002) specified that there is a greater need to revitalize human resources function to respond to demands of the knowledge economy and to develop linkages with KM which requires major changes across four key areas: roles, responsibilities, strategic focus and learning focus. Several years later Chivu and Popescu (2008) analysed the main role of HR in knowledge management. Concluding that human resources help organizations to articulate the purpose of KM systems, they perceived HR management as a knowledge facilitator and experience creator and which has to integrate effective knowledge sharing and usage into daily life. They discussed the ways in which specific functional areas of HRM (employee recruitment, career management, development and others) can respond to challenges of knowledge management. Mathew et al. (2011) conducted a study which showed that KM initiative is determined by organizational culture, structure and technology. They concluded that organizations should have affect on all factors to be able to successfully exploit knowledge in the organization. Daud and Yusoff (2011) suggested that a combination of KM process and organizational skills and intellectual capital as a strategic organizational asset enables the increases of organizational effectiveness. If human resources, employees and their effective managing are essential for the company and if the people's most more valuable resource is knowledge, then HRM and KM are closely interrelated (Svetlik and Stavrou-Costea 2007).

For the purpose of this paper, HRM is observed from two aspects: (1) *functions*, which are derived from the '*best fit*', defined as 'recruitment and selection of employees; training and development and performance appraisal' (Armstrong and Armstrong 2009); and (2) *effective factors*, which are 'empowerment, quality of work, culture, individual factors and learning'.

According to research done by Oltra (2005) and Thite (2004), selection of employees has been introduced as one of the most important activity of human resources in knowledge-oriented organizations, and an accurate selection of employees has a significant impact on knowledge management success (Wong and Aspinwall 2005). After successful selection, employee training and development plays a major role for KM. This was confirmed by Lin and Joe (2012) showing that the transfer of tacit knowledge depends on confidence in commitment of employees and organization. Significant are also attitudes of employees on mutual transfer of tacit knowledge. Paying attention to the needs of employees, giving feedback to them and performance appraisal based on accurate standards are effective on facilitation of knowledge management process (Attafar et al. 2012).

Observing the aspect of effective factors of the enhancement of quality of work life in the organization helps in facilitating knowledge management processes (Attafar et al. 2012), and according to Horak (2001), developing employees' proficiencies in communications, networking, learning, team formation, cooperation and creative thinking is necessary for knowledge management success. Research has shown that motivated employees are willing to share when they think that knowledge sharing will be worth the effort (Lin 2007). Results of Lam and Lambermont-Ford (2010) research showed that external motivational factors help knowledge sharing in organizations. Organizational culture has been regarded as an effective factor on KM and HR success in many researches (Carrión et al. 2004; Davenport and Prusak 1998; Oltra 2005). It plays an effective role in KM effectiveness as the identity and foundation of the organization (Attafar et al. 2012) and can have direct effect on employees' empowerment and knowledge sharing behaviour (Özbebek and Toplu 2011). According to Attafar et al. (2012), individual factors show significant relation with KM which emphasizes the importance of paying attention to individual factors in selection process. Communication climate and employee-affective commitment are antecedents for knowledge sharing (van den Hooff and de Ridder 2004). Research done by Tavari et al. (2009) proves existence of proportion between individual interests and job and between individual proficiencies and job, and also having work experience affect enhancement of human resources productivity considerably.

Analysing previous research, the main goal of this paper is to present a preliminary model of the relationship between HR and KM. As mentioned above, there is a relationship between HR and KM, but if digging deeper and analysing two HR aspects, the literature supports this relationship and proves that effective factors of HR and functions have positive impact on KM process in organizations (see Fig. 31.1).

Through analysis of literature regarding specified areas of HRM, thus effective factors and functions and their relation to KM, it has been shown that there is an unquestionable relationship between these three elements. Preliminary theoretical model is done on the basis of literature review which supports the belief that strong relationships between functions of HRM, effective factors and KM can be established. Based on literature findings, the contribution of HRM to KM is at the high end of value chain as it is primarily used to create and sustain a culture that fosters innovation, creation, creativity and learning. Therefore, paying attention to human resources management, its effective factors and functions, it could be regarded as activities related to knowledge management.
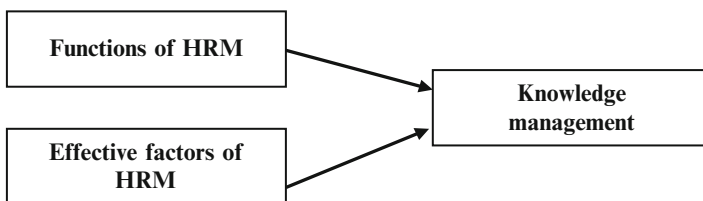

Fig. 31.1 Preliminary conceptual model

4   Conclusion and Perspective for Further Work

If human resources, employees and their effective managing are essential for company and if the people's most valuable resource is knowledge, then HRM and KM are closely interrelated (Svetlik and Stavrou-Costea 2007). Individuals and human potentials are in the centre of knowledge management, so knowledge management is individuals' management and individuals' management is knowledge management (Davenport and Völpel 2001).

Effective factors and functions of HR have enhancing impact on HR productivity (Attafar et al. 2012) and since the HRM has impact on KM, it can be stated that effective factors and functions are related to knowledge management. As per conducted case research in the past, improving the awareness of significance of HR issues on KM in IT organizations is important. In addition, emphasis is placed on development of an appropriate model that can provide support with assessing the impact of human resources issues on knowledge management in IT companies.

More elaborate research is running where sample of IT companies in two central European countries is used. For the purpose of this research selection and recruitment, training and development and performance appraisal were observed as HR functions and quality, organizational culture and individual factors were observed as effective factors of HR. Proposed preliminary theory-based model does not intent to simplify the direct relationship between HRM practices and knowledge management. This relationship has already been examined thoroughly in the past. The main purpose is to highlight processes and effective factors of HR practices which should *activate* for long-term knowledge management as competitive advantage, and therefore, this paper presents the preliminary theoretical model for future research.

References

Ahmed M, Ahmad RR (2012) Human resource effective factor for knowledge management with IT. In: International conference on technology and business management, vol 2. University of Wollongong in Dubai, Dubai. Retrieved from http://www.icmis.net/ictbm/ictbm12/ICTBM12CD/pdf/D2248-done.pdf

Anand A, Singh MD (2011) Understanding knowledge management. Int J Eng Sci Technol 3:926–939

Armstrong M, Armstrong M (2009) Armstrong's handbook of human resource management practice. Kogan Page, London. Retrieved from http://site.ebrary.com/id/10309992

Attafar A, Soleimani M, Shahnazari A, Shahin A (2012) The relationship between enhancement of human resource productivity and knowledge management in Iranian libraries: a correlation analysis. Afr J Bus Manage 6(8):3094–3099

Boselie P, Dietz G, Boon C (2005) Commonalities and contradictions in HRM and performance research. Hum Resour Manag J 15:67–94

Brewer PDB (2010) Knowledge management, human resource management, and higher education: a theoretical model. J Educ Bus 85:330

Carrión GC, González JLG, Leal A (2004) Identifying key knowledge area in the professional services industry: a case study. J Knowl Manag 8:131–150

Chan P, Pollard D, Puriveth P (2011) Implementing knowledge management. J Bus Econ Res (JBER), 2(5)

Chivu I, Popescu D (2008) Human resources management in the knowledge management. Rev Inf Econ 4:54–60

Cole DC (2005) Quality of working life indicators in Canadian health care organizations: a tool for healthy, health care workplaces? Occup Med 55:54–59

Collins H (2010) Tacit and explicit knowledge. University of Chicago Press, Chicago

Daud S, Yusoff WFW (2011) How intellectual capital mediates the relationship between knowledge management processes and organizational performance. Afr J Bus Manag 5:2607–2617

Davenport T, Prusak L (1998) Working knowledge. Harvard Business School Press, Cambridge

Davenport TH, Völpel SC (2001) The rise of knowledge towards attention management. J Knowl Manag 5:212–222

Dhamija P (2012) E-recruitment: a roadmap towards e-human resource management. Res World J Arts Sci Commer 3:33–39

Dicke C, Holwerda J, Kontakos AM (2006) Global HR best practices: maximizing innovation, effectiveness and efficiency in HR. Center for Advanced Human Resource Studies, New York. Retrieved from http://www.ilr.cornell.edu/cahrs/research/pubs/SpecialTopics/upload/2006 FALL-GlobalHRBestPractices.pdf

Fombrun CJ, Tichy NM, Devanna MA (1984) Strategic human resource management. Wiley, New York

Fong C-Y, Ooi K-B, Tan B-I, Lee V-H, Chong AY-L (2011) HRM practices and knowledge sharing: an empirical study. Int J Manpow 32:704–723

Foot M, Hook C (2008) Introducing human resource management. Pearson Education, Harlow

Gloet M (2002) Knowledge management audit: the role of managers in articulating and integrating quality practices. Manag Audit J 17:310–316

Gloet M, Berrell M (2003) The dual paradigm nature of knowledge management: implications for achieving quality outcomes in human resource management. J Knowl Manag 7:78–89

Greasley K, Bryman A, Dainty A, Price A, Soetanto R, King N (2005) Employee perceptions of empowerment. Empl Relat 27:354–368

Horak BJ (2001) Dealing with human factors and managing change in knowledge management: a phased approach. Top Health Inf Manage 21:8–17

Hussock J (2009) Defining a framework for knowledge sharing in a dynamic sales oriented organisation. Master's thesis, Dublin Institute of Technology, Dublin

Hutchinson JR, Huberman M (1994) Knowledge dissemination and use in science and mathematics education: a literature review. J Sci Educ Technol 3:27–47

Ishak N, Eze U, Ling L (2010) Integrating knowledge management and human resource management for sustainable performance. J Organ Knowl Manage 2010(2010):1–13. doi:10.5171/2010.322246

Iske P, Boersma W (2005) Connected brains: question and answer systems for knowledge sharing: concepts, implementation and return on investment. J Knowl Manag 9:126–145

Jantz R (2001) Knowledge management in academic libraries: special tools and processes to support information professionals. Ref Serv Rev 29(1):33–39. doi:10.1108/00907320110366778

Jengard L (2010) Project knowledge management: how to evaluate project knowledge, and project knowledge management performance (Student thesis). Linnaeus University, Faculty of Science and Engineering, School of Computer Science, Physics and Mathematics

Lam A, Lambermont-Ford J-P (2010) Knowledge sharing in organisational contexts: a motivation-based perspective. J Knowl Manag 14:51–66

Lin H-F (2007) Knowledge sharing and firm innovation capability: an empirical study. Int J Manpow 28:315–332

Lin C-P, Joe S-W (2012) To share or not to share: assessing knowledge sharing, inter employee helping, and their antecedents among online knowledge workers. J Bus Ethics 109:439–449

Madhoushi M, Sadati A, Delavari H, Mehdivand M, Hedayatifard M (2010) Facilitating knowledge management strategies through IT and HRM. Chin Bus Rev 9(10):57–66

Mathew M, Kumar D, Perumal S (2011) Role of knowledge management initiatives in organizational innovativeness: empirical findings from the IT industry. Vikalpa 36:31

Noe RA, Hollenbeck JR, Gerhart B, Wright PM (2000) Human resource management: gaining a competitive advantage. McGraw-Hill College, Boston

Oltra V (2005) Knowledge management effectiveness factors: the role of HRM. J Knowl Manag 9:70–86

Özbebek A, Toplu EK (2011) Empowered employees' knowledge sharing behavior. Int J Bus Manag 3:69–76

Renuka SD, Venkateshwara BA (2006) A comparative study of human resource management practices and advanced technology adoption of SMEs with and without ISO certification (Small and Medium Enterprises). Singapore Manage Rev 28:41

Svetlik I, Stavrou-Costea E (2007) Connecting human resources management and knowledge management. Int J Manpow 28:197–206

Tavari M, Sukhkian MA, Mirnejad SA (2009) Identification and prioritization of effective factors on Hr productivity by means of MADM techniques. Ind Manag J 1(1):71–88

Theriou GN, Chatzoglou PD (2008) Enhancing performance through best HRM practices, organizational learning and knowledge management: a conceptual framework. Eur Bus Rev 20:185–207

Thite M (2004) Strategic positioning of HRM in knowledge-based organizations. Learn Organ 11:28–44

van den Hooff B, de Ridder JA (2004) Knowledge sharing in context: the influence of organizational commitment, communication climate and CMC use on knowledge sharing. J Knowl Manage 8(6):117–130. doi:10.1108/13673270410567675

Wang Z, Wang N (2012) Knowledge sharing, innovation and firm performance. Expert Syst Appl 39:8899–8908

Wong KY, Aspinwall E (2005) An empirical study of the important factors for knowledge-management adoption in the SME sector. J Knowl Manag 9:64–82

Chapter 32
Preselection of Contractors Before Inviting for Bidding Using AHP

Satyendra Kumar Sharma

Abstract Contractor preselection is a typical multi-criteria decision-making problem that includes both quantitative and qualitative criteria. Contractor preselection requires a tool that will help managers in reducing the no. of bidders, and this process is critical in recovering markets where emphasis is on the cost, quality and sound management of contractors. The analytic hierarchy process (AHP) is a structured technique for organizing and analysing complex decisions. It has particular application in group decision-making and is used around the world in a wide variety of decision situations, in the fields such as government, business, industry, healthcare and education. AHP methodology provides a comprehensive and rational framework for structuring a decision problem, for representing and quantifying its elements, for relating those elements to overall goal and for evaluating alternative solutions. This paper seeks to take full advantage of AHP and solve the contractor preselection problem using it.

Keywords Contractor selection • Multi-criteria decision-making • AHP

1 Introduction

Contractors play a major role in success of any construction project. Therefore, contractor selection represents a critical decision for any construction company. Preselection is a pretender process used to investigate and assess the capabilities of contractors to carry out a contract, satisfactorily, if it is awarded to them. Contractor preselection is generally preferred by clients to minimize risks and failures accompanied with ineligible contractors. Holt et al. (1994) confirmed that a prequalification should be integrated as part of any contractor selection process, performed just prior to invitation to tender. Contractor preselection is a complex decision problem which requires the identification of criteria involved, their interrelationships and the method required for solving the problem. The components of a decision problem

S.K. Sharma (✉)
Department of Management, BITS Pilani, Pilani, India
e-mail: satyendra.sharma1979@gmail.com; satyendrasharma@pilani.bits-pilani.ac.in

are generally described in the form of a decision tree. Preselection process is often carried out by one individual or a small like-minded group, which makes it very difficult to eliminate biases in the selection process (Russell and Skibniewski 1988).

2 Literature Review

A number of preselection models were found in literature. Nguyen (1985) has developed a fuzzy set preselection model utilizing fuzzy set theory. This model serves the uncertainty involved in the preselection system. The fuzzy logic is suitable to deal with ambiguous qualitative information, but it is not easy to apply (Jaskowski et al. 2010; Wang et al. 2008). Russell and Skibniewski (1988) applied five contractor's selection strategies: dimensional weighting, two-step preselection, dimension-wide strategy, preselection formula and finally the strategy of subjective judgement. These strategies are subject to biases of the decision-maker. Russell (1990) developed a decision model for contractor preselection. The disadvantage of this model is that the contractors who are not sufficiently compatible for some decision factors are eliminated in the initial stages of the preselection process. Russell and Skibniewski (1990) developed a dimensional weighting aggregation model; the aggregate weighted ratings of contractor scores are calculated based on the analysis of results obtained from questionnaires. Russell and Skibniewski (1990) developed a computer program called QUALIFIER-1 to aid decision-makers in preselection. This program was based on an aggregated weighting for each contactor obtained through the input rating for each decision criterion. Russell et al. (1990) further developed QUALIFIER-1 by using a prototype knowledge-based expert system and adding extra functions, thereby producing QUALIFIER-2. However, QUALIFIER-2 does not adequately deal with uncertainties associated with heuristic knowledge (Russell 1996). Holt et al. (1994) developed a model which utilizes multi-attribute analysis and utility theory (UT) to evaluate contractor prequalification criteria and provide guidelines for practitioners. Holt (1996) applied cluster analysis to reduce a large number of potential bidders, to identify only those most suitable to tender for a particular project. Cluster analysis can handle a large number of data points and groups of similar subsets together, which seems like a good idea for a preselection system. Hatush and Skitmore (1998) used multi-criteria UT for contractor selection problem. The utility model used utility curves to represent the relationship between the specific capability of a contractor and the value of that capability in risky situations. Multi-attribute UT is not easy to apply. It is very sophisticated to be implemented and operated by construction professionals who need an extensive mathematical background and a long learning process to understand its methodology. Lam et al. (2000) applied the neural network (NN) approach for contractor preselection by inputting the contractor's attributes to the NN and outputting the clients' decision. NNs are often criticized for exhibiting a low degree of

comprehensibility and requiring a large amount of historical data for training. Other research efforts include those of Fong and Choi (2000), Wong et al. (2000), Palaneeswaran and Kumaraswamy (2001), Sönmez et al. (2002) and Topcu (2004).

3   Research Gaps

Literature review shows that the current preselection models are based on subjective judgement or qualitative analysis, tend to ignore vagueness and do not take into consideration the uncertainty and imprecision of criteria involved in the contractor prequalification process. In addition, current models require exact numbers for expressing the relative weights of decision-makers' preferences for some of the prequalification criteria. Since some of the criteria are subjective and qualitative, it is very difficult for the decision-maker to do that using exact numerical values Ossama and Nassar (2013). And many papers have put a greater emphasis on fuzzy theory which in recent times proved to be wrong (Hemanta K. Baruah et al. (2011)). Therefore, there is a need to a contractor prequalification model to overcome the shortcomings apparent in the current models.

4   Problem Definition

The main objective of this paper is to use a decision model composed of analytic hierarchy process (AHP) approach that tackles the uncertainty and imprecision of contractor preselection and then choose the most reasonable and least reasonable criteria at the prequalification stage out of the six criteria defined below. The criteria used in this model had been collected through the literature review and experts' opinion for building projects.

5   Proposed Model

AHP is the proposed model, and here we first decompose our decision problem into a hierarchy of more easily comprehended subproblems, each of which can be analysed independently. The elements of the hierarchy can relate to any aspect of the decision problem—tangible or intangible, carefully measured or roughly estimated, well or poorly understood—anything at all that applies to the decision at hand. Once the hierarchy is built, the decision-makers systematically evaluate its various elements by comparing them to one another two at a time, with respect to their impact on an element above them in the hierarchy. In making the comparisons, the
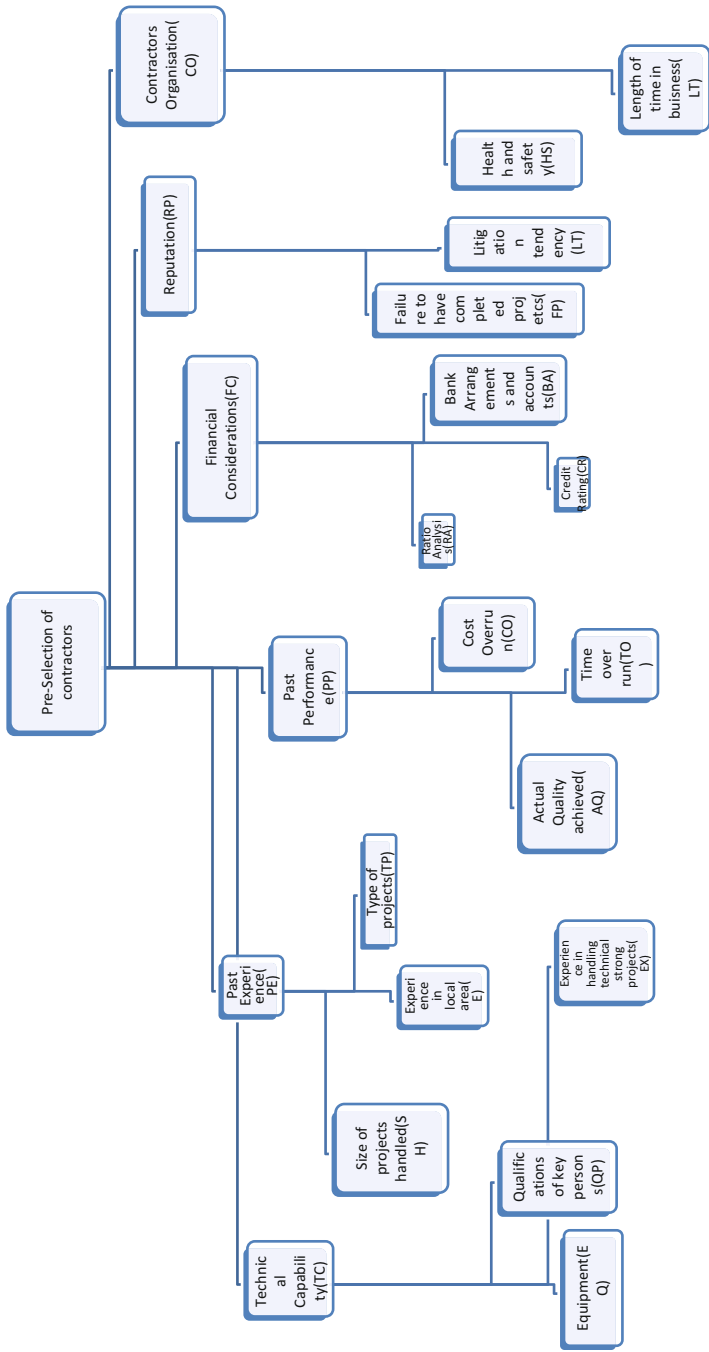
decision-makers can use concrete data about the elements, but they typically use their judgements about the elements' relative meaning and importance. It is the essence of the AHP that human judgements, and not just the underlying information, can be used in performing the evaluations.

The AHP converts these evaluations to numerical values that can be processed and compared over the entire range of the problem. A numerical weight or priority is derived for each element of the hierarchy, allowing diverse and often incommensurable elements to be compared to one another in a rational and consistent way. This capability distinguishes the AHP from other decision-making techniques. In the final step of the process, numerical priorities are calculated for each of the decision alternatives. These numbers represent the alternatives' relative ability to achieve the decision goal, so they allow a straightforward consideration of the various courses of action. AHP requires several time-consuming calculations. Depending on the number of criteria and candidate contractors taken into consideration, a lot of time is necessary to make all calculations in order to reach the final solution. As the number of criteria and contractors increases, the dimension of the problem expands. This could lead to a great number of mathematical operations. Therefore, a software aid may be very useful to automatically carry out the AHP process. A software prototype for AHP application was developed using Microsoft.

6 Methodology and Its Implementation

Here we are applying the proposed AHP model to solve the preselection process in the following steps:

Step 1. Identify the main criteria and sub-criteria to be used in the model. A crucial task in the contractor selection is to establish a set of decision criteria through which the capabilities of contractors are measured and judged to make the preselection process efficient in its costs and durations (Ng and Skitmore 1999). The following criteria below as shown in tree diagram were previously suggested in Russell and Skibniewski (1988, 1990), Russell et al. (1990), Holt et al. (1994, 1995), Bubshait and Al-Gobali (1996), Holt (1996), Hatush and Skitmore (1998), Hatshu (1998), Ng and Skitmore (1999), Fong and Choi (2000), Wong et al. (2000), Palaneeswaran and Kumaraswamy (2001), Sönmez et al. (2002) and Topcu (2004). A comparison between the preselection decision criteria adopted by some of the previous researchers is made. And the most common criteria considered by decision-makers are taken into account, and they have been grouped in six main criteria such as contractor's organization, financial consideration, technical capability, past experience, past performance and reputation. They are structured as shown below.

Pre-Selection of contractors

Contractors Organisation(CO)

Length of time in buisness(LT)

Healt h and safet y(HS)

Reputation(RP)

Litig atio n tend ency (LT)

Failu re to have com plet ed proj etcs(FP)

Financial Considerations(FC)

Bank Arrang ement s and accoun ts(BA)

Credit Rating(CR)

Ratio Analysi s(RA)

Past Performanc e(PP)

Cost Overru n(CO)

Time over run(TO)

Actual Quality achieved(AQ)

Type of projects(TP)

Past Experi ence(PE)

Experi ence in local area(E)

Experien ce in handling technical strong projects(EX)

Size of projects handled(S H)

Qualific ations of key person s(QP)

Technic al Capabili ty(TC)

Equipment(E Q)

Hierarchical structure representing Contractor preselection variables

Table 32.1 AHP rating scale

Definition	Intensity of importance	Explanation
Equal importance	1	Two elements contribute equally to the objective
Moderate importance	1.5	Experience and judgement moderately favour one element over the other
Strong importance	2	Experience and judgement strongly favour one element over the other
Very strong importance	2.5	One element is favoured strongly over other and its importance is demonstrated in practice
Extreme importance	3	The evidence favouring one element over the other is of highest affirmation

Step 2. Consider the most fundamental scale in AHP for assigning relative weights (Table 32.1).

Step 3. Now, to determine the weights assigned to each criterion by consulting around 20 contractors and passing them a questionnaire and then taking averages of their responses and scaling them down to five-point scale. And the matrix is constructed in the next step where criteria's acronyms are as follows:

RP-Reputation
CO-Contractors organization
PE-Past experience
PP-Past performance
TC-Technical consideration
FC-Financial consideration

Step 4. Now by using a calculation software by CGI as shown in the figures below, construct a comparison matrix by assigning weights and then find out priorities for each of the main criteria and sub-criteria. Each of the below steps is shown in the tables. The following sections present the AHP calculations for first-level criteria and second-level criteria.

7   Analysis (Table 32.2)

Weights and CI
Maximum eigenvalue = 6.15864
CI = 0.0317279
Weights (eigenvector)

0.0985417
0.119368
0.151029
0.152562
0.23828
0.24022

Table 32.2 AHP pairwise comparison matrix for level 1 criteria

1	0.666667	0.666667	1	0.333333	0.4
1.5	1	1	0.666667	0.5	0.4
1.5	1	1	1	0.5	1
1	1.5	1	1	1	0.5
3	2	2	1	1	1
2.5	2.5	1	2	1	1

Table 32.3 AHP pairwise comparison matrix for level 2 CO sub-criteria

1	2
0.5	1

Table 32.4 AHP pairwise comparison matrix for level 2 FC sub-criteria

1	1.51515	2
0.66	1	1.51515
0.5	0.66	1

8   Contractors Organization (CO)

Health and safety of programme (HS) and length of time (LT) in business are sub-criteria taken, and they are put in the respective order in column and row (Table 32.3).

Weights and CI
Maximum eigenvalue = 2
CI = 0
Weights (eigenvector)

0.666667
0.333333

9   Financial Consideration (FC)

Ratio analysis accounts, credit rating and bank arrangements and bonding are sub-criteria taken and are put in the same order in the column and row (Table 32.4).

Weights and CI
Maximum eigenvalue = 3.00211
CI = 0.0010564
Weights (eigenvector)

0.461131
0.318661
0.220208

Table 32.5 AHP pairwise comparison matrix for level 2 TC sub-criteria

1	1.51515	2
0.66	1	1.51515
0.5	0.66	1

Table 32.6 AHP pairwise comparison matrix for level 2 PE sub-criteria

1	1	2
1	1	1
0.5	1	1

10 Technical Capability (TC)

Plant and equipment (PE), qualification of key persons (QP) and experience with company (EX) are sub-criteria taken and are put in the same order in the column and row (Table 32.5).

Weights and CI
Maximum eigenvalue = 3.00211
CI = 0.0010564
Weights (eigenvector)

0.461131
0.318661
0.220208

11 Past Experience (PE)

Size of projects completed (SZ), type of projects completed (TP) and experience in local area (LA) are sub-criteria considered and are put in the same order in the column and row (Table 32.6).

Weights and CI
Maximum eigenvalue = 3.05362
CI = 0.0268108
Weights (eigenvector)

0.412599
0.32748
0.259921

Table 32.7 AHP pairwise comparison matrix for level 2 FP sub-criteria

1	0.5	0.666667
2	1	1.51515
1.5	0.66	1

Table 32.8 AHP pairwise comparison matrix for level 2 R sub-criteria

1	1.51515
0.66	1

12   Past Performance (PP)

Actual quality achieved (AQ) and time overrun (TO) are sub-criteria chosen and are put in the same order in the column and row (Table 32.7).

Weights and CI
Maximum eigenvalue = 3.00182
CI = 0.000907991
Weights (eigenvector)

0.221019
0.461282
0.317699

13   Reputation (R)

Failure to have completed contracts (FL) and litigation tendency (LT) are the sub-criteria taken into account and they are put in column and row in the same order (Table 32.8).

Weights and CI
Maximum eigenvalue = 2
CI = 0
Weights (eigenvector)

0.60241
0.39759

Once we calculate the priority vector for level 1 criteria and level 2 criteria, then we find the overall weights of all the criteria listed at level 2 in Fig. 32.1 by multiplying local weights with their global weights. Table 32.9 presents all criteria used in preselection of contactor selection with relative weights.
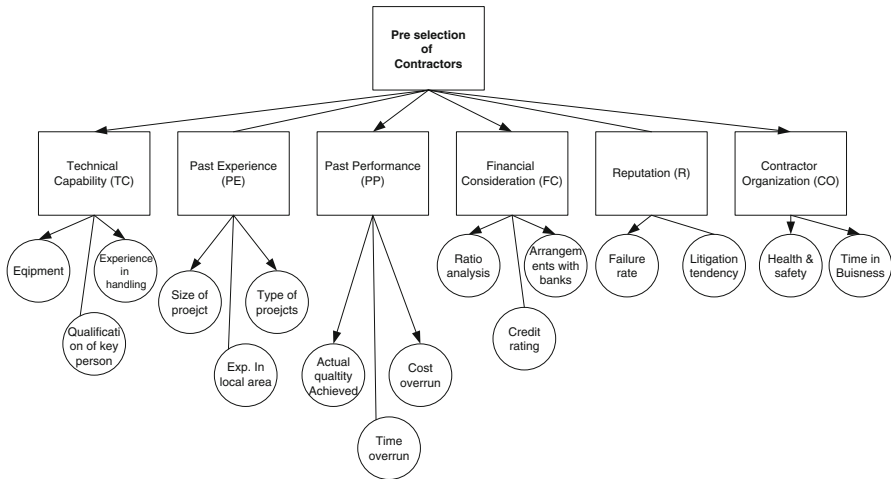
Fig. 32.1 Contractor preselection variables - A Hierarchical structure

Table 32.9 Overall weights of preselection of contractor criteria

S. no.	Criteria used in preselection	Local weight	Global weight	Overall weight
1	Health and safety of programme (HS)	0.666667	0.119368	0.08
2	Length of time (LT) in business	0.333333	0.119368	0.04
3	Ratio analysis accounts	0.461131	0.24022	0.111
4	Credit rating	0.318661	0.24022	0.077
5	Bank arrangements and bonding	0.220208	0.24022	0.053
6	Plant and equipment (PE)	0.461131	0.23828	0.11
7	Qualification of key persons (QP)	0.318661	0.23828	0.076
8	Experience with company (EX)	0.220208	0.23828	0.053
9	Size of projects completed (SZ)	0.412599	0.151029	0.063
10	Type of projects completed (TP)	0.32748	0.151029	0.05
11	Experience in local area (LA)	0.259921	0.151029	0.04
12	Actual quality achieved (AQ)	0.221019	0.152562	0.034
13	Actual quality achieved (AQ)	0.461282	0.152562	0.71
14	Time overrun (TO)	0.317699	0.152562	0.049
15	Failure to have completed contracts (FL)	0.60241	0.0985417	0.06
16	Litigation tendency (LT)	0.39759	0.0985417	0.04

14   Conclusion

From the analysis of financial consideration like ratio analysis, it is evident that financial strength of firms is most considered, and this can be imagined because while approaching the contractor for a project, the most sensitive thing to look out is finances, as any irregularities in them could lead to total fatal consequences. Technical consideration, plant and equipment are equally important. Reputation is least considered while looking out for suitable contractors.

Based on the decision criteria, judgements about the relative importance of each, and on the judgements about each criterion, have been carefully considered and analysed, thus arriving at plausible consistency ratio of less than 10 % in each case. Because we have used the AHP, it has become easy for us to trace the thinking and to justify the steps along the way to the decision. If we have any second thoughts about the final outcome, we can revisit the process and make changes if appropriate.

References

Bubshait AA, Al-Gobali KH (1996) Contractor prequalification in Saudi Arabia. J Manag Eng 12(2):50–54

Fong PS-W, Choi SK-Y (2000) Final contractor selection using the analytical hierarchy process. Constr Manag Econ 18(5):547–557

Hatshu ZA (1998) Contractor selection using multi-criteria utility theory: an additive model. Build Environ 33(2–3):105–115

Hatush Z, Skitmore M (1998) Assessment and evaluation of contractor data against client goals using PERT approach. Constr Manag Econ 15:327–340

Holt GD (1996) Applying cluster analysis to construction contractor classification. Build Environ 31(6):557–568

Holt GD, Olomolaiye PO, Harris FC (1994) Evaluating prequalification criteria in contractor selection. Build Environ 29(4):437–448

Holt GD, Olomolaiye PO, Harris FC (1995) A review of a contractor selection practice in the UK construction industry. Build Environ 30(4):553–561

Jaskowski P, Biruka S, Bucona R (2010) Assessing contractor selection criteria weights with fuzzy AHP method application in group decision environment. Autom Constr 19(2):120–126

Lam KC, Ng ST, Hu T, Skitmore M (2000) Decision support system for contractor prequalification artificial neural network model. Eng Constr Archit Manag 7(3):251–266

Ng ST, Skitmore RM (1999) Client and consultant perspectives of prequalification criteria. Build Environ 34(5):607–621, Egyptian construction contractors

Nguyen VU (1985) Tender evaluation by fuzzy sets. J Constr Eng Manag 111(3):231–243

Ossama H, Nassar K (2013) Prequalification of Egyptian construction contractors using fuzzy-AHP models. Eng Constr Archit Manag 20(4):381–405, by Emerald Group Publishing Limited

Palaneeswaran E, Kumaraswamy M (2001) Recent advance and proposed improvements in contractor pre-qualification methodologies. Build Environ 36(1):73–77

Russell JS (1990) Model for owner pre-qualification of contractors. J Manag Eng 6(1):59–75

Russell JR (1996) Construction pre-qualification: choosing the best constructor and avoiding constructor failure. ASCE Press. ISBN 9780784400524

Russell JS, Skibniewski MJ (1988) Decision criteria in contractor pre-qualification. J Manag Eng 4(2):148–164

Russell JS, Skibniewski MJ (1990) Qualifier-1: contractor pre qualification model. J Comput Civ Eng 4(1):77–90

Russell JS, Skibniewski M, Cozier D (1990) Qualifier-2: knowledge-based for contractor pre-qualification. J Constr Eng Manag 116(1):157–171

Sönmez M, Holt GD, Yang JB, Graham G (2002) Applying evidential reasoning to prequalification construction contractors. J Manag Eng 18(3):111–119

Topcu YI (2004) A decision model proposal for construction contractor selection in turkey. Build Environ 39(4):469–481

Wang YM, Luo Y, Hua Z (2008) On the extent analysis method for fuzzy AHP and its applications. Eur J Oper Res 186(2):735–747

Wong CH, Holt GD, Cooper PA (2000) Lowest price or value? Investigation of UK construction clients' tender selection process. Constr Manag Econ 18(7):767–774

Chapter 33
Role of Passion in Organizational Cynicism: A Mediating Effect of Sustainable Leader in the Process Model

Niharika Gaan

Abstract With the increasing economic turbulence all over the world, it is apparently becoming difficult on the part of the corporate to remain as a high-performing organization and intensify the engagement of the employees by keeping enormous pressure to hold down costs as long as market does not show the sign of recovery. Even though the attempt is made to increase one's engagement, one's psychological well-being is always ignored. Moreover, the engagement has always been discussed in the literature of burnout as reported in the past study. It is in this context we would like to view from the lens of work passion as it is considered to be self-generated motivation associated with work-related activity involving less pressure on reward system.

In this conceptual paper, the author argues how the work passion is related to organizational cynicism through a process model. The process model involves the moderating role of sustainable leadership which facilitates the occurrence of psychological well-being. Consequently, the ramification is quite evident in the form of reduced organizational cynicism.

Keywords Work passion • Sustainable leadership • Psychological well-being • Organizational cynicism

1 Introduction

Over the last three decades, research in burnout has drawn a lot of attention (Freudenberger 1974; Maslach and Jackson 1981; Maslach et al. 2001). Such studies have even dealt with social-related factors and work-related attitudes influencing burnout extensively. However, a noticeable gap is observed when all these studies have measured the burnout from three-dimensional perspectives (emotional exhaustion, depersonalization, and personal accomplishment) rather than from four-dimensional

N. Gaan, Ph.D. (✉)
Assistant Professor Cum Chairperson, Student Welfare,
MDI-Murshidabad, DB-3, Sector-1, Salt Lake 700064, Kolkata
e-mail: niharika@mdim.ac.in

perspectives wherein the fourth component is named as organizational cynicism (Vallerand et al. 2010). MBI depersonalization is deciphered as feeling of alienation from people (Maslach 1993) and not from the job. On the contrary, MBI cynicism is defined to be mentally distancing from the work not from the people (Salonova et al. 2005). The latter could be proved as an appropriate variable as an outcome of work-related attitudes.

One of the work-related attitudes called work passion has been explaining well the differences in the experiences of individuals toward burnout while thriving in the same environment (Vallerand et al. 2010). However, studies examining the causal relationship between the former and latter have also emphasized upon the construct from three-dimensional perspectives: emotional exhaustion, depersonalization, and self-efficacy ignoring MBI cynicism. It is also reported that work passion shares distal relationship with burnout and the same thing possibly can be argued in the relationship between former and organizational cynicism (Donhaue et al. 2012; Vallerand et al. 2010). The past literatures have also reported that their relationship is basically activated through mediating variables like work rumination, recovery experiences, work satisfaction, and conflict. The other variables like leadership style and other psychological variables, for instance, psychological well-being, may mediate and activate the relationship and it seems to be scarce.

With changing environment where sustainability has become buzzword, the human sustainability has been gaining much ground, and in such context the passion is more relevant as it directly pertains to thriving force (Spreitzer et al. 2012). Moreover, this focus is reinforced with the evidence that employee engagement faces the debates of not having any specific definitions, and there exists a wide gulf between practitioner and academicians in its understanding for which HRD professionals are unable to increase its effective applied use (Zigarmi et al. 2009).

In this paper, we start looking into this apparent gap. This paper is structured as follows. We start with an overview of why the concept of work passion has become of increasing interest and importance. Thereafter, we undertake a review of existing research on work passion and why the concept has taken precedence over employee passion. In the third section, we start developing tentative propositions showing relationship between work passion, perceived interpersonal relationship, and support through sustainable leadership, psychological well-being, and organizational cynicism. We end this paper with paper's contributions, discussions, and summary in nutshell.

2   Why Passion Matters

Though passion seems to have long philosophical history, the field of psychology has not captured the concept pertaining to its romantic relationships involving intense personal interests, commitment, and over commitment until recently (Krapp 2002). The past literature reports its coverage in the context of numerous nonwork activities like sports, gambling, romance, and Internet use (Amiot et al. 2006;

Mageau et al. 2005; Rousseau et al. 2002; Seguin-Levesque et al. 2003). Most of the creative work is an outcome of passion influenced both by a person's basic interest in a particular kind of work and by the work environment surrounding the person (Amabile 2001; Fisher and Smith 2006). It is stated to result in cognitive, affective, and instrumental outcomes (Vallerand and Houlfort 2003). It is even argued to be an active ingredient for venture growth (Baum et al. 2001), well-being (Burke and Fiskenbaum 2009), and entrepreneurial success (Cardon et al. 2005). Further, passion seems to be an essential driver for employee engagement and its important facets (Pati 2012; Ho et al. 2011). That may supposedly lead one to assume that employee passion takes precedence over employee engagement.

Lately, the work passion (WP) has become catchphrase of the researchers and practitioners because of some inherent weaknesses attached to the concept of "employee engagement." This leads to clear distinctions between former and latter that can aid practitioner to prefer indicator which positively influence the performance of the organization without any anomaly. Firstly, the key indicators that differentiate employee engagement with passion are organizational and job-related factors (Zigarmi et al. 2009) which together explain the construct. WP construct not only considers both organizational and job factors, but it is even termed as self-defining activity which strengthens one's identity (Zigarmi et al. 2011a; Vallerand and Houlfort 2003). On the contrary, the engagement construct is connected solely to job-related factors as perceived by academicians, whereas practitioner has related it solely to organizational factors creating a debate in their interpretation. From social cognitive theory perspective (Zigarmi et al. 2011a), WP has been discerned to emphasize on appraisal process of an individual on events and environment impacting one's well-being, whereas, from role theory perspectives of Khan (1990), it is described as one kind of stable psychological presence wherein the individuals in organization express themselves physically, cognitively, and emotionally to their discretionary work roles. Secondly, the emotional and intellectual involvement is referred to as emotional and intellectual commitment to the organization (Baumruk 2004; Richman 2006; Shaw 2005) or the amount of discretionary effort exhibited by employees in their jobs (Frank et al. 2004), and the duo explains variance in employee engagement substantially. However, it has been also observed that organizational commitment and job involvement are interchangeably used. Therefore, it draws criticism that how both the predictors are explaining engagement at the same time if they are interacting with each other (Harrison et al. 2006; Saks 2008). Thirdly, work engagement is neither strong enough nor descriptive enough to be associated with affective, cognitive, and intention and/or behavioral components found in social cognitive theory and the appraisal literature, whereas WP presupposes the key underlying drivers of intense desire and intentionality that are not part of engagement, but it is extensive enough to provide incentive for work behaviors (Zigarmi et al. 2009). Given the preceding discussions and the criticisms attached to the term employee engagement, WP being proactive than being simply engaged at work has been gaining ground as HRD professionals could be more precise about the concepts, antecedents, and modifiers that affect employee motivation and work passion (Zigarmi et al. 2009).

3 Overview of Work Passion

3.1 What Is Work Passion?

Passion makes employees excited about their work and gives a sense of personal accomplishment. It is an intrinsic motivation in its highest form, which makes work interesting, engaging, and positively challenging and can lead to complete absorption in the work (Csikszentmihalyi 1990). Passion for work is the outward manifestation of individual purpose and the connection with organizational purpose (Love 2005); however, there is no one-size-fits-all solution for restoring passion to one's life (Boyatzis et al. 2002). In line with these different constructs, WP is defined as a strong inclination toward a self-defining activity that people love and feel devoted and in which they invest significant time and energy (Vallerand and Houlfort 2003). With these criteria the internalization of activity with one's identity becomes an underlying meaning to WP construct. Vallerand and colleagues (2003) proposition is based on self-determination theory that believes internalization of activity is influenced by the interaction of their innate, psychological needs of autonomy, competence, and relatedness (Williams and Deci 1996). Furthermore, they postulated the dualistic existence of passion consisting of harmonious and obsessive passion unlike the other studies. The former one is considered to emanate when a person freely accepts an activity as important for them and represents their identity (Ryan and Deci 2000). The harmonious passion of it has shared congruency with the social cognitive theory (Vallerand and Houlfort 2003) advocated by Zigarmi et al. (2011a). This component of passion is supposed to yield positive outcome. On the contrary, the latter emanates uncontrollable urge to partake in the activity where one can experience contingencies attached to it. This may lead to negative psychological adjustment (Mageau et al. 2012) as the activity controls individual interests. As per Zigarmi et al. (2011a) extensive study, WP is an individual's persistent, emotionally positive, meaning-based, state of well-being stemming from reoccurring cognitive and affective appraisals of various job and organizational situations which results in consistent, constructive work intentions and behaviors (Zigarmi et al. 2009). It measures affective, cognitive, and intention and provides a clearer sense of how the individual intends to behave on behalf of the organization. The cognitive aspect of the formation of WP involves the growth of mental schema or thought patterns that contain the features, images, feelings, and ideas associated with the work experience being appraised (Lord and Kernan 1987; Wofford and Goodwin 1990), whereas the emotions generated through cognitive aspect of WP in the appraisal process are known as work affect that helps appraiser to perceive the work experience to be either threatening or enhancing (Gotlieb et al. 1994; Jaussi 2007; Swailes 2002). As defined by Schaufeli et al. (2006), job well-being is a positive, fulfilling, work-related state of mind characterized by vigor, dedication, and absorption which is nomologically networked with employee engagement. During the second phase of the appraisal process, intentions are generated which is defined as one's inclination to act in a given way toward a particular commitment target (Brown 1996). In sum,

the conceptualization of WP by Zigarmi et al. (2011a) has revealed it to be process oriented. Although they tried operationalizing the construct which apparently seems to be comprehensive, it suffers from methodical lacunae. As discussed from social cognitive point of view, WP is supposedly sharing relevance with harmonious passion of dualistic model but not showing any relevance with obsessive passion. The sample drawn in the study was representing solely to one of the divisions of Electronics Company based at western United States. This may pose greatest limitations to its generalization. Finally, Maslach and Leiter (2008) discussed passion in terms of vigorous immersion in rewarding activities that build self-efficacy. Owing much to this foundational work, studies have recognized that passion is a complex construct capable of eliciting employee reactions ranging from exceedingly positive to highly destructive (Marsh et al. 2013).

4 Present Research with Theoretical Propositions

The purpose of the present research is to propose and test a model on the role of work passion toward organizational cynicism. Although work passion shares distal relationship with burnout, the relationship is always activated by mediating variables like work rumination, recovery experiences, work satisfaction, and conflict (Donahue et al. 2012; Vallerand et al. 2010). From the perspective of Vallerand et al. (2010), if work passion has dualistic feature, then as per his findings, it is reported that the harmonious passion prevents the occurrence of emotional exhaustion and the obsessive passion facilitates emotional exhaustion. Past literature investigating the relationship between them has taken emotional exhaustion as the best indicator of burnout out of the other two dimensions: depersonalization and personal accomplishment (Piko 2006) ignoring organizational cynicism as another component of burnout. This component was found out to be important component and different from depersonalization as it connects with the work not with the people (Salanova et al. 2005). Therefore, it can be argued here that the harmonious passion will be reversibly related to organizational cynicism, whereas the obsessive passion will be directly related to organizational cynicism. Since the past literature has shown a gap wherein the relationship of passion with organizational cynicism is scarce, hence the following propositions can be arrived at:

Proposition 1a: Harmonious passion will be negatively related to organizational cynicism.

Proposition 1b: Obsessive passion will be positively related to organizational cynicism.

As it is already reported that work passion shares a distal relationship with burnout, it sets things in motion by triggering a causal sequence wherein psychological mediators like work conflict and work satisfaction (measures of well-being) are activated (Vallerand et al. 2010). The scholars also contend that environmental factors exercise more influence on display of passion than individual differences.

Thus among such environmental clues, psychological well-being is reported to be an important factor which results into positive outcome (Zigarmi et al. 2009).

There are two facets of well-being which have been identified in the past literature (Ryan and Deci 2000). The first facet deals with one's happiness toward life (hedonic well-being: Diener et al. 1985). The second is concerned with self-realization or personal growth (eudaimonic well-being; Ryff and Keyes 1995). As observed in past studies, the harmonious passion is expected to facilitate sustainable increases in psychological well-being and prevent against ill-being. Obsessive passion, while ensuring regular activity engagement, does not produce such psychological gains and may even facilitate some deleterious effects. Further, it is reported that being non-passionate leads to a small decrease in psychological well-being (Vallerand 2012). However, such potential drop and exacerbation in well-being by passion is mediated through affective experiences. As indicated previously, these two passions orient the person to engage in the activity leading to experience of positive and negative affectivity. If the affective experiences occur on repetitive basis, then it results in the occurrence of psychological well-being or ill-being (Brown et al. 2007; Hodgins and Knee 2002).

Additionally, perceived interpersonal relationship with managers has got potential ramification on affective inferences (Zigarmi and Roberts 2012). If leader or manager follows developmental model and shows concern to one's personal growth with compassion as well as adopts sustainable practices, then it can mitigate negative effects such as productivity, losses, and absenteeism (Avery and Bergsteiner 2011; Mariappanadar 2003) and leads to healthy and safe environment for employees. It can be argued here that such kind of leadership approaches emanate in the disguise of sustainable practices. Moreover, intervention of sustainable leadership may mitigate the occurrence of depletion of energy underneath passion as a result of perceived finite job resources that hinders task completion (Vallerand et al. 2010) and lack of opportunities to grow. Thus with intervention of sustainable leadership, employees may experience positive affectivity which subsequently reported to result into positive outcome (Vallerand 2012).

Since an individual experiencing harmonious passion does not experience any burnout or anxiety, they might be called thriving employees (Vallerand et al. 2010) as they are the ones who feel passionate about what they do. They produce their own energy through excitement for their work and actively seek out opportunities to learn new things and develop (Spreitzer et al. 2012). Further, as per the past research, it is also noted that harmonious passion shares a weak relationship with one of the environmental factors, that is, work conflict (Vallerand et al. 2010) which may influence psychological well-being indirectly leading to negative affective outcomes.

In such pretext, the role of sustainable leader becomes very essential whose first principle advocates leadership for learning and leadership for caring, among others (Hargreaves 2003). Such approach of sustainable leader can intensify their excitement for learning new things solely on the basis of their merit and eventually leading to positive and sustainable psychological well-being. Conversely, if employees have energy at work but lack opportunities to learn and grow, they are likely to feel stagnated and depleted (Spreitzer et al. 2012) and may experience obsessive passion.

In such context, sustainable leadership can facilitate by renewing people's energy through growth and development strategy and other enablers too to prevent the occurrence of ill-being as a result of display of obsessive passion.

Therefore, propositions are as follows:

P2a: Sustainable leadership moderates the relationship between work passion and psychological well-being.

Although empirical evidences on the relationship between psychological well-being and organizational cynicism seem to be murky, one of the research studies has argued that when physician's psychological well-being is at higher side, then there is less chance of them to be suffering from the burnout. Further, this study has not been replicated in any other occupations. Yet, another research study cites that teachers who are passionate about their job and passion being more explained through harmonious one, it leads to increase in psychological well-being. This in turn reduces the burnout suffering. On the contrary, if they are ruled by obsessive passion, then it is unrelated with psychological well-being and contributes significantly to increase in the level of burnout (Carbonneau et al. 2008).

Looking into backdrop discussion, we can arrive at the following propositions:

Proposition 3a: Psychological well-being of an individual is negatively related to organizational cynicism.
Proposition 3b: Psychological well-being will mediate the relationship between harmonious passion and organizational cynicism.
Proposition 3c: Obsessive passion will be significantly and directly influence organizational cynicism if not mediated by sustainable leadership.

Sustainable leadership is newly perceived leadership style by the employees which has been recently introduced after two decades of dramatic changes in business and academic interests in building sustainable organizations. Part of the responsibility lies with industry, business, and government in building sustainable organization. Organizations within these sectors must identify and disseminate the changes they wish to make in their leadership structures. These form no less than a cultural transformation in many organizations and include insuring congruence between organizational strategy and actual output; implementing a people-centered strategy for identifying, recruiting, training, and retaining leaders; and designing an organizational strategy which provides employees with opportunities to develop the skills needed by future leaders (Emerald 2011). Such kind of cultural transformation and change can facilitate process model of passion which subsequently prevents the occurrence of organizational cynicism. Thus under the realms of organizational change and in its underneath, a wave of cultural transformation toward sustainability germinates making sustainable leadership to be imperative. In such context, the process model of passion as a part of human sustainability can well be accentuated. Eventually, it attempts to improve psychological well-being which again mitigates the cynicism in the organization. The entire process model of work passion is represented through conceptual model as illustrated in Fig. 33.1.
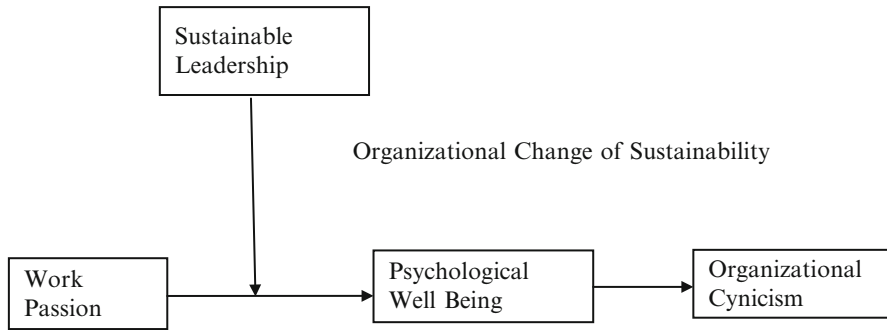
Fig. 33.1 A conceptual model of the role of passion in organizational cynicism

5 Theoretical Implications

This paper makes a considerable contribution toward human sustainability by dealing with the process model of passion embedded in work environment where sustainability is of prime importance. The study is the first in its kind to provide a theoretical framework on human aspect of sustainability which can be supposedly achieved if one's passion toward work can result in positive psychological well-being, and this relationship can be well sustained if sustainability as a key principle to leadership approach becomes more imperative.

Besides that the double-edged sword passion where one type of it named obsessive passion leads to ill-being, thereby accentuating cynicism in organization, can be well mitigated through mediating the role of sustainable leadership. The proposition is first in its kind as it strongly argues that the presence of sustainable leadership can activate the process of passion majorly dominated through display of harmonious passion yielding in improved psychological well-being which is quite sustainable.

From the perspective of self-determination theory, if one is persistently engaged with few activities among many other activities, then one can establish himself/herself with his/her own personal identity. However, as per the social cognitive theory, human functioning is more explained through triadic causality in which behavior, cognitive, and other environmental events all operate as interacting determinants of each other. Therefore, while proposing theoretical framework in this study, we argue here that Vallerand and Houlfort (2003) double-edged sword of passion can be better viewed from an integrative model which is following social cognitive theory principle.

6 Managerial Implications and Discussions

At present, managerial techniques for passion, that is, inviting voluntary contribution beyond the observable, measurable, enforceable minimum, are much less developed than managerial techniques that stem from hierarchy, control, or structure and that

rest on formal order. The process model of passion in reducing cynicism will be of great assistance in this context as it is fundamentally based on self-motivation and voluntary effort. Further, it serves two-pronged objective: reduces the expenses incurred in practicing all the interventions of engagement and burnout suffered through the way of engagement practices. Such voluntary contribution by way of work passion can be made sustainable through embedded work context involving best practices. The organization must cultivate the seed of change by building sustainability in its strategy and practices which in turn wrap in structural changes in leadership. Moreover, sustainable leadership believes in the conservation of resources by virtue of sustainability practices. This further ensures the prevention of depletion of energy and resources leading to the occurrence of ill-being and thereby resulting in burnout (cynicism).

Although organization may face challenges initially by building capacity to endure and simultaneously satisfy triple bottom line of economic, environmental, and human performance, the long-term objective of sustainability in employee's performance can be realized with reduced cynicism and healthy well-being, and this whole phenomenon is dependent upon one's passion. Thus it focuses on the significant benefits that can accrue to corporations, society, and employees by making human sustainability like passion work.

7   Conclusion

This paper aims at developing theoretical model which focuses on the human sustainability, that is, how the passion at work can lead to sustainable psychological well-being which in turn mitigates the cynicism in organization. The passion of employee can result into favorable and unfavorable outcomes due to its double-edged nature. One type of passion (obsessive) is presumed to be conducive, whereas on the other hand, the other type of passion (harmonious) prevents its occurrence. However, the environment of sustainability can support employees to thrive and sustain their harmonious passion toward their work. This is so because sustainable leader not only adds learning to vitality of passionate employees but also help them to design and implement the routine to renew themselves; otherwise their health and performance are likely to suffer (Spreitzer et al. 2012). Furthermore, the sustainable leader creates an environment for employees where they can be refrained to undergo through obsessive passion which has much debilitating effect on employees' psychological well-being. Subsequently, the reduced cynicism can be realized.

References

Amabile TM (2001) Beyond talent: John Irving and the passionate craft of creativity. Am Psychol 56:333–336

Amiot C, Terry D, Jimmieson N, Callan V (2006) A longitudinal investigation of coping processes during a merger: implications for job satisfaction and organizational identification. J Manag 32:552–574

Avery GC, Bergsteiner H (2011) Sustainable leadership practices for enhancing business resilience and performance. Strateg Leadersh 39(3):5–15

Baum JR, Locke EA, Smith KG (2001) A multi-dimensional model of venture growth. Acad Manag J 44(2):292–303

Baumruk R (2004) The missing link: the role of employee engagement in business success. Workspan 47(12):48–52

Boyatzis R, McKee A, Goleman D (2002) Reawakening your passion for work. Harv Bus Rev 80:87–94

Brown RB (1996) Organizational commitment: clarifying the concept and simplifying the existing construct typology. J Vocat Behav 49(3):230–251

Brown KW, Ryan RM, Creswell JD (2007) Mindfulness: theoretical foundations and evidence for its salutary effects. Psychol Inq 18:211–237

Burke RJ, Fiskenbaum L (2009) Work motivations, work outcomes and health: passion versus addiction. J Bus Ethics 84:257–263

Carbonneau N, Vallerand RJ, Fernet C, Guay F (2008) The role of passion for teaching in intrapersonal and interpersonal outcomes. J Educ Psychol 100:977–987. doi:10.1037/a0012545

Cardon MS, Zietsma C, Saparito P, Matherne BP, Davis C (2005) A tale of passion: new insights into entrepreneurship from a parenthood perspective. J Bus Ventur 20:53–45

Csikszentmihalyi M (1990) The domain of creativity. In: Runco MA, Albert RS (eds) Theories of creativity. Sage, Newbury Park, pp 190–212

Diener E, Emmons RA, Larsen RJ, Griffin S (1985) The satisfaction with life scale. J Pers Assess 49:71–76

Donahue EG, Forest J, Bergeron E (2012) Passion for work and emotional exhaustion: the mediating role of rumination and recovery. Appl Psychol Health Well-Being 4(3):341–368

Emerald (2011) Sustainable leadership: leading business, industry and local government towards a sustainable future. Strat Direct 27(2):5–8

Fischer R, Smith PB (2006) Who cares about justice? The moderating effect of values on the link between organizational justice and work behavior. Appl Psychol Int Rev 55:541–562

Frank FD, Finnegan RP, Taylor CR (2004) The race for talent: retaining and engaging workers in the 21st century. Hum Resour Plan 27(3):12–25

Freudenberger HJ (1974) Staff burnout. J Soc Issues 30:159–165

Gotlieb JB, Grewal D, Brown SW (1994) Consumer satisfaction and perceived quality: complementary or divergent constructs? J Appl Psychol 79:875–885

Hargreaves A (2003) Teaching in the knowledge society: education in the age of insecurity. Teachers College Press, New York

Harrison DA, Newman DA, Roth PL (2006) How important are job attitudes? Meta-analytic comparisons of integrative behavioral outcomes and time sequences. Acad Manag J 49:305–325

Ho VT, Wong S, Lee CH (2011) Tale of passion: linking job passion and cognitive engagement to employee work performance. J Manag Stud 48(1):26–47

Hodgins HS, Knee R (2002) The integrating self and conscious experience. University of Rochester Press, New York

Jaussi KS (2007) Attitudinal commitment: a three-dimensional construct. J Occup Organ Psychol 80:51–61

Kahn W (1990) Psychological conditions of personal engagement and disengagement at work. Acad Manag J 33:692–724

Krapp A (2002) Structural and dynamic aspects of interest development: theoretical considerations from ontogenetic perspective. Learn Instr 12:383–409

Lord RG, Kernan MC (1987) Scripts as determinants of goal commitment. Acad Manag Rev 12:265–277

Love A (2005) Expressing purpose through work. Research monograph. HRx Renaissance Consortium, Flint Hill

Mageau GA, Vallerand RJ, Rousseau FL, Ratelle CF, Provencher PJ (2005) Passion and gambling: investigating the divergent affective and cognitive consequences of gambling. J Appl Soc Psychol 35:100–118

Mageau GA, Carpentier J, Vallerand RJ (2012) The role of self-esteem contingencies in the distinction between obsessive and harmonious passion. Eur J Soc Psychol 41(6):720–729

Marsh HW, Vallerand RJ, Lafreniere MAK, Parker P, Morin AJS, Carbonneau N, Jowett S, Paquet Y, Bureau JS, Fernet C, Guay F, Salah Abduljabbar A (2013) Passion: does one scale fit all? Construct validity of two-factor passion scale and psychometric invariance over different activities and languages. Psychol Assess 25(3):796–809

Mariappanadar S (2003) Sustainable human resource strategy: the sustainable and insustainable dilemmas of retrenchment. Int J Soc Econ 30(8):906–923

Maslach C (1993) Burnout: a multidimensional perspective. In: Schaufeli WB, Maslach C, Marek T (eds) Professional burnout: recent developments in theory and research. Taylor & Francis, Washington, DC, pp 19–32

Maslach C, Jackson SE (1981) The measurement of experienced burnout. J Occup Behav 2:99–113

Maslach C, Leiter MP (2008) Early predictors of job burnout and engagement. J Appl Psychol 93:498–512. See more at: http://psychology.berkeley.edu/people/christina-maslach#sthash.YIXDWm8f.dpuf

Maslach C, Schaufeli WB, Leiter MP (2001) Job burnout. Annu Rev Psychol 52:397–422

Pati SP (2012) Development of a measure of employee engagement. Indian J Ind Relat 48(1):94–104

Piko BF (2006) Burnout, role conflict, job satisfaction and psychosocial health among Hungarian health care staff: a questionnaire survey. Int J Nurs Stud 43:311–318

Richman A (2006) Everyone wants an engaged workforce how can you create it? Workspan 49:9–36

Rousseau FL, Vallerand RJ, Ratelle C, Mageau GA, Provencher PJ (2002) Passion and gambling: on the validation of the Gambling Passion Scale (GPS). J Gambl Stud 18:45–66

Ryan RM, Deci EL (2000) The darker and brighter sides of human existence: basic psychological needs as a unifying concept. Psychol Inq 11:319–338

Ryff CD, Keyes LM (1995) The structure of psychological well-being revisited. J Pers Soc Psychol 69:719–727

Saks AM (2008) The meaning and bleeding of employee engagement: how muddy is the water"? Ind Organ Psychol 1:40–43

Salanova M, Llorens S, García M, Burriel R, Bresó E, Schaufeli WB (2005) Towards a four dimensional model of burnout: a multigroup factor-analytic study including depersonalization and cynicism. Educ Psychol Meas 65:901–913

Schaufeli WB, Bakker AB, Salanova M (2006) Measurement of work engagement with a short questionnaire: a cross-national study. Educ Psychol Meas 66:701–716

Seguin-Levesque C, Laliberte ML, Pelletier LG, Blanchard C, Vallerand RJ (2003) Harmonious and obsessive passion for the internet: their associations with couple's relationships. J Appl Soc Psychol 33:197–221

Shaw K (2005) An engagement strategy process for communicators. Strateg Commun Manag 9:26–40

Spreitzer G, Porath CL, Gibson CB (2012) Toward human sustainability: how to enable more thriving at work. Organ Dyn 41(2):155–162

Swailes S (2002) Organizational commitment: a critique of the construct and measure. Int J Manag Rev 4:155–178

Vallerand RJ (2010) On passion for life activities: the dualistic model of passion. In: Zanna MP (ed) Advances in experimental social psychology. Academic, New York, pp 97–193

Vallerand RJ (2012) Passion for sport and exercise: the dualistic model of passion. In: Roberts G, Treasure D (eds) Advances in motivation in sport and exercise, vol 3. Human Kinetics, Champaign

Vallerand RJ, Blanchard C, Mageau GA, Koestner R, Ratelle CF, Marolais J (2003) Les passions de l'ame: on obsessive and harmonious passion. J Pers Soc Psychol 85:756–767

Vallerand RJ, Houlfort N (2003) Passion at work: toward a new conceptualization. In: Vallerand RJ, Blanchard C, Mageau GA, Koestner R, Ratelle CF, Marolais J (ed) Les passions de l'ame: on obsessive and harmonious passion. J Pers Soc Psychol 85:756–767

Vallerand RJ, Paquet Y, Philippe FL, Charest J (2010) On the role of passion in burnout: a process model. J Pers 78:289–312

Williams GC, Deci EL (1996) Internalization of biopsychosocial values by medical students: a test of self-determination theory. J Pers Soc Psychol 70:767–779

Wofford JC, Goodwin VL (1990) Effects of feedback on cognitive processing and choice of decision style. J Appl Psychol 75:603–612

Zigarmi D, Roberts TP (2012) Leader values as predictors of employee *affect and work passion intentions*. J Mod Econ Manage 1(1):1–28

Zigarmi D, Nimon K, Houson D, Witt D, Diehl J (2009) Beyond engagement: toward a framework and operational definition for employee work passion. Hum Resour Dev Rev 8:300–326

Zigarmi D, Nimon K, Houson D, Witt D, Diehl J (2011a) A preliminary field test of an employee work passion model. Hum Resour Dev Q 22:195–221

Zigarmi D, Nimon K, Houson D, Witt D, Diehl J (2011b) Sustainable leadership: leading business, industry and local government towards a sustainable future. Strateg Direc 27(2):5–8

Chapter 34
The Role of Technological Innovation in Managing Through Business Cycles: A Study on Indian ICT Firms

Arindam Das and Sheeba Kapil

Abstract The global economic downturn of 2008 has impacted almost all industry segments in all geographies, and even after 5 years, many of them are in different stages of recovery. Emerging economies and technology firms in these economies have braved this headwind relatively better, and they have witnessed a significant growth in the recent years. In this study, we conduct an empirical research on Indian ICT firms and analyse how factors related to innovation and inorganic growth contribute to their sustenance and growth during boom and bust cycles. A set of 442 Indian firms in the ICT sector have been studied for the period 1999–2012, a period when this sector has witnessed all the four phases of business cycle. The results show that acquisitions vary significantly across phases of business cycle, whereas R&D investments do not vary over the cycle. Contrary to established findings in developed economies on technology firms' focus on R&D, we find that Indian ICT firms' R&D investments are significantly lower and may not play any significant role in the long-term growth of the firms.

Keywords ICT sector • Acquisitions • Innovation • Emerging markets • India • ANOVA

1 Introduction

High-tech industries are characterised by fierce competition and the threat of obsolescence. In order to create a sustainable edge over competitors, firms must constantly invest in the creation of new technological capabilities. Acceleration of R&D efforts and development of internal innovative capabilities are no longer sufficient to cope with the increasing cost, speed and complexity of technological developments in high-tech industries. In addition, even the largest companies are forced to use

A. Das (✉) • S. Kapil
Indian Institute of Foreign Trade, B-21, Qutub Institutional Area, New Delhi 110016, India
e-mail: arindam.iift@gmail.com; sheebakapil@iift.ac.in

external sources of technology through licensing, strategic technology agreements or M&A (Vanhaverbeke and Duysters 1997). The ICT sector, in particular, has experienced rapid growth and increasing economic importance over the past two decades. It has also changed the working methods in almost all other sectors in the economy. It is a sector with a high degree of uncertainty and change, impacted by technological breakthroughs as well as global business environment.

Business cycles refer to the periods of expansions and contractions in the level of economic activities around a long-term growth trend. The Indian ICT industry has been on a growth trajectory over the past two decades, thanks to globalisation. However, it has been subjected to demand fluctuation and cost sensitivity due to cyclical events in the global economy. Specifically, since 1999, it has witnessed dot-com bubble, the industrial boom of 2004 and again the economic crisis of 2008.

There are various factors that influence survival of a firm during the downturn and growth during the expansion cycle. The capacity of the firm to absorb disturbance, identify opportunities and reorganise while undergoing changes so as to still retain profitability, growth avenues, structure and identity forms the backbone of a resilient and growing organisation. In the technology sector, quick obsolescence of existing technology and emergence of new technology also play a critical role.

Mergers and acquisitions (M&A) have been popular means of growth for firms over several decades, and in recent years, M&A volumes have surged in emerging markets as well. Liberalisation of the domestic economy, globalisation of industries, increasing intensity of competition and access to capital markets are some of the enablers that are helping firms in these markets explore inorganic growth. For example, the share of emerging economy firms in cross-border acquisition volume has gone up from 4 % in 1987 to 13 % in 2005 and 25 % in the first half of 2011 (UNCTAD 2011).

There are various reasons why firms choose to grow through M&A instead of organic growth. Acquiring a target in a line of business where the acquirer wants to grow is often a faster way to grow than via internal expansion (Trautwein 1990). In addition, if the replacement cost of assets is higher than the market value of target assets, the acquisition turns out to be a cheaper alternative. However, M&A and organic growth are not necessarily mutually exclusive strategies, and firms often consider them as complementary (Luypert and Huyghebaert 2008).

In this paper, we look at R&D investments, acquisitions activities as well as quantum of intangible assets held by ICT firms in India during different stages of business cycle to explain a firm's strategic intent to leverage these for sustenance and long-term growth. We use analysis of variance (ANOVA) to test the hypotheses. Our work attempts to: (a) provide a general assessment of M&A and R&D activities in Indian ICT sector; (b) examine the role of R&D, intangible assets and acquisitions as response to changes in business environment and (c) provide evidence that suggests that while R&D is perceived to play a critical role in technology industry, in Indian ICT sector, there is little relevance to R&D activities with changing business environment and strategic directions.

2   Background

2.1   Technology Firms and Inorganic Growth

In the context of technological sourcing, Hitt et al. (1991) argued that acquisitions caused lower R&D and patenting intensities, and this explained poor post-merger performance encountered frequently. They found that decreasing returns from existing knowledge base and the choice between doing R&D and buying R&D were the main drivers for acquisition and concluded that there was a substitutive link between firm's own R&D and acquisitions, which was confirmed by other researchers (Christensen and Bower 1996; Blonigen and Taylor 2000). On firm survival and growth in high-tech industry, Christensen et al. (1998) found that these were linked to an interesting phenomenon – "dominant design", and once such a design emerged, the number of players in the industry came down, and the entry barrier for the newcomer went up. In addition, intangible asset of the firm was found to be an important explanatory variable for core competencies that provided the "leadership edge" to the firms (Onyeiwu 2003).

However, in a study of European high-tech industry, Wagner (2008) found that the determinants for acquisitions were mostly related to firm size, financial conditions and geographical origin of the firm. Patenting and R&D intensities of firms were only rarely associated with firms' acquisition activities, and the most consistent predictors for acquisition were found to be sales volume (a proxy for firm size) and financial leverage.

Kayo et al. (2010) analysed the determinants of the choice among different firm growth strategies: acquisitions and joint ventures or arm's-length alliances in an emerging market like Brazil. The results supported the learning perspective of the firm's choice. A firm's previous experience in a specific growth strategy was found to be determining its future strategic choices. Financial factors as explanatory variable showed no statistical significance.

2.2   Emerging Markets MNEs (EMNE) and Their Inorganic Growth

There have been several studies focused on emerging economies. Dunning et al. (2008) noted that unlike developed country MNEs, the EMNEs rarely had the firm-specific ownership advantages (notably organisational and management skills) to ensure success in their outward FDI. What they did have was a variety of home country-specific advantages that they were able to internalise and use outside their national boundaries. Mathews (2006) identified "Dragon multinationals" as firms that started from behind and overcame their deficiencies by turning initial disabilities into sources of advantage – by leapfrogging to advanced technological levels or by leveraging their way into new markets through partnerships and joint ventures.

Ramamurti (2010) hypothesised a set of firm-specific advantages (FSA) in EMNEs: products suited to emerging markets, production and operational excellence, privileged access to resources and markets, adversity advantage and traditional intangible assets. On intangible assets, only a handful of EMNEs seemed to be close to their industry's technology frontier when measured through R&D-to-sales ratio derived their FSA from being late-movers rather than first-movers and took advantage of technology licensing and alliances.

The literature on performance of emerging market firms in M&A space is mixed. Bhaumik and Selarka (2008) examined the impact of M&A on profitability of firms in India and concluded from their study on M&As during 1995–2002 that M&A in India led to deterioration in firm performance. They also found that negative effects of entrenchment of owner managers trumped the positive effects of reduction in owner vs. manager agency problems. Kumar (2009) confirmed that unlike western companies that used M&A primarily to promote efficiency or instant growth, emerging giants acquired companies for more strategic reasons like obtaining knowledge and technology. Even after the economic crisis engulfed the world in the last quarter of 2008, the Indian technology majors continued their selective acquisitions. He concluded that Indian companies "have become self-assured and savvy investors, financing large deals and paying global prices".

Bhaumik et al. (2009) found that both China and India achieved very high growth rates in patents granted with resident research and significant involvement from MNEs from developed countries between 1992 and 2007. However, it is not known how these patent stocks are influencing inorganic growth strategies of technology firms in these countries. In a relevant study, Niosi and Tschang (2009) found that large Indian software services firms, enabled by higher market capitalisation, adopted a notable shift in strategy, using acquisitions to complement their previously dominant strategy of organic growth. Many of their acquisition targets were in developed country markets and served as "bases" to help the Indian MNEs to operate in those markets.

Resource dependence is another factor for acquisition decisions and R&D-related assets or lack of them influence firm's acquisitive behaviour. However, high-tech EMNEs operate with different FSA than their western counterparts and may not have the first-mover technology advantage. In addition, EMNEs do consider acquisitions as a dominant strategy, while local business press eulogise acquisitive behaviour of EMNEs, irrespective of real value creation. Patenting activities and focus on intellectual property are also on the rise in these economies. In such a context, we would like to see how R&D investments, acquisitions and quantum of intangible assets contribute to firm's sustenance during a downturn and growth during expansion phase.

3   Hypotheses

3.1   The Role of R&D Investments and Intangible Assets

Technology firms have propensity to source technology through acquisitions because such actions can mitigate specific weaknesses, such as lack of R&D investment or low R&D output. In order to address the challenges imposed on business by

different phases of business cycle, firms are expected to vary their R&D activities to ensure sustenance and growth. R&D investment weighted by firm size measures a firm's focus on developing intangible assets (Harzing 2002; Lu and Beamish 2004).

Hypothesis 1: *Technological focus*, *measured through R&D intensity, is expected to contribute to a firm's sustenance and growth and will be at different levels during different business cycle phases*.

However, for a large number of ICT firms, formal R&D may be limited. This is especially true for IT services firms where a firm's strategic advantage lies not so much in explicit R&D expenses but in tacit knowledge that the firm and its people possess. These typically include firm's execution processes, knowledge base and tools it use to deliver business. Thus, quantum of intangible assets becomes an important factor in shaping a firm's sustenance and growth strategy.

Hypothesis 2: *Intangible assets that include non-codifiable assets are expected to contribute to a firm's sustenance and growth and will be at different levels during different business cycle phases*.

3.2   Effect of Prior Acquisition Experience

A choice of only "greenfield" growth tends to make a firm simple and inert, whereas acquisitions broaden a firm's knowledge base (Vermeulen and Barkema 2001). We extend this argument that a firm will actively pursue acquisition opportunities to secure its sustenance and growth strategies, and these activities are expected to vary across business cycle phases. This is applicable for both related acquisition as well as unrelated acquisition. Firms in emerging economies demonstrate such behaviour more vigorously as the environmental factors put up additional barriers and uncertainty to firms who have not experienced acquisitions.

Hypothesis 3: *Acquisition opportunities are expected to contribute to a firm's sustenance and growth and will be at different levels during different business cycle phases*.

4   Method

4.1   Sample and Data Collection

We decide to identify the technology companies by 5-digit NAICS (North American Industry Classification System) codes and include firms primarily engaged in computer and electronic manufacturing, IT and telecom business. The broad range of companies helps us to understand the nuances of the industry happenings better. We select 442 firms based on revenue reported and analyse firm level, and we use

multiple sources of data to compile our dataset. The acquisition-related data are collected from Euromoney ISI Emerging Markets Information System, the firm-level annual data are collected from Prowess database, maintained by Centre for Monitoring Indian Economy (CMIE). We also verify acquisition-related data with available public announcements in the Indian stock market. By following this process, we arrive at a dataset consisting of 6,188 firm-level information spanning 14 years between Indian financial years (FY) 1999–2012. However, we do have missing values for some variables for certain firm, year combinations. In addition, not all firms were in operation during the complete period of observation.

4.2 Statistical Technique

We deploy analysis of variance (ANOVA) to test statistical significance of the differences in our observed variables between different stages of business cycle. One-way ANOVA is used to determine whether there are any significant differences between the means of two or more independent (unrelated) groups. It is important to realise that the one-way ANOVA is an omnibus test statistic and cannot tell which specific groups are significantly different from the other; it only tells that at least two groups are different. As we have four groups (stages) in our study design, determining which of these groups differ from each other is important for our analysis. We do this using Tukey's post-hoc test.

As mentioned earlier, we consider three variables as our measures for this analysis as mentioned below:

R & D Intensity: We follow Lu and Beamish (2004) and use R&D expenditure weighed by sales as the measure of R&D intensity.
No. of Acquisitions: We consider all acquisitions as well as majority stake purchases by these firms as a measure of external technology acquisition. While some acquisitions may not be carried out for specific technological benefits, past studies show that almost all related acquisitions contribute to technological assets of the acquirer.
Intangible Assets: A large number of ICT companies, especially firms in IT sector do not have a large direct R&D investment, but at the same time, they possess significant intangible assets; a lot of these lie in their experiential knowledge, processes and people skills. Firms do report indicative intangible assets in monetary terms, and we use this information to calculate the share of a firm's intangible assets as a proportion of firm size (measured in terms of revenue).

These measures are studied over four groups that represent for stages of business cycle: depression, expansion, boom and recession. Table 34.1 provides the details of the variables, their definitions and source of information.

Table 34.1 Variable definitions and source of data

Variable name	Data type	Definition/calculation	Data source
Financial year (FY)	Numeric	Financial year of the reported data	
Business cycle phase	Numeric – integer	Four possible values: expansion, boom, recession and depression. A financial year is categorised under one of these phases	Authors' assessment based on macroeconomic information as well as sources like NASSCOM
Total income	Numeric	Reported stand-alone total income of the firm for the financial year	CMIE prowess
EBITDA	Numeric	Reported earnings before interest, tax, depreciation and amortisation	CMIE prowess
Net intangible assets	Numeric	Reported valuation of intangible assets of the firm for the financial year	CMIE prowess
Number of acquisitions	Numeric – integer	Number of acquisitions made by the firm during the financial year	ISI emerging markets information systems and CMIE prowess
Total R&D expenses	Numeric	Total of R&D operating expenses, R&D capital investment and royalties paid during the financial year	Authors' calculation based on CMIE prowess
R&D intensity	Numeric	Total R&D expenses as percentage of total income	Authors' calculation
Intangible assets %	Numeric	Net intangible assets as percentage of total income	Authors' calculation
EBITDA %	Numeric	EBITDA as percentage of total income	Authors' calculation

5 Results and Discussion

We first present a descriptive overview of our dataset. Table 34.2 provides the total view of the complete Indian ICT sector, summing up information from all the 442 firms under study. The data shows that the size (revenue) of the ICT sector has been growing at a CAGR of 16.15 %, while the profit (EBITDA) has grown at a CAGR of 17.02 % over the period of study. Similarly, total intangible assets, reported in monetary value, have grown at a rate of 16.61 %. In contrast, R&D expenses, which include capital expenditure and royalty payments, have increased by a CAGR of 4.25 % only. This suggests relative lack of relevance of R&D investments in the growth of the industry sector.

Before conducting ANOVA, we verify key assumptions on the data, i.e. test for outliers, approximate normal distribution for dependent variables and homogeneity of variances.

Table 34.2 Trend of Indian ICT sector growth, M&A and innovation activities

Year	Business cycle phase	Total income (in Rs. million)	EBITDA (in Rs. million)	Net intangible assets (in Rs. million)	No. of acquisitions	Total R&D expenses (in Rs. million)	R&D intensity %	EBITDA %	Intangible asset %	Growth in revenue	Growth in profit
1999	1	383,679.8	92,279.1	66,827	0	13,595.4	3.54	24.05	17.42	24.82	27.65
2000	1	482,971	114,971.1	26,234.9	21	14,514.8	3.01	23.80	5.43	25.88	24.59
2001	2	717,808.2	222,637.9	31,965.8	29	11,274.1	1.57	31.02	4.45	48.62	93.65
2002	2	928,906.2	339,095.5	62,206.1	20	13,754.7	1.48	36.50	6.70	29.41	52.31
2003	2	1,003,928.7	313,597.9	65,673.1	29	14,403.4	1.43	31.24	6.54	8.08	−7.52
2004	3	1,271,732.7	413,858.8	85,647.7	34	16,667.3	1.31	32.54	6.73	26.68	31.97
2005	3	1,544,193	487,180.8	81,997.4	35	9,182.5	0.59	31.55	5.31	21.42	17.72
2006	3	1,904,976.9	579,366.1	82,814.7	50	12,780.4	0.67	30.41	4.35	23.36	18.92
2007	4	2,545,373.7	761,080.1	118,518.9	94	14,422.8	0.57	29.90	4.66	33.62	31.36
2008	1	3,127,499.4	904,352.2	195,929.3	78	17,703	0.57	28.92	6.26	22.87	18.82
2009	1	3,696,247.4	966,572.5	351,857.5	48	21,905	0.59	26.15	9.52	18.19	6.88
2010	2	3,887,083.2	998,508.4	604,614.6	50	26,286.6	0.68	25.69	15.55	5.16	3.30
2011	2	3,820,959.4	846,528.2	860,774.3	48	24,045.6	0.63	22.15	22.53	−1.70	−15.22
2012	2	3,121,263.9	833,485.1	574,743.6	46	24,341.6	0.78	26.70	18.41	−18.31	−1.54

Table 34.3 Descriptive statistics in ANOVA

Variable		N	Mean	Std. deviation	Std. error
R&D intensity	1	396	10.7365	156.1306	7.8459
	2	537	3.0691	5.4821	0.2366
	3	317	2.7572	4.4820	0.2517
	4	114	5.4605	31.0759	2.9105
	Total	1,364	5.4225	84.6936	2.2932
No. of acquisitions	1	104	1.4135	0.7710	0.0756
	2	170	1.3059	0.6798	0.0521
	3	88	1.3523	0.7587	0.0809
	4	51	1.8431	1.2550	0.1757
	Total	413	1.4092	0.8242	0.0406
Intangible asset ratio	1	532	76.4873	642.6147	27.8609
	2	791	29.5223	109.9653	3.9099
	3	482	26.0564	163.0761	7.4279
	4	200	1394.5289	17827.3145	1260.5815
	Total	2,005	177.3109	5643.0974	126.0261

Table 34.4 Analysis of variance (ANOVA) output

Variable		Sum of squares	df	Mean square	F	Sig.
R7D intensity	Between groups	16,408.578	3	5,469.526	0.762	0.515
	Within groups	9,760,405.958	1,360	7,176.769		
	Total	9,776,814.536	1,363			
No. of acquisitions	Between groups	11.705	3	3.902	5.951	0.001
	Within groups	268.140	409	0.656		
	Total	279.845	412			
Intangible asset ratio	Between groups	330,035,698.058	3	110,011,899.353	3.467	0.016
	Within groups	63,486,438,284.515	2,001	31,727,355.465		
	Total	63,816,473,982.574	2,004			

Tables 34.3 and 34.4 summarise the output of ANOVA from SPSS® where we establish if our observed variables demonstrate significant difference between different business cycle phases. The results show that the number of acquisitions demonstrates significant difference across business cycle phases ($p<0.01$). Intangible assets percentage demonstrates only limited difference across business cycle phases ($0.01<p<0.05$). However, R&D intensity does not demonstrate any significant difference across business cycle phases ($p>0.05$).

Table 34.5 Post hoc test (Tuckey HSD)

Dependent variable	(I) Cycle	(J) Cycle	Mean difference (I–J)	Std. error	Sig.
No. of acquisitions	1	2	0.1076	0.1008	0.710
		3	0.0612	0.1173	0.954
		4	−0.430	0.1384	0.011
	2	1	−0.1076	0.1008	0.710
		3	−0.0464	0.1063	0.972
		4	−0.537	0.1293	0.000
	3	1	−0.0612	0.1173	0.954
		2	0.0464	0.1063	0.972
		4	−0.491	0.1425	0.004
	4	1	0.430	0.1384	0.011
		2	0.537	0.1293	0.000
		3	0.491	0.1425	0.004
Intangible asset ratio	1	2	46.9650	315.8296	0.999
		3	50.4309	354.2065	0.999
		4	−1,318.0416	467.1987	0.025
	2	1	−46.9650	315.8296	0.999
		3	3.4659	325.4763	1.000
		4	−1,365.0066	445.8107	0.012
	3	1	−50.4309	354.2065	0.999
		2	−3.4659	325.4763	1.000
		4	−1,368.4725	473.7733	0.020
	4	1	1,318.0416	467.1987	0.025
		2	1,365.0066	445.8107	0.012
		3	1,368.4725	473.7733	0.020

As the next step, in order to test on which groups (business cycle phases) acquisitions and intangible assets demonstrate significant differences, we conduct Tuckey's post hoc test. The results in Table 34.5 show that the number of acquisitions is significantly different between phase 4 and other phases, i.e. phases 1, 2 and 3 ($p < 0.01$). However, for intangible assets ratio, we do not find statistically significant difference across phases.

5.1 The Role of R&D Intensity and Intangible Assets

We find support for hypothesis 1 but not for hypothesis 2. Our studies indicate that the quantum of intangible assets varies significantly across business cycle, but it is not true for R&D investments. In fact, R&D investments for the whole industry is less than 1 % of the total sectoral revenue, indicating significantly lower R&D investments by Indian ICT firms in comparison to their global counterparts. However, Wagner (2008) explained such trend as obstacles to innovation experienced by larger

technology firms. When innovation tends to become organisationally radical or firms do not have sufficient absorptive capacity, then firms tend to avoid investments in innovation and instead go for acquiring necessary product/platform to maintain leadership positions. In addition, larger firms may tend to let their smaller counterparts carry out technological exploration and then pick out the survivors among these smaller ones. This helps in acquiring an amplified output towards definitive product/platform and economise on resources. However, a few large firms in our study, including the top two technology companies in India, Tata Consultancy Services and Infosys, have been very selective about acquiring smaller firms in the past decade.

Studies conducted on firms in developed economies indicate that intangible assets, like patent portfolio, R&D infrastructure etc., influence firm growth (Christensen and Bower 1996; Grimpe and Hussinger 2008; Luypaert and Huyghebaert 2008). However, lack of importance of R&D investments can be explained by Ramamurti's (2010) observation that EMNEs in mid-tech industries have insignificant R&D-to-sales ratios and probably derive their FSA from being late-movers rather than first-movers.

R&D investment's limited relevance on Indian technology firms' strategies may get addressed through some of the corrective measures taken by Indian policymakers. The Science, Technology and Innovation Policy 2013 of the Indian government (DST 2013) intends to promote and foster research and innovation in India and has a target to double India's Gross Expenditure on Research and Development (GERD) to at least 2 % of GDP through increased R&D investments from the private sector firms. Facilitating such initiatives is expected to result in improved self-sufficiency on products and solutions for Indian technology firms and therefore create sustainable competitive advantage.

5.2   Role of Acquisitions

Hypothesis 3 does find strong support from this study. The number of acquisitions carried out by firms varies significantly across business cycles with the average acquisitions coming down during downturn. This may suggest that the firms become cautious about investments when the macro-environment is not positive. On the other hand, they look at acquisitions as a way to enhance growth during other phases. The fact that R&D does not play an important role in these companies emphasise that firms may look at acquisitions as a mechanism to acquire new technologies.

6   Conclusions

This study contributes to the understanding on the role acquisitions, R&D investments and intangible assets play during different business cycle phases. By studying a large volume of secondary data and analysing information on a number of

acquisitions, R&D investments and intangible assets ratio during different business cycle phases, we try to establish how these factors may play a role in surviving a downturn and grow during expansion phase of the business cycle. The results clearly highlight that Indian ICT firms' acquisition behaviour vary significantly across business cycle phases, whereas R&D investments do not differ at all between different phases.

The primary role of acquisition seems to be consolidation of resources and pursue growth. In addition, as another departure from western technology firms, we find that firms' R&D intensity does not play an important role in India ICT firms' growth strategy. The findings suggest an interesting perspective: the firms in technology sector in a country like India may not have as much focus on technology when it comes to growth. As Ramamurti (2010) suggested, these firms are probably late entrants. Therefore, though they operate in technology sector, they may not possess, develop or intend to acquire cutting-edge technologies and are probably more reliant on technology alliances with partners from developed economies. This view is also supported by the fact that India's GERD to GDP ratio has consistently remained below 1.00 and below other BRIC countries since 2000. As of 2010, India's GERD to GDP was 0.88 %, while that of China was 1.75 %, and patenting activities in India, though it has grown in the new millennium, was less than half of that in China (Mani 2010; Thomson 2013). The insight on the role of acquisitions, R&D and intangible assets in Indian ICT firms provide inputs to strategy practitioners and can be further extended to study the effect of these decisions on firm's growth.

References

Bhaumik SK, Selarka E (2008) Impact of M&A on firm performance in India: implications for concentration of ownership and insider entrenchment. William Davidson Institute Working Paper Number 907. Available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=970001. Last accessed 30 Jan 2013

Bhaumik PK, Chakrabarti AK, Makinen S (2009) Technology development in China and India: a comparative evaluation. Journal Indian Bus Res 1(4):213–237

Blonigen BA, Taylor CT (2000) R&D intensity and acquisitions in high technology industries: evidence from the US electronic and electrical equipment industries. J Ind Econ XLVIII(1):47–70

Christensen CM, Bower JL (1996) Customer power, strategic investment, and the failure of leading firms. Strateg Manag J 17:197–218

Christensen CM, Suarez FF, Utterback JM (1998) Strategies for survival in fast-changing industries. Manag Sci 44(12):S207–S220

DST (2013) Science, technology and innovation policy, 2013. Department of Science and Technology, Government of India, New Delhi. Available at http://www.dst.gov.in/sti-policy-eng.pdf. Last accessed 30 Jan 2013

Dunning JH, Kim C, Park D (2008) Old wine in new bottles: a comparison of emerging market TNCs today and developed country TNCs thirty years ago. In: Sauvant K (ed) The rise of transnational corporations from emerging markets: threat or opportunity? Edward Elgar Publishing, Cheltenham

Grimpe C, Hussinger K (2008) Building and blocking: the two faces of technology acquisitions, ZEW – Centre for European Economic Research Discussion Paper No. 08-042. Available at SSRN: http://ssrn.com/abstract=1169382. Last accessed 25 Mar 2013

Harzing A-W (2002) Acquisitions versus greenfield investments: international strategy and management of entry modes. Strateg Manag J 23:211–227

Hitt MA, Hoskisson RE, Duane Ireland R, Harrison JS (1991) Effects of acquisitions on R&D inputs and outputs. Acad Manag J 34(3):693–706

Kayo EK, Kimura H, Patrocínio MR, de Neto LE, Oliveira N (2010) Acquisitions, joint ventures or arm's-length alliances? Analyzing the determinants of the choice of growth strategy in Brazil from 1996 through 2007. Braz Adm Rev 7(4):397–412

Kumar N (2009) How emerging giants are rewriting the rules of M&A. Harv Bus Rev 87(5):115–121

Lu JW, Beamish PW (2004) International diversification and firm performance: the s-curve hypothesis. Acad Manag J 47(4):598–609

Luypaert M, Huyghebaert N (2008) Determinants of growth through mergers and acquisitions: an empirical analysis EFMA conference proceedings. Available at http://www.efmaefm.org/0EFMAMEETINGS/EFMA%20ANNUAL%20MEETINGS/2007-Vienna/Papers/0166.pdf. Last accessed 30 Jan 2013

Mani S (2010) Financing of industrial innovations in India: how effective are tax incentives for R&D? Int J Tech Learn Innov Dev 3(2):109–131

Mathews JA (2006) Dragon multinationals: new players in 21st century globalization. Asia Pac J Manag 23:5–27

Niosi J, Tschang FT (2009) The strategies of Chinese and Indian software multinationals: implications for internationalization theory. Ind Corp Chang 18(2):269–294

Onyeiwu S (2003) Some determinants of core competencies: evidence from a binary-logit analysis. Tech Anal Strat Manag 15(1):43–63

Ramamurti R (2010) What have we learned about EMNEs. In: Ramamurti R, Jitendra S (eds) Emerging multinationals from emerging markets. Cambridge University Press, Cambridge, UK, 2008, Chapter 13

Thomson R (2013) Building BRICKS: exploring the global research and innovation impact of Brazil, Russia, India, China and South Korea. In: Thomson R (ed). Available at http://sciencewatch.com/sites/sw/files/sw-article/media/grr-brick.pdf. Last accessed 19 July 2013

Trautwein F (1990) Merger motives and merger prescriptions. Strateg Manag J 11:283–295

UNCTAD (2011) Non-equity modes of international production and development. United Nations Conference on Trade and Development World Investment Report 2011. United Nations, Geneva

Vanhaverbeke W, Duysters G (1997) A longitudinal analysis of the choice between technology-based strategic alliances and acquisitions in high-tech industries: the case of the ASIC industry. Netherlands Institute of Business Organization and Strategy Research (NIBOR) discussion paper no. NIBOR/RM/97/07. Available at http://arno.unimaas.nl/show.cgi?fid=653. Last Accessed 25 Mar 2013

Vermeulen F, Barkema H (2001) Learning through acquisitions. Acad Manag J 44(3):457–476

Wagner M (2008) Determinants of the acquisition of smaller firms by larger incumbents in high-tech industries: are they related to Innovation and Technology Sourcing? Technical University of Munich SFB Discussion Paper. Available at http://ideas.repec.org/p/hum/wpaper/sfb649dp2007-063.html. Last accessed 30 Jan 2013

Chapter 35
Sustainable Supplier Selection: A Case of Indian SME

Jitendar Bittoo Khatri and Manoj Srivastava

Abstract The challenges offered by sustainable manufacturing deeply affect supply chain strategies and the entire procurement process. The need to improve organizational efficiency, overcome supply chain risks, achieve competitive position, and realize zero wastes, concern for the environment, and awareness among consumers has made companies to start considering triple bottom line (3BL) sustainable value creation approach in their supply chain strategy. Supplier selection is an important process for achieving this objective. Only through the active participation of suppliers, the buying firms can truly integrate societal, environmental, and economic sustainability in their supply chains. There are limited examples, within the context of developing economies like India, where firms have adopted 3BL sustainability approach in their procurement process. This paper deals with specific considerations of sustainability approach by an Indian automotive Tier-I, aluminum die casting parts manufacturing company. The company develops and applies an AHP-based model for ranking raw material suppliers. Implication of this approach, limitations, and future research direction conclude this paper.

Keywords Sustainable supply chain management (SSCM) • Small and medium enterprises (SMEs) • Analytic hierarchy process (AHP) • Aluminum high-pressure die casting (HPDC)

J.B. Khatri (✉)
EFPM- 2009, Management Development Institute (MDI), Gurgaon, India
e-mail: bittooshah@gmail.com

M. Srivastava
Associate Professor, Management Development Institute (MDI), Gurgaon, India

1 Introduction

It is being increasingly realized that the most significant societal and environmental impacts made by many companies occur outside of their internal operations. These impacts include social and environmental impacts of their suppliers in upstream supply chain and use and disposal of products by customers/consumers in downstream supply chain. In the recent years, researchers and managers have been focusing on how organizations and their supply chains are creating sustainable economic, societal, and environmental values for the stakeholders. Supply chains play an important and critical role toward achieving sustainability objectives of organizations. "Company is no more sustainable than its supply chain" (Krauss et al. 2009, p. 4). In most manufacturing industries, the cost of raw material and component parts constitutes the major cost elements of a product, such that in some cases it can account for up to 70 % (Ghodsypour and O'Brien 1998). In addition, companies are increasingly including sustainable development in their strategy and competitive priorities (Hart 1992; Bansal 2005; Sharma and Henrique 2005).

The supplier selection decision is one of the most critical issues faced by operations and purchasing managers to help organizations maintain a competitive advantage under sustainable supply chain management (SSCM) practice. Suppliers furnish buying firms with raw materials, semifinished assemblies, and finished components in timely and cost-effective manner to help them achieve competitive advantage. This article has been written in following sections: Sect. 2 refers to supplier selection criteria under sustainable supply chain environment, Sect. 3 refers to AHP methodology, Sect. 4 refers to sustainable supplier selection model, Sect. 5 refers to how the case company's supplier evaluation, and finally Sect. 6 deals with conclusion, research findings, and limitation of the research work.

2 SSCM and Supplier Selection Under Sustainable Supply Chain Environment

The issue of sustainable supply chain management (SSCM) is gaining recognition in both academia and practice, as an area of opportunity to enhance competitiveness. Truly sustainable supply chains are expected to keep on generating profits for a longer period of time without impacting social and environmental system and perform well on economic, social and environmental dimensions, the triple bottom line (Pagell and Wu 2009). Researchers conclude that SSCM can contribute positively to the reputation of an organization as "good citizen" (Wolf 2014). Owing to obvious benefits in incorporating sustainability issues in their supply chains, the companies are reinventing the way their entire procurement process is executed. Sustainability in supply chain is one such initiative which has been linked to the additional environmental and societal performance objectives while taking care of profitability, customer satisfaction, quality, and delivery to gain competitive advantage. To make the

supply chains truly sustainable, the environmental, economic, and social factors need to be addressed at strategic and at Daily Work Management (DWM) levels along the entire value chain. Supplier selection is described as "the process by which firms identify, evaluate and contract with suppliers" (Beil 2010, p. 1). Buying firms have to deploy large amount of resources in supplier selection and evaluation process; therefore, a well-defined criterion is required at each stage of the screening process. Selecting the suitable suppliers is always a challenging task for purchase managers under sustainable supply chain environment, since "Sustainable SCM means that buying organizations are held responsible for the environmental and social performance of their suppliers" (Walker and Brammer 2007, p. 15).

3   SSCM and Performance of SMEs

Although SSCM is considered to be additional component of competitive advantage, researchers (Blackhurst et al. 2012) highlight that small and medium enterprises (SMEs) lag behind larger businesses in integrating environmental and societal management into corporate strategies (Revell et al. 2010). Most SMEs are found to adopt reactive approach to sustainability issues and hence do not exploit the full potential available. Incapability of focal company (Maignan et al. 2002), non-alignment with corporate strategy (Narsimhan and Das 2001), only focus on cost reduction (Min and Galle 2001) and lack of conceptual understanding (Cooper et al. 1997) have been identified as key factors in literature that limit their role in sustainable supply chain initiatives.

4   Analytic Hierarchy Process (AHP) Methodology

The AHP methodology, developed by T. L. Saaty (1980), is an important multi-criteria decision-making (MCDM) technique. The main advantages of AHP are its simplicity, robustness, and the ability to incorporate intangibles into a decision-making process. MCDM techniques consider an alternative set of methods that allow multiple criteria to be used concurrently in the decision-making process (Sarkis and Talluri 2002).

A hierarchy has at least three levels: overall objective/goal of the problem for which solution is sought is at the top, multiple criteria that define alternatives are placed in the middle, and alternatives from which selection is to be made are at the bottom level. Data is collected from experts or decision-makers corresponding to the hierarchy structure, in a pairwise comparison of alternatives on a qualitative scale. Experts can rate the comparison as equal, marginally strong, strong, very strong, and extremely strong. The comparisons are made for each criterion and converted into quantitative numbers. Subjective evaluations are converted into numerical values and decision-makers rank each alternative on a numerical scale (Saaty 1980).

5   Case Study: ABC Die Casting Company (P) Ltd.

The incorporation of sustainable issues in supply chain is at an initial phase of development (Ageron et al. 2012). This could be probably one of the reasons of few literatures in this field for guidance to SMEs in emerging economics. "Relatively little research has been conducted on the extent to which corporations have integrated sustainability principles into the management of their supply chain and evaluation of supplier performance" (Morali and Searcy 2013, p. 635).

In this paper, we present the case study of an Indian SME, known as ABC Die Casting Company (ABC Co.), which applies scientific principles in evaluating sustainability performance of its suppliers. The case company is a Tier-1 supplier to major automotive original equipment manufacturers (OEMs) in India and abroad. The company is into business of manufacturing and supply of aluminum die casting parts for passenger cars and light commercial vehicles (LCVs). Partly, as a part of new manufacturing philosophy and partly owing to customers' demand, the company management decided to evaluate its suppliers on the basis of economic, environmental, and societal sustainable value creation performance for awarding future business. The management chooses to apply AHP methodology to evaluate and select its suppliers. The step-by-step procedure adopted by the company is shown in Fig. 35.1.

With the help of external and internal four criteria, 15 sub-criteria and 36 sub-sub-criteria were considered important for the company (Table 35.1).

This information was captured into hierarchy model, as shown in Fig. 35.2. The sustainable supplier selection (problem to be solved) is at the top of the hierarchy structure, while criteria, sub-criteria, and sub-sub-criteria are in the middle. The suppliers (alternatives) are at the bottom of the structure.
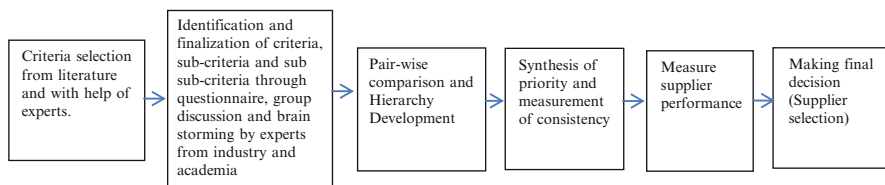
Fig. 35.1 Framework of supplier selection using AHP

Table 35.1 Hierarchy level and description

Hierarchy level	Description	Factor(s)
First level	Goal	One
Second level	Criteria	Four
Third level	Sub-criteria	Fifteen
Fourth level	Sub-sub-criteria	Thirty six
Fifth level	Suppliers	Three
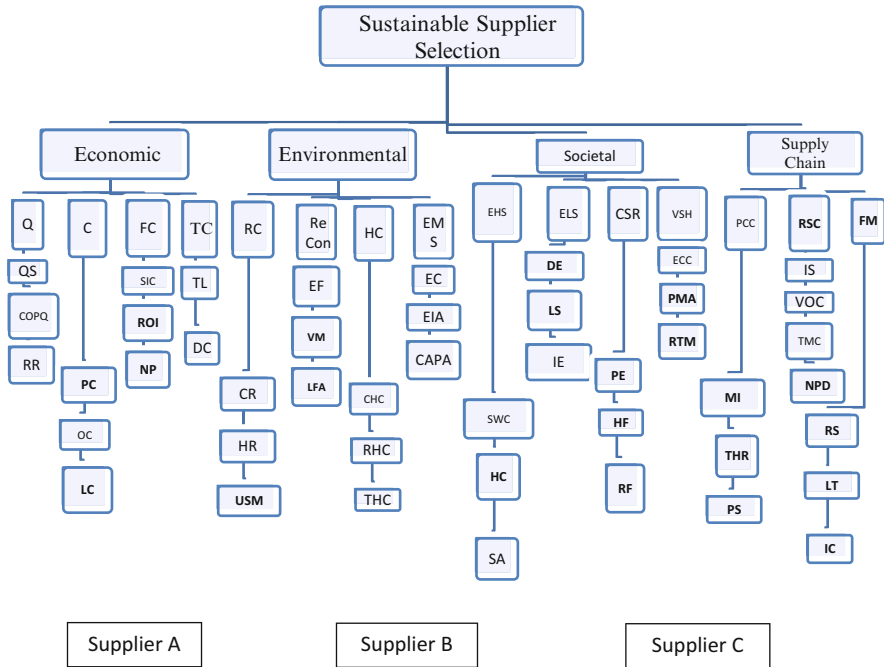
Fig. 35.2 Supplier assessment model for sustainable supply chain

Table 35.2 Criteria for sustainable supplier selection

	Sustainable economic value criteria (ECO)	Sustainable environmental value criteria (ENVO)	Sustainable societal value criteria (SOC)	Supply chain consideration criteria (SC)
ECO	1	2	0.33	0.5
ENVO	0.5	1	0.5	0.5
SOC	3	0.5	1	3
SC	2	2	0.33	1

The pairwise comparisons of various criteria generated were organized into a square matrix. The pairwise comparison of the second level of the hierarchy, which included four criteria, is shown in Table 35.2.

In the beginning, pairwise comparison of all the four identified criteria (Hierarchy level 2) was done. The eigenvector and maximum eigenvalues were calculated and matrix was validated for consistency by calculating CR value. The eigenvector value of each criterion with respect to other criterion in the matrix is indicative of the relative importance of those criteria. For example, the eigenvalue of sustainable societal criteria (0.40) is almost twice that of sustainable economic value creation value (0.19). The results are shown in Table 35.3.

Table 35.3 Normalized pairwise comparison matrix for four criteria of sustainable supplier selection and the eigenvector, maximum eigenvalue, and CR values

	Sustainable economic value criteria (ECO)	Sustainable environmental value criteria (ENVO)	Sustainable societal value criteria (SOC)	Supply chain consideration criteria (SC)		Eigenvector		Max. eigenvalue	RI	C.R
ECO	1	2	0.33	0.5						
ENVO	0.5	1	0.5	0.5						
SOC	3	0.5	1	3						
SC	2	2	0.33	1						
TOTAL	6.5	5.5	2.16	5						
ECO	0.15	0.36	0.15	0.10	0.77	0.19	1.25			
ENVO	0.08	0.18	0.23	0.10	0.59	0.15	0.81			
SOC	0.46	0.09	0.46	0.60	1.62	0.40	0.87			
SC	0.31	0.36	0.15	0.20	1.02	0.26	1.28			
								4.22	0.07	0.08

Table 35.4 Pairwise comparison matrix for sustainable societal value creation

	Employees' health and safety (EHS)	Employment for local community (ELC)	CSR projects implemented (CSRP)	Voice of stakeholders (VSH)
EHS	1	5	3	2
ELC	1/5	1	1/2	1/5
CSRP	1/3	2	1	1/3
VSH	1/2	5	3	1
Total	2.03	13.0	7.50	3.53

Table 35.5 Normalized matrix of paired comparison and eigenvector

	Employees' health and safety (EHS)	Employment for local communities (ELC)	CSR projects implemented (CSRP)	Voice of stakeholders (VSH)	Eigenvector
EHS	0.492	0.385	0.40	0.566	0.461
ELC	0.098	0.077	0.067	0.057	0.075
CSRP	0.164	0.154	0.133	0.094	0.136
VSH	0.246	0.385	0.40	0.283	0.328
Total	1	1	1	1	1

To explain the entire process of pairwise comparison matrix for sub-criteria, the procedure adopted for evaluating criteria and sub-criteria (Hierarchy level 3) under *Sustainable Societal Value* creation criteria is illustrated as an example (Table 35.4).

After obtaining the pairwise judgment for all sub-criteria, priority vector or the weight of an element in the matrix ("eigenvector" or "principal vector" of the matrix) was calculated, by adding members of each column to find the total. Each column in the matrix is normalized to sum to 1 or 100 % by dividing the elements of that column by the total of the column and sum them up. The principal eigenvalue and the corresponding normalized right eigenvector of the comparison matrix give the relative importance of the various criteria being compared. The elements of normalized eigenvectors are termed weights with respect to the criteria or sub-criteria and ratings with respect to alternatives. The results are shown in Table 35.5.

In the next step, data inconsistencies were checked with an aim to capture enough information to verify whether decision-makers have been consistent while making choices among alternatives. The inconsistency index is based on maximum eigenvalue which is calculated by adding the product of each element in the eigenvector (Table 35.5) by the respective column total of the original comparison matrix (Table 35.3). The maximum eigenvalue λ max (4.09) and CR (0.03) values were calculated as suggested by Saaty (1980). Since CR <0.1, matrix is consistent. In contrast, whenever the value of CR is more than the acceptable value, the matrix is considered inconsistent and exempted from further analysis (Saaty 1980).

Similar calculations were done for all the three shortlisted suppliers under four criteria (Hierarchy Level 1) and the results were summarized (Table 35.6).

Table 35.6 Suppliers evaluation on the basis of four criteria

	Supplier A	Supplier B	Supplier C		Eigenvector		Max. eigenvalue	C.I	C.R
Economic criteria									
A	1	3	6						
B	0.33	1	5						
C	0.16	0.2	1						
Total	1.49	4.2	12						
A	0.671	0.714	0.500	0.671	0.885	0.628			
B	0.221	0.238	0.417	0.876	0.292	0.227			
C	0.107	0.048	0.083	0.238	0.079	0.953			
							3.117	0.058	0.086
Environmental criteria									
A	1	2	5						
B	0.5	1	5						
C	0.2	0.2	1						
Total	1.7	3.2	11						
A	0.588	0.625	0.455	0.668	0.556	0.945			
B	0.294	0.313	0.455	0.061	0.354	0.132			
C	0.118	0.063	0.091	0.271	0.090	0.994			
							3.071	0.035	0.086
Societal criteria									
A	1	0.33	0.5						
B	3	1	4						
C	2	0.25	1						
Total	6	1.58	5.5						
A	0.167	0.209	0.091	0.466	0.155	0.933			
B	0.500	0.633	0.727	0.860	0.620	0.980			
C	0.333	0.158	0.182	0.673	0.224	0.235			
							3.147	0.074	0.086
Supply chain criteria									
A	1	0.5	1						
B	2	1	3						
C	1	0.33	1						
Total	4	1.83	5						
A	0.250	0.273	0.200	0.723	0.241	0.964			
B	0.500	0.546	0.600	0.646	0.549	0.004			
C	0.250	0.180	0.200	0.630	0.210	0.051			
							3.019	0.010	0.086

Local weights of each criterion, sub-criterion, and sub-sub-criterion at each level of hierarchy (refer Fig. 35.2) were calculated and global weight of each sub-sub-criteria was determined and a composite matrix was prepared (Table 35.7).

In the last step, overall priority matrix was calculated for each supplier (Table 35.8). Overall priority rating calculation for supplier A is shown as below:

Overall Supplier A rating $=(0.19*.63)+(.15*.56)+(.4*.93)+(.26*.24)=.64$

6   Conclusion, Limitations of the Research, and Scope for Future Study

On the basis of this calculation, Supplier B achieved highest priority rating (1.43) and was selected as the most preferred supplier, closely followed by Supplier C (1.38), which was chosen as second source. The management of ABC Co. distributed share of business (S.O.B.) in the ratio of 70:30 between the two suppliers.

The selection of the most preferred suppliers has been the area of interest for researchers and practicing managers since the 1960s, but incorporating the issue of sustainability dimensions into supply chain is comparatively new. The main contribution of this research work was selection of suppliers who could help focal company in achieving sustainable value creation in their supply chain. This objective was successfully achieved by selecting most suitable supplier for their supply chain. The second achievement was the development of a multi-criteria model for evaluating suppliers by using AHP methodology. The AHP model developed can be utilized by other small and medium enterprise (SME) companies for selection of supplier in their own supply chains. Since SMEs have limited resources and cannot invest heavily in costly software and training programs, their contribution toward supply chain sustainability is very limited. The third significant contribution of this framework is that companies have found it useful for internal evaluation and improvement of their own sustainability performance. In order to make the decision more robust and reliable, it is recommended that fuzzy AHP methodology may be applied in decision-making.

Table 35.7 Composite priority weights for sub-sub-criteria

Criteria	Local weights	Sub-criteria	Local weights	Sub-sub-criteria	Local weights	Global weights
Sustainable economic value creation criteria	0.19	Quality (Q)	0.140	Quality systems (QS)	0.402	0.010
				Cost of poor quality (COPQ)	0.457	0.012
				Rejection rate (RR)	0.139	0.004
		Cost (C)	0.169	Production cost (PC)	0.512	0.016
				Ordering cost (OC)	0.360	0.012
				Logistics cost (LC)	0.127	0.004
		Financial capability (FC)	0.379	Sustainable Investment Capability (SIC)	0.471	0.034
				Return on Investment (ROI)	0.376	0.027
				Net profit (NP)	0.139	0.010
		Technological capability (TC)	0.312	Technology level (TL)	0.860	0.050
				Design capability (DC)	0.139	0.080
Sustainable environmental value creation criteria	0.150	Recycling capability (RC)	0.190	Cold refining (CR)	0.127	0.004
				Hot refining (HR)	0.512	0.015
				Use of scrap material (USM)	0.360	0.010
		Resource conservation (ReCon)	0.390	Electricity and fuel (EF)	0.309	0.023
				Virgin metal (VM)	0.581	0.034
				Land filling avoidance (LFA)	0.109	0.006
		Use of hazardous chemicals (HC)	0.260	Reduction in consumption of HC (CHC)	0.724	0.028
				Replacement of HC (RHC)	0.193	0.008
				Training for handling HC (THC)	0.082	0.003
		Environmental management system (EMS)	0.15	EMS certification (EC)	0.680	0.015
				Environmental Impact Assessment (EIA)	0.250	0.006
				Corrective and preventive actions (CAPA)	0.068	0.002

Sustainable societal value creation criteria	0.40	Employees' health and safety (EHS)	0.46	Safe work conditions (SWC)	0.118	0.019

Main criteria	Sub-criteria	Criterion		
Sustainable societal value creation criteria (0.40)	Employees' health and safety (EHS) (0.46)	Safe work conditions (SWC)	0.118	0.019
		Regular health checkup (HC)	0.680	0.125
		Safety audits (SA)	0.201	0.037
	Employment opportunities for local communities (ELC) (0.07)	Direct employment to local people (DE)	0.681	0.019
		Number of local suppliers (LS)	0.236	0.007
		Support for self-employment generation (IE)	0.083	0.002
	Corporate social responsibility projects (CSRP) (0.141)	Primary education (PE)	0.739	0.042
		Primary health facilities (HF)	0.093	0.005
		Recreation facilities for local people (RF)	0.168	0.009
	Voice of stakeholders (VSH) (0.33)	Establishing communication channels (ECC)	0.548	0.072
		Procedure for monitoring and audits (PMA)	0.210	0.028
		Review by top management (RTM)	0.241	0.032
Supply chain criteria (0.260)	Production capacity and capability (PCC) (0.628)	Machinery and infrastructure (MI)	0.10	0.016
		Trained human resources (THR)	0.812	0.133
		Established production system (PS)	0.087	0.014
	Relationship and strategic commitment (RSC) (0.292)	Information sharing with supply chain partners (IS)	0.480	0.036
		Capturing voice of customers (VOC)	0.093	0.007
		Top management commitment (TMC)	0.182	0.014
		New product development capability (NPD)	0.249	0.019
	Flexible manufacturing practice (FM) (0.079)	Routing and scheduling flexibility (RS)	0.201	0.004
		Lead time reduction (LT)	0.680	0.014
		Inventory cost reduction (IC)	0.118	0.002

Table 35.8 Overall priority rating of suppliers

	Economic	Environmental	Societal	Supply chain	Overall priority
Weights	0.19	0.15	0.4	0.26	
Supplier A	0.63	0.56	0.93	0.24	0.64
Supplier B	0.29	0.35	0.98	0.55	1.43
Supplier C	0.08	0.09	1.24	0.21	1.38

References

Ageron B, Gunasekaran A, Spalanzani A (2012) Sustainable supply management: an empirical study. Int J Prod Econ 140:168–182

Bansal P (2005) Evolving sustainability: a longitudinal study of corporate sustainability development. Strateg Manag J 26:197–218

Beil RD (2010) Supplier selection. Wiley encyclopedia of operations research and management science. Wiley, Hoboken

Blackhurst J, Cantor D, O'Donnel M (2012) Sustainable supply chains: a guide for small to medium sized manufacturers. CIRAS, Iowa State University

Cooper MC, Lambert DM, Pagh JD (1997) Supply chain management: more than a new name for logistics. Int J Logist Manag 8(1):1–14

Ghodsypour SH, O'Brien C (1998) A decision support system for supplier selection using an analytic hierarchy process and linear programming. Int J Prod Econ 199(122):56–67

Hart S (1992) An integrative framework for strategy making. Acad Manag Rev 17:327–351

Krause DR, Vachon S, Klassen RD (2009) Special topic forum on sustainable supply chain management: introduction and reflection on the role of purchasing management. J Supply Chain Manag 45(4):18–25

Maignan I, Hillebrand B, McAlister D (2002) Managing socially-responsible buying: how to integrate noneconomic criteria into the purchasing process. Eur Manag J 20(6):641–648

Min H, Galle WP (2001) Green purchasing practices of US firms. Int J Oper Prod Manag 21(9):1222–1238

Morali O, Searcy C (2013) A review of sustainable supply chain management practices in Canada. J Bus Ethics 117(3):635–658

Narasimhan R, Das A (2001) The impact of purchasing integration practices on manufacturing performance. J Oper Manag 19(5):593–609

Pagell M, Wu Z (2009) Building a more complete theory of sustainable supply chain management using case studies of ten exemplars. J Supply Chain Manag 45(2):37–56

Revell A, Stokes D, Chan H (2010) Small business and the environment – turning over a new leaf? Bus Strateg Environ 19(5):273–288

Saaty TL (1980) The analytic hierarchy process, 1st edn. McGraw-Hill, New York

Sarkis J, Talluri S (2002) A model for strategic supplier selection. J Supply Chain Manag Winter 38(4):18–28

Sharma S, Henrique I (2005) Stakeholders influence on sustainability practices in the Canadian forest product industry. Strateg Manag J 26:159–180

Walker H, Brammer S (2007) Sustainable procurement in United Kingdom public sector. University of Bath, School of Management Working paper 2007-15

Wolf J (2014) The relationship between sustainable supply chain management, stakeholder pressure and corporate sustainable performance. J Bus Ethics 119(3):317–328

Chapter 36
The Cyber Security Ecosystem: Post-global Financial Crisis

Saini Das

Abstract   The global financial crisis of 2008–2009 resulted in recession in majority of the economies of the world. Information technology, considered to be one of the major enablers of all business activities, also underwent certain changes in this phase. New technologies such as cloud computing and mobile commerce emerged and continued to grow. However, along with these opportunities, threats to information security in the form of malicious attacks also grew. But such threats not only impacted individual organizations but all the organizations that were related to the target organization in some manner. In this study, we present a cyber security ecosystem which provides a holistic view of all the players present such as, network, cloud, and software providers. Governing bodies and reporting agencies also play an important role in this ecosystem. We also show the complex interactions among the players. These interactions can be used to arrive at correlated risks of the entire cyber security ecosystem in case of an information security breach on a target organization.

Keywords   Cyber security ecosystem • Cloud providers • Niche payers • Keystone players

1   Introduction

The global financial crisis of 2008 witnessed the largest and the sharpest drop in economic activity of the modern era. After the crisis, most major developed economies of the world found themselves in a deep recession (McKibbin and Stoeckel 2009). Significant challenges were also faced by the IT industry as a result of the economic crisis. With most of the global markets still in recovery phase, two new waves emerged in the IT sector. Firstly, organizations were increasingly using the Internet or other mobile devices to communicate and exchange data with their business partners. Consequently, the traditional hard boundaries of an organization

S. Das (✉)
Department of Information Systems, Indian Institute of Management, Indore, India
e-mail: sainid@iimidr.ac.in

were vanishing and so were the traditional security paradigms. Secondly, most of the IT systems and data processing moved into the cloud which gave rise to entirely new information security requirements. As a result of these two new trends along with the rise of emerging markets, recovery from the financial crisis, and offshoring, the complexity of the ever-evolving information security issues have immensely increased. Though organizations have responded to the accelerating security issues by investing in newer strategies, security technologies, and people, there is a need for a holistic approach to the information security problem in order to address it best (Ernst & Young 2012).The period of recovery after the global financial crisis of 2008 emphasized on adoption of enterprise risk management techniques to combat risk and enhance opportunities for business continuity in the face of disaster (Deloitte 2011).

Though a lot of studies have been done to find the impact of a cyber security breach on a target organization, a holistic view of the entire cyber security ecosystem is not considered in most of these works. In this study, we provide a holistic view of the entire cyber security ecosystem and highlight the changes due to the impact of the global financial crisis. We also show the complex nature of the cyber security ecosystem which comprises of many players having complicated interactions. Due to these complex interactions, an information security breach on one player affects all the players related to it. Hence, the impact of a particular breach targeted at one player is affected by the complex interactions between the other players. In the future, we can use these interactions to quantify correlated risks of the entire cyber security ecosystem in case of an information security breach on a target organization. This highlights the importance of this study in the post-financial crisis period where the number of information security breaches has increased.

2 The Proposed Cyber Security Ecosystem

A healthy cyber security (CS) ecosystem comprises of several loosely networked players that work together to gain competitive advantage due to their symbiotic relationships. This would not be possible had they been working alone (Hyeyoung et al. 2010). The players of the cyber security ecosystem operate in the black market as well as in the white market. The black market players have malicious intentions. Sellers do not have ethical considerations, and the trade is not advertised openly. However, in the white market, players do not have malicious intentions, and trade is advertised openly (Frei et al. 2009). The cyber security ecosystem is shown in Fig. 36.1. Individuals/groups of cyber criminals operate in the black market and attack the IT resources (network, servers, and software) of organizations. Software vendors (e.g., Microsoft) supply system/application software. Hardware vendors (e.g., IBM) supply various kinds of hardware. Similarly, bandwidth providers (e.g., Verizon) sell bandwidth. Network and security providers sell various security technologies like antivirus software, firewalls, etc. Cloud providers (e.g., Amazon,
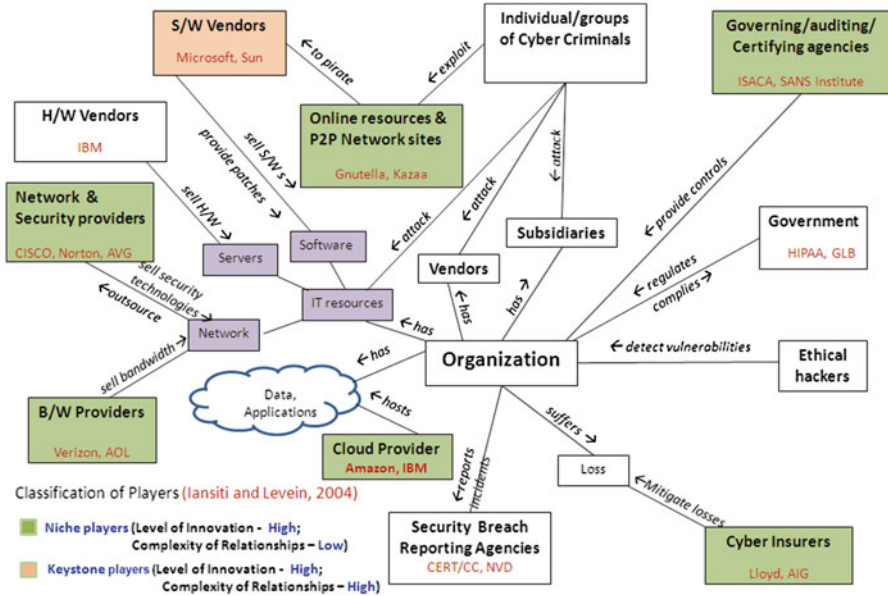
Fig. 36.1 Cyber security ecosystem

IBM) enable client organizations to host their applications or data on the cloud. Organizations sometimes outsource their security functions to vendors because vendors have expertise in providing round-the-clock cyber security. Malicious criminals also attack vendors of famous client organizations and subsidiaries of large parent organizations. Sometimes, individuals/groups of cyber criminals exploit online resources and P2P networks to pirate software or music.

Governing/auditing/certifying agencies like ISACA are players of the white market who provide controls or security standards like Control Objectives for Information and Related Technology (COBIT) for an organization to follow. The Government is another player operating in the white market. It regulates the environment by creating and enforcing laws like the HIPAA (The Health Insurance Portability and Accountability Act) that an organization has to comply with. The HIPAA created in 1996 states an organization has to protect the privacy of patients' health information during electronic data interchange. Ethical hackers belong to the white market and are usually hired by organizations for penetration testing and network vulnerability discovery. If vulnerabilities in the network are discovered a priori, then they can be patched before being exploited by cyber criminals who are always on the prowl. When cyber criminals attack an organization, it usually reports the incident to reporting agencies like the CERT/CC or NVD who maintain a database of the reports. Due to such attack, the organization may suffer losses (both direct and indirect). Cyber insurers (e.g., Lloyd) are white market players who play a complementary role to mitigate the financial losses suffered by the organization.

Fig. 36.2 Position of different players of the cyber security ecosystem
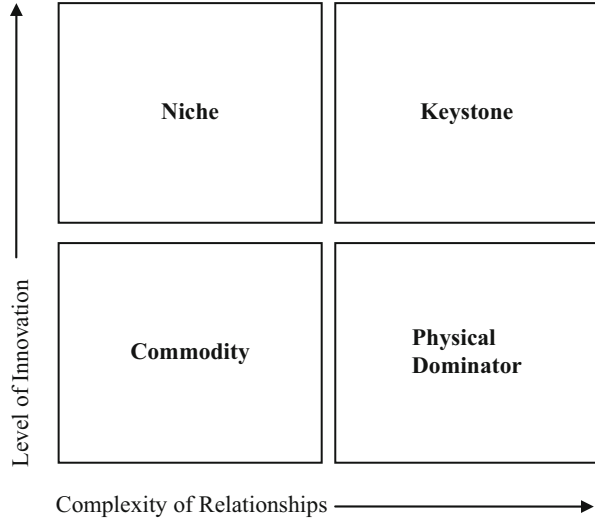
According to strategy literature, companies can be classified as keystone or niche depending upon their level of innovation and complexity of relationship (Iansiti and Levein 2004), as shown in Fig. 36.2. Software vendors like Microsoft sell system/application software (e.g., Windows OS, Microsoft Office, etc.) to organizations. They also provide patches when any vulnerability is discovered in the software. Hence, they add value to the cyber security ecosystem. Thus, they play the role of keystone (shown in orange in Fig. 36.2) in the ecosystem. Security technology providers like CISCO and antivirus companies like Symantec, Norton, etc., specialize in their own area of operation. Hence, they can be classified as niche players (shown in green in Fig. 36.2).

We now describe each of these major players in detail:

Players of the Black Market

1. *Individual/groups of cyber criminals*: They can operate as individual hackers or as groups. These criminals identify vulnerabilities present in any network and exploit them for their own benefit. Some of them have financial motives, while some others do it just for the thrill, challenge, or pleasure of breaking into unknown networks. Sometimes cyber criminals operate individually. Sometimes they may operate as groups that operate across national borders and indulge in activities related to cyber crime. There are international rackets operating in many countries that target organizations in a different country either for financial motives, cyber terrorism, or spying and information theft. There are also international "hacktivist" groups like Anonymous who launch cyber attacks on high-profile targets to protest or to reveal corruption.

2. *P2P network sites*: P2P technology is a distributed computing software architecture that enables individual computers to connect to and communicate with each

other. By doing so, computer users (known as "peers") can share communications, data files, and processing power among themselves. Rather than having a central computer to store data, P2P technology allows data sharing from individual computers directly. There are three types of P2P networks: pure, centralized, and hybrid. Although P2P framework can increase productivity by allowing file sharing, they can also introduce vulnerabilities in the network by enabling users to download executable codes that can introduce rogue or untraceable "backdoor" applications on users' machines and jeopardize the security of the entire network. Cyber criminals can easily exploit these vulnerabilities and launch IS breaches. Examples of such P2P networks are Gnutella and Kazaa.

Players of the White Market

1. *Organization*: Any organization that is electronically networked is susceptible to be compromised or exploited by cyber criminals. The chief technology officer (CTO) of such organizations proactively discovers and reports existing vulnerabilities to reporting agencies. Such organizations can belong to any sector or industry. However, those belonging to e-commerce or BFSI sectors are more prone to cyber security breaches. This is because the impact of breaches would be larger on such firms both in terms of financial and reputation loss.

2. *Software vendors*: They are companies that supply software which have some vulnerability. Vendors also have the responsibility to release patches against those vulnerabilities once they have been discovered and declared. There are two types of patch management policies generally followed by vendors: (A) time-driven and (B) event-driven (Cavusoglu et al. 2008). In the time-driven patch management, the vendor releases security patches periodically, i.e., after a certain interval of time "*t*." In the event-driven patch management, the vendor releases patches once a certain predetermined number of vulnerabilities are discovered. Microsoft, Sun, etc., are examples of software vendors.

3. *Other security product vendors*: These are the vendors who supply various network security components like firewalls, intrusion detection systems (IDSs), routers, etc. CISCO is one of the pioneers in this field. Apart from network security hardware components, there are vendors who specialize in network security software like antivirus. Norton, AVG, and Symantec are the leading antivirus vendors. Apart from these, there are newer and more technologically sophisticated security components released regularly by these vendors.

4. *Cyber insurers*: The use of appropriate defense mechanism may not always prove effective in avoiding information security breaches due to the uncertainty and novelty of each of these attacks. Hence, any organization would possess a certain degree of cyber risk which needs to be mitigated. One efficient way of cyber risk mitigation is cyber insurance. Cyber risk can be transferred to third party insurance companies which provide insurance coverage to vulnerable companies against possible losses due to information security breaches against a premium amount. Such third parties are often referred to as cyber insurers. The leading providers of cyber insurance in the world today are AIG and Lloyd's of London.

5. *Ethical hackers*: An ethical hacker is a computer and network security expert who is usually hired by a vulnerable organization to detect and report vulnerabilities in the network a priori, i.e., before the malicious hackers can identify and exploit them. They play a very important role in penetration testing or intrusion testing.

6. *Cloud providers*: Several cloud providers such as Amazon, IBM, and others host data and applications of client organizations on the cloud. Such cloud providers are potential targets of cyber attackers because access to a cloud would provide access to information of many client companies. In the period following the financial recession of 2008, there has been a steady increase in the number of applications moving to the cloud. However, the issue of security and privacy of data is a cause of concern.

7. *Internet service providers (ISPs)*: ISPs are the companies that provide access to the Internet. They can play a very important role in cyber security because they not only control a user's access to the Internet but can also identify malicious users who appear to be causing security threats and can limit their activities on the Internet or remove them from the network (Rowe et al. 2011). They also play a preventive role in cyber security by providing antivirus, IDSs, etc., at a nominal rate to the subscribers. Moreover, they can sensitize the users of the Internet about cyber security by educating them or creating awareness among them. Comcast, Verizon, etc., are examples cyber security of companies that belong to this domain.

8. *Government*: It has multiple roles to play in information security ecosystem such as, (a) protecting the critical cyber security infrastructure of a nation, (b) working in collaboration with the private sector to protect digital infrastructure, and (c) creating and enforcing rules and laws to prevent cyber crimes and prosecute the criminals. Such laws act as deterrent controls to prevent cyber crimes. For example, the US government introduced several acts like the Health Insurance Portability and Accountability Act (HIPAA), the Federal Information Security Management Act (FISMA), etc., to protect the privacy of individuals and to prevent information theft.

9. *IT governance/auditing agencies*: These are agencies that enforce and supervise an organization's compliance to IT laws like the Sarbanes-Oxley Act (SOX), Basel II, etc. They also ensure that organizations comply with industry standards for security like ISO 27001, COBIT, etc. Such agencies also audit the information security infrastructure adopted by organizations and certify them if they succeed in meeting certain standards. The Information Systems Audit and Control Association (ISACA) is an international organization that deals with IT governance and audit.

10. *Security information providers/reporting agencies*: Any information security breach that takes place on an organization or any newly discovered vulnerability are immediately reporting to reporting agencies or security information providers like the CERT Coordination Center CERT/CC or the National Vulnerability Database (NVD). They have incident response teams which immediately respond to such information. Such organizations also address existing threats and provide security-related information on queries raised by customers.

3   Conclusion and Future Work

The global financial crisis of 2008 resulted in recession in majority of the economies of the world. Information technology, considered to be one of the major enablers of all business activities, also underwent certain changes in this phase. New technologies such as cloud computing and mobile commerce emerged and continued to grow. Along with these, threats to information security in the form of malicious attacks also grew. But such threats not only impact individual organizations but also all the other organizations that are interrelated to the target organization in some manner. In this study, we present a cyber security ecosystem which shows a holistic view of all the players present and the complex interactions among them. In the future, we can use these interactions to quantify correlated risks of the entire cyber security eco-system in case of an information security breach on a target organization.

References

Cavusoglu H, Cavusoglu H, Zhang J (2008) Security patch management: share the burden or share the damage? Manag Sci 54(4):657–670

Deloitte (2011) Global risk management survey, seventh edition: Navigating in a changed world

Ernst & Young (2012) Fighting to close the gap – Global Information Security Survey

Frei S, Schatzmann D, Plattner B, Trammell B (2009) Modeling the security eco system – the dynamics of security. In: Proceedings of The Eighth Workshop on the Economics of Information Security (WEIS 2009) University College London, England

Hyeyoung K, Lee J, Han J (2010) The role of IT in business ecosystems. Commun ACM 53:151–156

Iansiti M, Levien R (2004) Strategy as ecology. Harv Bus Rev 82(3):68–78

McKibbin W, Stoeckel A (2009) The global financial crisis: causes and consequences. Working paper in economics. The Lowy Institute for International Policy, Sydney

Rowe B, Wood D, Reeves D, Braun F (2011) Economic analysis of ISP provided cyber security solutions. Institute for Homeland Security Solutions

Chapter 37
The Impact of Gold Price Changes on Saudi Stock Market

Durga Prasad Samontaray and Ahmed Awad Alanuzi

Abstract In investment analysis gold and stock are alternate sources of investment. Gold is a very important financial asset, and in financial crises usually investors look at gold as the safe haven for them. Stock market is one of the most important aspects of the economy, in Saudi Arabia; Tadawul All Share Index (TASI) has huge market value in the region, reaching the value 1.4 trillion in 2012.

In this paper, we have investigated the long-run relationship between gold prices and Saudi stock market, using 10-year monthly data set from 31 October 2004 to 30 November 2013 using the tool Ordinary Least Squares (OLS) method.

The investigation applying the simple regression through Ordinary Least Squares (OLS) method shows that TASI reacts negatively to gold price movement. This research also examines the relationship between gold prices and two important sector indexes, i.e., banking and financial services (TBFSI) and telecom and information sector (TTISI) form about 30 % of TASI weight; all these sectors show a negative reaction to gold price (www.tadawul.com.sa).

As the Asian as well as the global market is showing the recovery trend after the turmoil and slowdown, we carried out this research to show the investors and analysts and the researchers the impact of gold on the security market taking the Saudi perspective. It is very important to show the relationship of equity and commodity which we think tried to be addressed in this paper.

Keywords TASI • Ordinary Least Squares (OLS) • Linear regression model • Correlation • Long position and short position

D.P. Samontaray (✉)
Department of Finance, College of Business Administration, King Saud University, Riyadh, Kingdom of Saudi Arabia
e-mail: dsamontaray@ksu.edu.sa; drdpsray@gmail.com

A.A. Alanuzi
Cash Management & Treasury Operations, Saudi Telecom Company (STC), Riyadh, Kingdom of Saudi Arabia
e-mail: ahanazi@stc.com.sa

1 Introduction

Although that Kingdom of Saudi Arabia is one of the most prosperous and stable countries in the world because of its many different raw materials that are source of global energy, geographically it locates in the most disturbed area in the world.

Middle East in few decades has cited many wars and public revolutions that have huge negative, at least in the short-run period, effect on all aspects of economy and society. Recently, as the Arab spring sparks from Tunisia and goes through Libya, Yemen, and Egypt and ends with the most tragedy in the recent history in the civil war in Syria, has put the investors not only the local but even the global one at challenges and pressures of the investment options and tactics.

In light of these circumstances, we have seen that both local and global media are more focusing on the radical of price movements of stock markets with every sign of bad or good news that comes as a result of these political tensions.

Financial and economic commentators at TV and newspapers keep saying that "gold is the safe haven investment!" And make hundreds of reports about gold around the world.

Gold is one of the most precious metals, traded or used at many levels, personal as jewelry or even at international level when most of the central banks in the world show it as one of their assets in the balance sheet; it has also financial usage; it is considered as a risk diversifier, hedged against inflation, and it has other uses in different markets. Saudi stock market from the other hand, as other stock market, is risky investment due to its volatility which is in crisis becoming highly volatile and causes huge loses (Barunik et al. 2013; Ahuja et al. 2012).

In this research, we are exploring the relationship between the gold price and Saudi stock market (TASI) and its sectors from other hand, to investigate whether the stock market investors can diversify the risk by taking position in gold or not.

2 Review of Literature

Ahmed et al. (2013) examine the long-run relationship between gold prices and Karachi Stock Exchange (KSE) and Bombay Stock Exchange (BSE) in perspective of supply and demand of gold and its impact on the value of stock index. To investigate the existence of long-run equilibrium relationship among time series variables, different statistical tests are used. To analyze the lead-lag relationship in the sample, Granger causality test is used which is proposed by C. J. Granger in 1969, whereas hypotheses will be accepted based on F-test results at a significance level of 0.05 which provide the evidence of explained relationship between predictors and endogenous variables. This study is comprised with the period from 2005:1 to 2011:6. To analyze the impact of gold prices on KSE and BSE stock index, monthly data is used which is gathered from reliable and official sources of KSE and BSE statistics.

Findings of this study indicated that there is no long-run relationship that exists between monthly average gold prices and KSE-100 Index; however, BSE has long-term relation with average gold prices.

Subarna and Zadeh (2011) examine the co-movements of several macro-variables in the world economy over a period of more than 20 years from January 1989 through September 2009 with more than 5,200 observations. They find out that it seems likely that stock price and gold price are more likely to move on their own while oil price and exchange rates likely to be influenced by other variables.

Giam and Sriboonchitta (2009) focused on testing possible linkages among international gold and ASEAN emerging markets (Indonesia, Malaysia, Philippines, Thailand, and Vietnam) based on daily data from 28 July 2000 to 31 March 2009. Granger causality test for short-run interdependence of index pairs and Johansen co-integration test for long-run equilibrium relationship and short-run dynamics of the whole gold price prove reciprocal effect on Vietnam index and also influence Thailand stock but show no connection with stock exchange of Malaysia, Indonesia, and the Philippines in short run. However, gold prices are not integrated with all indexes in the long run.

Baur and Lucey (2010) first define the safe haven as the following: "A safe haven is defined as an asset that is uncorrelated or negatively correlated with another asset or portfolio in times of market stress or turmoil." The data cover a time period of 10 years from 30 November 1995 until 30 November 2005. Results show that gold is a safe haven for stocks and gold only functions as a safe haven for a limited period of time, around 15 trading days. In the longer run, gold is not a safe haven, that is, investors that hold gold more than 15 trading days after an extreme negative shock lose money with their gold investment.

Martin and Yunita (2012) took data in their research are weekly price of gold (per troy ounce) and closing price of Indonesia Composite from 4 July 1997 to 4 November 2001. Results show that gold investment is quite safe for investors and could be categorized as a safe haven.

Coudert and Raymond-Feingold (2011) have investigated if gold is a safe haven and/or a hedge against stocks, by estimating a time-varying conditional covariance between gold and stock returns from four countries (France, Germany, the USA, the UK) and the G7 countries data for gold total returns in US$ that come from Standard and Poor's and Goldman Sachs Commodity Index (S&P GSCI) database and are extracted from Bloomberg. Three main results emerge from our estimations. First, the conditional covariance between the two types of assets generally decreases during crises, whether defined as recessions or bear markets. Second, gold qualifies for being a safe haven as it does not co-move with stock returns on average neither during recessions nor bear markets. This result holds for all the considered stock indexes. More precisely, gold is a "weak safe haven" in most cases as its correlation with stocks is not significantly different from zero during crises. Third, gold appears to be a hedge against stocks in most cases, but not all of them. Overall, gold appears as an interesting asset to diversify a portfolio away from stocks, especially in times of bear markets.

Contuk et al. (2013) analyze the effect of fluctuations in gold prices on ISE-100 Index using daily prices and the index data from 1 January 2009 to 31 December 2012. The raw data has been converted into earnings yields and analyzed. The study first determines whether or not the use of a GARCH model would be appropriate using a heteroskedasticity test. The test results show that there was an ARCH effect in both variables and that GARCH modeling could be used. The results obtained from MGARCH modeling show that gold and stock exchange yields have been affected both by their own shocks and by shocks of each other.

Abdul Basit (2013) tries to help the investor to investigate the relationship in the said investment options in Pakistan. For this purpose the researcher on the basis of available secondary data collected the KSE-100 Index, oil prices, and gold prices for the time period 2005–2011. The researcher took oil prices and gold prices as dependent variables, whereas KSE-100 Index was taken as independent variable. The researcher applied the simple regression models separately for both dependent variables and concluded that there is no obvious relationship in these variables.

3 Present Body of Knowledge/Learning from the Review of Literature

In many research and study, researchers apply many test models and analysis tools, such as Granger causality test, simple regression, multiple regression, correlations, and GARCH model, and they use different data set like, daily, weekly, monthly, and annually. In some research relation between gold and stock market does exist either negative or positive, and in many other research studies, relation does not exist.

4 Research Gap

Though there are several studies that took place taking many variables including gold to predict the stock return, the main gap we found is the lack of study of the sector-specific relationship with gold in Saudi perspective.

In this research, the main focus is to investigate the relationship between gold price and TASI and two more sectors in the Saudi Arabia Stock Exchange. Those sectors are banking and financial services and telecom and information sector.

5 Objectives

- To study the relationship between Tadawul All Share Index (TASI) and the gold price movement.

- To study the relationship between two different sectors in the market, i.e., TBFSI (banking and financial services sector) and TTISI (telecom and info sector), and the gold price movement.
- The result will help a lot the investors to know whether the gold will diversify away the risk of the equity market.

6   Methodology and Data Description

We have used the monthly price data from years 2004 to 2013, gold price, and Tadawul All Share Index (TASI) and two important sectors: banks and financial services and telecom and info sector. The independent variable is the monthly gold price. The dependent variables are the TASI, banking and financial services index, and telecommunication and information technology index. All the data are of secondary nature and monthly index imported from Thomson Reuters. The tool to be used is simple regression. The computer packages/software that we used is Microsoft Excel and EViews (Table 37.1) (Sarbapriya, 2012; Sujit and Rajesh, 2011; Sharma, 2010; Subarna and Zadeh, 2011; Wang, 2012).

6.1   In Our Research We Have Proposed the Testing of the Following Three Hypotheses

- Gold price changes have negative impact to the stock market index:

    H_0: $\beta = 0$ There is no negative impact on stock market.
    H_1: $\beta \neq 0$ There is a negative impact on stock market.

- Gold price changes have negative impact to the banks and financial services index:

    H_0: $\beta = 0$ There is no negative impact on banks and financial services index.
    H_1: $\beta \neq 0$ There is a negative impact on banks and financial services index.

Table 37.1 Sector analysis

Sector	No. of companies	Index weight	Code and name
Banking and financial services	11	22.4 %	TBFSI – banking and financial services sector
Telecommunication and information technology	5	10.9 %	TTISI – telecom and info sector
TASI	161	100 %	TASI – Tadawul All Share Index

Index weight as of November 2013 based on Tadawul.com

- Gold price changes have negative impact to telecommunication and information technology index:

  H_0: $\beta = 0$ There is no negative impact on telecommunication and information technology index.
  H_1: $\beta \neq 0$ There is a negative impact on telecommunication and information technology index.

7   Economic Model, Discussion, and Analysis

In order to investigate the relation between gold price and TASI and other sectors in TASI (banks and financial services, telecom and info sector, cement sector), we used the Ordinary Least Squares (OLS) method, which is used usually for estimating the unknown parameters in a linear regression model.

So our research will examine the following simple linear modes:

7.1   Gold Effect on All Share Index (TASI)

$$TASI = \alpha + \beta \ \text{gold}$$

where TASI is the monthly stock index in the Kingdom of Saudi Arabia, α is the constant (or the intercept), β is the slope of the regression (which represents the strength and the direction of the relationship between the dependent variable and the independent variable), and gold is the monthly price of gold.

The regression functions of TASI:

$$TASI = \beta 1 + \beta 2 \left(\text{gold} \right).$$

The dependent variable is Tadawul All Share Index (TASI) and the independent variable is gold. Because of the error term and assumption of its probability distribution, the econometric model will be

$$TASI : \beta 1 + \beta 2 \left(\text{gold} \right) + \mu.$$

Estimated equation result:

$$TASI = 12,500 - \underset{(7.149)}{4.03} \, \text{GOLD} + \hat{u}_t.$$

The negative sign of the coefficient of gold indicates that there is a negative relation between TASI and gold. Numerically, it means that an increase in gold price by 100 $ will lead to decrease in the TASI by 403 points, which we think is a very

logical conclusion; in case of bad news, investors will short on equity and long in gold market to be in the safe side.

By looking at the t-statistic (7.150), it is greater than the critical value (Tc = 1.96) and falls in the rejection region, which leads to rejecting the null hypothesis and confirming the significant relation between gold and TASI. Moreover, this result is supported by the P-value = (0) < α at level 5 % confidence.

Significance of the whole model:

By looking at the value of R square, it shows that 32.1 % of the variability of TASI, the dependent variable, is explained by the variation of the independent variable, which is the gold price. The F-statistic is high and its probability is less than 5 % by far, which indicates for the significance of the model.

7.2   Gold Effect on Telecom and Info Technology (TTISI)

The regression functions of TTISI:

$$TTISI = \beta1 + \beta2 \left(gold\right).$$

The dependent variable here is telecom and info technology (TTISI) and the independent variable is gold. Because of the error term and assumption of its probability distribution, the econometric model will be

$$TTISI : \beta1 + \beta2\left(gold\right) + \mu.$$

Estimated equation result:

$$TTISI = 4,853 - \underset{(9.629)}{2.026} \ GOLD + \hat{u}_t.$$

The negative sign of the coefficient of gold indicates that there is a negative relation between TTISI and gold which supports our assumption.

The model suggests that an increase in gold price by 100 $ will lead to decrease in the TTISI by 203 points, which we think is a very logical conclusion; which implies that in case of bad events, investors will short on TTISI and long in gold market to be in safe side.

In t-statistic (9.629), it is greater than the critical value (Tc = 1.96) and falls in the rejection region, which obviously rejects the null hypothesis and confirms the significant relation between gold and TTISI; this result is also supported by the P-value = (0) < α at level 5 % confidence.

Significance of the whole model:

R^2 indicates that 46.2 % of the variability of TTISI, the dependent variable, is explained by the variation of the independent variable, which is the gold price.

7.3 Gold Effect on Banking and Financial Services (TBFSI)

The regression functions of TBFSI:

$$\text{TBFSI} = \beta1 + \beta2 \; (\text{gold}).$$

The dependent variable here is the banking and financial services (TBFSI) and the independent variable is gold. Because of the error term and assumption of its probability distribution, the econometric model will be

$$\text{TBFSI} : \beta1 + \beta2(\text{gold}) + \mu.$$

Estimated equation result:

$$\text{TBFSI} = 33{,}021 - \underset{(8.897)}{11.780} \; \text{GOLD} + \hat{u}_t.$$

The negative sign of the coefficient of gold indicates that there is a negative relation between TBFSI and gold. Numerically, it means that an increase in gold price by 100 \$ will lead to decrease in the TBFSI index by 1,178 points, which we think is a very logical assumption; in case of bad events, investors will short on TBFSI and long in gold market to be in safe side.

By looking at t-statistic (8.897), it is greater than the critical value (Tc = 1.96) and falls in the rejection region, which leads to rejecting the null hypothesis and confirming the significant relation between gold and TBFSI; moreover, this result is supported by the P-value = (0) < α at level 5 % confidence.

Significance of the whole model:

By looking at the value of R square, it shows that 42.3 % of the variability of TBFSI, the dependent variable, is explained by the variation of the independent variable, which is the gold price.

7.4 Correlation Between Stock Market Sectors and Gold

We found that significant negative correlation exists between gold and TASI and other three important sectors taken here. The correlation table also suggests that the highest negative correlation exists between gold and telecommunication and information technology, i.e., −0.62, followed by banking and financial services, i.e., −0.41. The joint effect is experienced with TASI where the correlation with gold is −0.39 (Tables 37.2, 37.3, 37.4, and 37.5).

Table 37.2 Gold effects on All Share Index (TASI)

View | Proc | Object | | Print | Name | Freeze | | Estimate | Forecast | Stats | Resids |

Dependent Variable: TASI
Method: Least Squares
Date: 01/09/14   Time: 22:05
Sample: 2004M10 2013M11
Included observations: 110

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	12499.80	632.9440	19.74867	0.0000
GOLD	-4.027936	0.563388	-7.149488	0.0000

R-squared	0.321246	Mean dependent var	8317.032
Adjusted R-squared	0.314962	S.D. dependent var	3060.739
S.E. of regression	2533.283	Akaike info criterion	18.53043
Sum squared resid	6.93E+08	Schwarz criterion	18.57953
Log likelihood	-1017.174	Hannan-Quinn criter.	18.55035
F-statistic	51.11519	Durbin-Watson stat	0.124429
Prob(F-statistic)	0.000000		

Table 37.3 Gold effects on telecom and info technology (TTISI)

View | Proc | Object | | Print | Name | Freeze | | Estimate | Forecast | Stats | Resids |

Dependent Variable: TTISI
Method: Least Squares
Date: 01/10/14   Time: 20:09
Sample (adjusted): 2004M10 2013M11
Included observations: 110 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4853.631	236.3775	20.53338	0.0000
GOLD	-2.025937	0.210401	-9.628918	0.0000

R-squared	0.461926	Mean dependent var	2749.817
Adjusted R-squared	0.456944	S.D. dependent var	1283.815
S.E. of regression	946.0729	Akaike info criterion	16.56053
Sum squared resid	96665834	Schwarz criterion	16.60963
Log likelihood	-908.8292	Hannan-Quinn criter.	16.58045
F-statistic	92.71606	Durbin-Watson stat	0.104433
Prob(F-statistic)	0.000000		

Table 37.4 Gold effects on banking and financial services (TBFSI)

View | Proc | Object | | Print | Name | Freeze | | Estimate | Forecast | Stats | Resids |

Dependent Variable: TBFSI
Method: Least Squares
Date: 01/10/14   Time: 20:17
Sample: 2004M10 2013M11
Included observations: 110

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	33021.32	1487.543	22.19856	0.0000
GOLD	-11.78003	1.324073	-8.896811	0.0000

R-squared	0.422933	Mean dependent var	20788.47
Adjusted R-squared	0.417590	S.D. dependent var	7801.416
S.E. of regression	5953.715	Akaike info criterion	20.23943
Sum squared resid	3.83E+09	Schwarz criterion	20.28853
Log likelihood	-1111.169	Hannan-Quinn criter.	20.25935
F-statistic	79.15325	Durbin-Watson stat	0.147678
Prob(F-statistic)	0.000000		

Table 37.5 Correlations
with gold

Sectors	Correlation with gold
Banking and financial services	−0.41
Telecommunication and information technology	−0.62
TASI	−0.36

8 Conclusion

As we have mentioned in several literatures which support that gold and equity are very important sources of alternate investment, therefore this research has been carried out between gold and Tadawul All Share Index (TASI) as well as gold and two important sectors, i.e., banking and financial services (TBFSI) and telecommunication and information technology (TTISI) of Saudi Economy to test the relationship so that it will help the investors and financial analysts to make the financial and portfolio decisions.

The correlation of gold with TASI as well as the other two important sectors shows significant negative relationship which strengthens our hypothesis of the negative relationship of gold and stock market.

The negative sign of the coefficient of gold indicates that there is a negative relation between TASI and gold, which we think is a very logical conclusion; in case of bad news, investors will short on equity and long in gold market to be on the safe side. The negative sign of the coefficient of gold indicates that there is a negative relation between TTISI and gold which supports our assumption. The model suggests that an increase in gold price by 100 $ will lead to decrease in the TTISI by 167 points, which we think is a very logical conclusion; in case of bad events, investors will short on TTISI and long in gold market to be in safe side. The negative sign of the coefficient of gold indicates that there is a negative relation between TBFSI and gold. Numerically, it means that an increase in gold price by 100 $ will lead to decrease in the TBFSI index by 1178 points, which we think is a very logical assumption; in case of bad events, investors will short on TBFSI and long in gold market to be in safe side.

References

Abdul Basit (2013) Impact of KSE-100 index on oil prices and gold prices in Pakistan. IOSR J Bus Manag (IOSR-JBM) 9(5):66–69, e-ISSN: 2278-487X, p-ISSN: 2319-7668

Ahmed AR, Talib NBA, Hag IU, Khan MNA (2013) How gold prices correspond to stock index: a comparative analysis of Karachi stock exchange and Bombay stock exchange. World Appl Sci J 21(4):485–4910. ISSN 1818-4952

Ahuja AK, Makan C, Chauhan S (2012) A study of the effect of macroeconomic variables on stock market: Indian perspective, working paper, University of Delhi. http://ssrn.com/abstract=2178481

Barunik J, Kocenda E, Vacha L (2013) Gold, oil, and stocks. http://ssrn.com/abstract=2304771 or http://dx.doi.org/10.2139/ssrn.2304771

Baur DG, Lucey BM (2010) Is gold a hedge or a safe haven? An analysis of stocks, bonds and gold, The Financial Review 45(2010):217–229

Contuk FY, Burucu H, Güngör B (2013) Effect of gold price volatility on stock returns: example of Turkey. Int J Econ Financ Stud 5(1). ISSN: 1309-8055 (Online)

Coudert V, Raymond-Feingold H (2011) Gold and financial assets: are there any safe havens in bear markets? Econ Bull 31(2):1613–1622

Giam QD, Sriboonchitta S (2009), Cointegration and causality among international gold and ASEAN emerging stock markets, Dec. 2009, 1–11, SSRN-id1533919

Martin SM, Yunita A (2012) Gold versus stock investment: an econometric analysis. Int J Dev Sustai, ISDS Article ID: IJDS12031001

Sarbapriya R (2012) Testing granger causal relationship between macroeconomic variables and stock price behaviour: evidence from India. Adv Appl Econ Financ 3(1):470–481, ISSN 2167-6348

Sharma GD, Mahendru M (2010) Impact of macro-economic variables on stock prices in India. Glo J Mana Bus Res 10(7). http://ssrn.com/abstract=1827462

Subarna SK, Zadeh AHM (2011) Co-movements of oil, gold, the US dollar, and stocks. Mod Econ 3:111–117

Sujit KS, Rajesh Kumar B (2011) Study on dynamic relationship among gold price, oil price, exchange rate and stock market returns. Int J Appl Bus Econ Res 9(2):145–165

Wang L (2012) Investment in gold – an empirical study of the gold return from 1090s to 21st, working paper series. Applied Economics and Finance, Copenhagen Business School, Jan. 2012, 1–100

www.tadawul.com.sa

Chapter 38
Waning the Challenges in the Implementation of Supply Chain Management Information System: A Study of the Indian Automobile Industry

Manisha Seth, Ravi Kiran, and D.P. Goyal

Abstract The implementation of Supply Chain Management Information System (SCMIS) faces severe challenges, and the studies have shown a dismal picture about its implementation success. SCMIS provides high-quality, relevant, and timely information flow that effectively supports decision making for inventory replenishment, for capacity activation, and for synchronizing material flows at all tiers within the supply chain. Thereby it plays an increasingly critical role in the ability of firms to reduce costs, increase responsiveness, gain competitive advantage, and achieve better coordination. The implementation of SCMIS is a complicated process with significant risk. The studies have revealed that the success in implementing these systems is not very encouraging. Therefore, it is necessary to establish the challenges in SCMIS implementation and their severity. Studies on the failure factors of the ERP system have already been done by various researchers. The research on SCMIS an interorganizational system is in its early stages and is still to receive that much attention as its predecessor, whereas barriers for its implementation are more severe. In this paper, an attempt has been made to establish the challenges being faced for the successful implementation of the system.

Keywords Supply Chain Management Information System • Impediments • Barriers • Challenges • Interorganizational system • Technical barriers • Human barriers

M. Seth (✉)
Assistant Professor, Hierank Business School, Noida 201301, UP, India
e-mail: sethmanisha11@gmail.com

R. Kiran
Professor, School of Behavioral Sciences and Business Studies, Thapar University, Patiala-147004, Punjab, India
e-mail: rkiran@thapar.edu

D.P. Goyal
Professor, Information Management, Management Development Institute, Mehrauli Road, Sukhrali, Gurgaon 12207, Haryana, India
e-mail: dpgoyal@mdi.ac.in

1   Introduction

Supply chain management (SCM) has become a very important and critical issue for an organization due to globalization (Gunasekaran 2004) and ever-increasing competition. It has been recognized by many organizations as a strategy to attain business goals (Altekar 2005; Chan and Lee 2005). SCM aims at the movement of goods and services from one end of the chain to the other through different stages so as to improve the efficiency, effectiveness, productivity, and profitability of the entire process. Apart from the movement of goods and services, information is another major flow in supply chain management. It serves as a lubricant that allows other supply chain drivers to work together with the goal of creating an integrated and coordinated supply chain. Information sharing in SCM is receiving attention for achieving global competitive advantage (Khurana et al. 2011). The flow of information has gained importance due to the advancement in information technology (Billington et al. 2004), which facilitates its movement between internal and external customers, suppliers, distributors, and other partners in a supply chain. Studies show increase in the operational efficiency when information is readily available to the trading partners (Gaur et al. 2005). Thus, information technology (IT) in supply chain management (SCM) has become a very important (Li et al. 2009) and critical issue for an organization due to globalization (Gunasekaran 2004) and ever-increasing competition. SCMIS is an extension of ERP as shown in Fig. 38.1 (Møller 2005) with additional functions and roles in interorganizational systems and not limited to intraorganization alone.

These systems not only increase the efficiencies of the internal processes but create an effective interactive medium with its suppliers upstream and its customers downstream. However, the achievement of these above-mentioned benefits depends upon the effective implementation of the system (Moon 2007). Implementing these systems is a complex, lengthy, and expensive process. These systems require huge commitment of
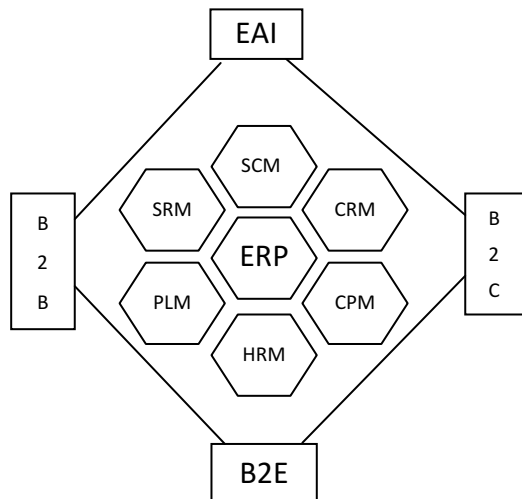

Fig. 38.1 ERPII conceptual framework (Moller 2005)

Table 38.1 Experience of ERP users with regard to enterprise software

Year	Cost	% of cost overruns	Duration	% of duration overruns	% receiving 50 % or less benefits
2012	$7.1MM	53 %	17.8 months	61 %	60 %
2011	$10.5MM	56 %	16 months	54 %	48 %
2010	$5.5MM	74 %	14.3 months	61 %	48 %
2009	$6.2MM	51 %	18.4 months	36 %	67 %

funds, time, and expertise. There is a strong evidence in the literature that the implementation of ERP projects was either not completed on time or did not bring about the planned effects and even exceeded their estimated costs. The research by Panorama consulting solutions summarizes the experiences of 172 ERP customers with regard to enterprise software, vendors, consultants, and implementations overall.

Table 38.1 shows the average cost of implementation for the last 4 years to be $7.3 million dollars and average duration for implementation to be 16.6 months. Further approximately 59 % of the projects have exceeded their planned budgets, 53 % have exceeded their planned durations, and about 56 % of respondent organizations have received less than 50 % of the benefits that was expected from the system.

The high failure rates suggest that understanding and implementing the information system is a challenging task (Al-Mashari et al. 2006). Too much focus is on the technical and financial part of the project, and often the nontechnical issues are neglected. Leon (2008) defines these systems as people's project. Therefore, SCMIS must be viewed in a different perspective, as a new business endeavor and not just an IT project. Changing this mindset will reduce the failure rate in the implementation of these enterprise systems.

Hence, in addition to technical factors, there are *organizational, human, interorganizational,* and *other issues* that need to be addressed for the successful implementation of SCMIS projects. Therefore, conducting research is crucial in order to have a successful implementation of these SCMIS projects. Thus, the study is being undertaken to find the challenges in implementing SCMIS in the Indian automobile industry.

2 Theoretical Background

2.1 Challenges for SCMIS Implementation

Based on the extensive review of literature for the challenges or barriers (used interchangeably) to the successful implementation of SCMIS, we attempted to categorize them into six broad categories:

(a) *Financial barriers*

The research by Kang et al. (2012) considers financial hindrance as a prerequisite for any implementation. Huge investment is required for the implementation of SCMIS (Gebauer and Buxmann 2000). Cost benefit analysis is done to justify

the investment. The various costs involved are cost of the software, migration of legacy data, implementation consultant cost, internal project team costs, training cost, and post-implementation maintenance cost. Both tangible and intangible benefits accrue from the implementation of the system. The company analyzes economic feasibility and often fails to draw a clear return from the investment that is being transpired. Thus, unclear ROI from the system forms one of the major barriers for the implementation of the system (Koh et al. 2008).

(b) *Organizational barriers*

One of the prime hindrance factors is the *lack of top management support, vision,* and *focus*. Various researchers like Supramaniam and Kuppusamy (2011), Shah et al. (2011), Finney and Corbett (2007), Bhatti (2005), and Wong et al. (2005) have stressed that if there is lack of commitment and participation from the top management, there are huge chances of failure. *Poor middle management support* will also have an adverse effect on the day-to-day operations associated with SCMIS, and the reluctance for adoption of the system by middle management is one of the impediments for the successful implementation of the system (Terziovski et al. 2003). Middle management acts as a change agent, and their uncertainty management is important in assisting their employees in the change transition (Herzig and Jimmieson 2006).

There should be a formal communication about the benefits of the system to the users (Sarker and Lee 2003), and the *lack of clear formal communication* among implementation team, software provider, and the users would lead to informal channels of communication which may lead to inaccurate flow of information in the organization, thus forming a barrier to successful implementation of the system. Change management (Alballaa and Al-Mudimigh 2011; Leon 2008) is one of the factors that affect the ERP adoption in organizations. The studies by Lindley et al. (2008), Esteves et al. (2003), and Umble et al. (2003) consider the lack of change management as a hindrance for successful implementation, and Kim et al. (2005) pointed that unless change management is appropriate in an organization, it would be difficult to adapt to the new system and to obtain total benefits from it.

Poor quality business process reengineering (BPR) leads to unsuccessful implementation of the system. Most of the researchers are of the opinion to fit business process to the system so that minimal customization is to be done. According to Bingi et al. (1999), implementing an ERP system involves reengineering the existing businesses to the best business process standard. Another challenge faced is the *absence of readiness assessment before project implementation*. Individuals and organizations might not be ready for complex level of integration leading to unsuccessful implementation of the system.

Finally *an unrealistic expectation from both the management and the user side* forms the barrier to the successful implementation of the system. The management has to be prepared for the decrease in the productivity of the people in the initial phase of the implementation.

(c) *Interorganizational barriers*

Study by Weston (2003) has divided barriers to the implementation of ERP II system into two categories: general business issues and issues related to

technological infrastructure. The study refers issues of collaborative BPR or business management process as a barrier to implementation. Further the *lack of trust* among supply chain members has been considered by various researchers (Vangen and Huxham 2003, Schoorman et al. 2007) as a barrier to information sharing. Another barrier is *inter-rivalry* as researched by Fawcett et al. (2012) which includes the lack of willingness to share information, risk, and rewards. Further due to cultural differences, span of relationship, and volume of transactions, trading partners may be *unwilling to collaborate* leading to the unsuccessful implementation of the system.

In addition the *lack of shared vision* between supply chain partners leads to less information sharing (Boddy et al. 2000; Mentzer et al. 2000) and more resistance from people leading to reduction in the quality of information being shared, thus causing less successful implementation of the system. Most of the executives lack their own business understanding which becomes more challenging when external partners are included (Koh et al. 2011).

(d) *Human barriers*

The *resistance to change* by the people (Tapp et al. 2003) forms one of the critical barriers to successful implementation of enterprise system. Leon (2008) in the study has stressed that system implementation is not a technology but a people's project. *Lack of sufficient training* will result in users that are unable to run the system properly (Umble et al. 2003). Insufficient training and education will increase the resistance associated with the system and would form a deterrent to the implementation success.

Lack of users' participation, involvement, and motivation will act as a hindrance factor to the successful implementation since users would be less motivated to use it and at the same time they might fear the new system. Studies by Zhang et al. (2002), Françoise et al. (2009), and Ngai et al. (2008) include two important areas for users' participation, i.e., when the organization is defining the need for adoption of the system and during the implementation phase.

(e) *Project management barriers*

Lack of effective project management methodology plays a major role in the failed implementation of the systems. Without proper project management, system will not be able to deliver the promised functionalities and will experience time overrun and cost overrun. According to the study by Umble et al. (2003), one of the reasons for system implementation failure is the underestimation of the scope, size, and complexity of the project. The *lack of experienced project leader* also becomes a hindrance factor. He also plays a crucial role in the selection of the implementation team (Sarker and Lee 2003). *Weak implementation team* forms a hindrance to the implementation of the system (Gargeya and Brady 2005) since it is the responsibility of the team to coordinate, communicate, and reduce the resistance among the users.

(f) *Technical barriers*

SCMIS involves complex transition from the legacy systems to an integrated interorganizational system; therefore, problems interfacing with existing systems and hardware difficulties (Umble et al. 2003) lead to the failure of the IT system. Al-Mashari et al. (2006) and Jarrar et al. (2000) in their study emphasize that *lack*

of adequate IT infrastructure in hardware and networking will lead to the failure of ERP system. Another important barrier to the successful implementation of the system is related to data standards and accuracy (Kang et al. 2012). In case standardized data is not there between disparate systems, erroneous data will be
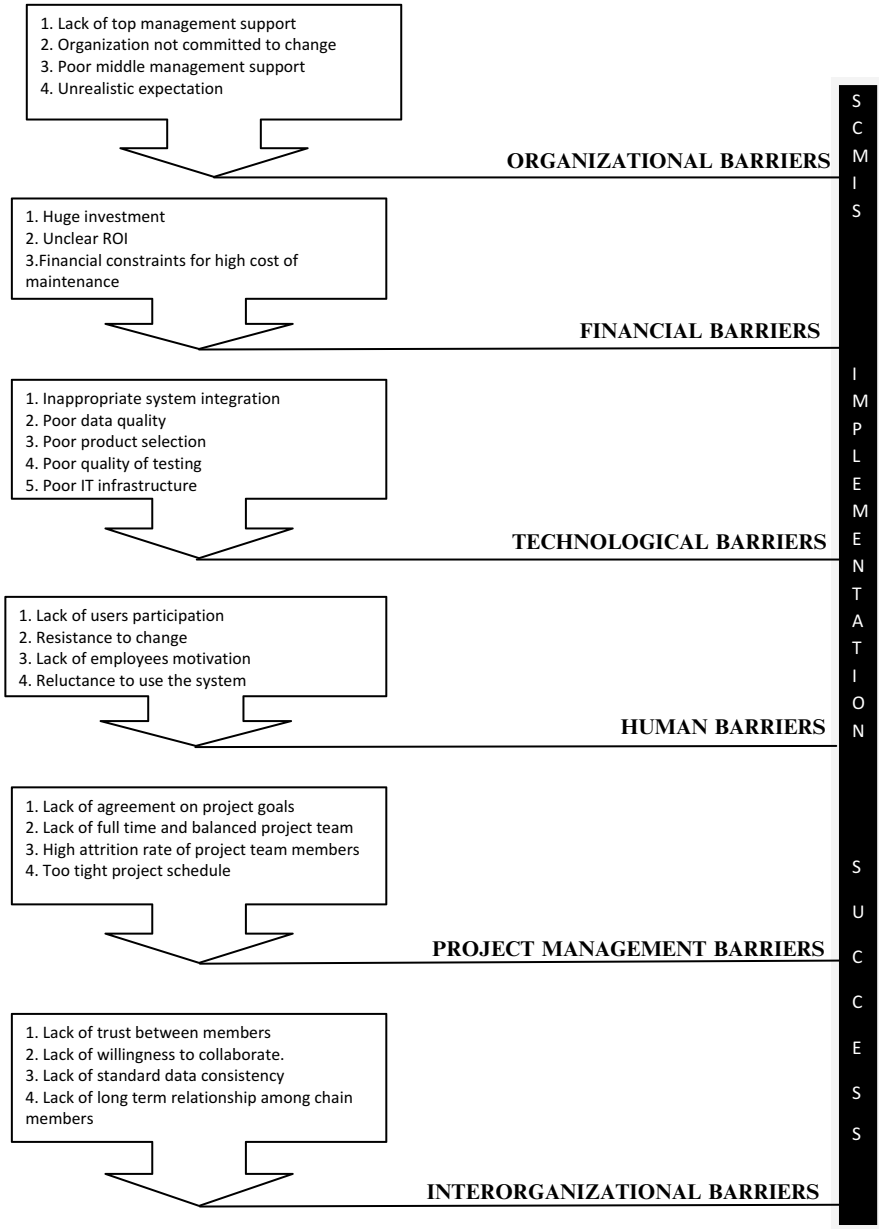

Fig. 38.2 Conceptual model for impediments in the successful implementation of SCMIS

spanning to various organizations. Data flowing through the system is like blood flowing in the body, and therefore *poor data conversion and quality* may cause negative domino effect in the organization, thus causing delay in the implementation of the system and may even lead to a failure of the project.

Overreliance on heavy customization would lead to higher implementation cost, causing project delays and unreliable system. Larger companies with enough resources choose this type of reengineering approach where heavy customization of the software is done which otherwise becomes a barrier. Since SCMIS is an interorganizational system, therefore customization further makes it difficult to use the software on disparate systems. Software upgrades end up in extensive software changes which require a huge financial implication (Subramoniam et al. 2009). Relying heavily on customization to fit with the business processes might lead to sacrificing best practices set in the system (Wong et al. 2005).

The conceptual model is shown in Fig. 38.2. The model shows the various impediments, namely, organizational, financial, human, technological, project management, and interorganizational which should be waned for the successful implementation of SCMIS.

3   Research Objectives and Methodology

The main objective of this paper is to identify various challenges being faced by organizations for the implementation of SCMIS and to calculate the severity of the impediments in the implementation of SCMIS.

The various challenges faced by the organizations for the implementation of SCMIS are based on the previous studies reported in the literature and discussions with the researchers, experts, and practitioners in this field. For the purpose of assessing the severity of the barriers, each was analyzed on multiple dimensions which added to a total of 40 dimensions for all 6 barriers taken together. The questionnaire covering these dimensions was framed on 5-point Likert scale ranging from 1 (no problem at all) to 5 (very serious problem) to measure the attitude of respondents for every question. Thus, the higher the score, the higher the severity of the barrier and its dimensions. A self-designed and pretested questionnaire was administered to 356 executives of two main automotive companies, namely, Maruti Suzuki India Ltd. and Honda Motors India Ltd., including their suppliers and dealers located in the national capital region (NCR) of India. Before issuing questionnaire to the respondents, the validity was established using a panel of experts from the area of SCM and discussions with academicians and implementers. Validity of the instrument was done to see if the questionnaire is measuring what it intended to measure and if the questionnaire is comprehensive enough to collect all the information needed to address the purpose. A total of 137 respondents or 38 % have responded to the questionnaires.

The data were analyzed in SPSS and the reliability was checked. A Cronbach's alpha coefficient for the data was 0.83 which is greater than 0.7; therefore, it was acceptable.

To measure the severity of the barriers, weighted mean was calculated using the formula given below:

$$\text{Severity of a variable} = \sum_{i=1}^{5} x_i y_i \,/\, \text{total no. of respondents}$$

where

x_i = no of responses for a rating score
y_i = rating score ($i = 1, 2, 3, 4, 5$)

Higher severity means high barrier to the successful implementation of SCMIS; therefore, it was given the highest ranking.

4 Data Analysis

The profile of the respondents showed that 86.8 % of them were males, and based on the number of years of work experience, 34 % of the respondents had experience less than 5 years, 38.6 % of respondents had an experience between 5 and 10 years, and 27.4 % of respondents had work experience of more than 10 years.

The severity was calculated for all the barriers as given in Table 38.2, and their ranking was done according to it. The table shows the severity score of

Table 38.2 Severity of the variables

Barrier	Variable	Dimension	Variable severity	SD	Barrier severity
1. Organizational barrier (OB)	OB 1	Lack of top management support	4.56	0.6	3.883
	OB 2	Lack of alignment between IT and organizational objectives	4.17	0.6	
	OB 3	Organization not committed to change	4.11	0.8	
	OB 4	Poor BPR – failure to redesign business process	4.06	0.8	
	OB 5	Absence of readiness assessment before implementation	3.32	0.9	
	OB 6	Poor middle management support	3.98	0.8	
	OB 7	Perspective of SCMIS as just a technical system	3.43	0.9	
	OB 8	Unrealistic expectation	3.67	0.8	
	OB 9	Inexperienced consultants	3.64	0.7	

(continued)

Table 38.2 (continued)

Barrier	Variable	Dimension	Variable severity	SD	Barrier severity
2. Financial barrier (FB)	FB 1	Huge investment	4.37	0.5	3.802
	FB 2	Unclear ROI	3.43	0.97	
	FB 3	Financial constraints for high cost of maintenance	3.60	0.74	
3. Technological barrier (TB)	TB 1	Inappropriate system integration	3.39	0.86	3.617
	TB 2	Overreliance on heavy customization	3.43	0.85	
	TB 3	Poor data quality	4.2	0.79	
	TB 4	Lack of data standards	3.08	0.86	
	TB 5	Poor product selection	3.46	0.9	
	TB 6	Poor quality of testing	3.42	0.85	
	TB 7	Poor IT infrastructure	3.72	0.97	
	TB 8	Lack of data and information security	4.23	0.69	
4. Human barrier (HB)	HB 1	Lack of users' participation	4.08	0.71	4.00
	HB 2	Ineffective communication with the users	4.14	0.72	
	HB 3	Lack of sufficient training to end users	4.21	0.72	
	HB 4	Inadequate employee involvement	3.94	0.85	
	HB 5	Lack of employees motivation	3.83	0.83	
	HB 6	Users don't understand the benefits of the system	3.82	0.83	
	HB 7	Resistance to change	4.25	0.64	
	HB 8	Reluctance to use the system	3.73	0.74	
5. Project management barrier (PMB)	PMB 1	Lack of effective project management methodology	4.19	0.68	3.874
	PMB 2	Lack of agreement on project goals	4	0.76	
	PMB 3	Lack of full-time and balanced project team	3.92	0.7	
	PMB 4	High attrition rate of project team members	3.42	1.09	
	PMB 5	Lack of a project champion/ establishment of an inexperienced project manager	4.17	0.74	
	PMB 6	Too tight project schedule	3.55	0.78	
6. Interorganizational barrier (IOB)	IOB 1	Technological incompetence within trading partners	3.79	1.04	3.761
	IOB 2	Lack of willingness to collaborate	3.86	0.89	
	IOB 3	Lack of trust between members	3.91	0.8	
	IOB 4	Culture of the partner may not support sharing of the information	3.75	0.92	
	IOB 5	Lack of standard data consistency	3.93	0.8	
	IOB 6	Lack of long-term relationship among chain members	3.33	0.84	

organizational barrier has a score of 3.883, financial barrier has a score of 3.802, technical barrier has 3.617, human barrier has a severity score of 4.00, and project management and interorganizational barrier have severity scores of 3.874 and 3.761, respectively. The variable with maximum severity for organizational barrier is the lack of top management support, for human barrier the resistance to change, for financial barrier the huge investment, for technological barrier the lack of data security, and trust among the trading members forms the severe variable for the interorganizational barrier.

5 Discussion

The highest severity among the barriers is that of human which is supported by Leon (2008) who stressed that system implementation is not a technology but a people's project. According to him 69 %, 28 %, and 13 % failure rate of the ERP systems is due to people, process, and technological problems, respectively. The findings from the study by Hawking et al. (2004) also reinforced enterprise resource planning implementations as people focused projects which rely heavily on change management for success. Further studies on information system also indicate that failure is largely due to organizational and social, rather than technical, factors (Fitzgerald and Russo 2005). Among the human barriers, the most important is users' resistance to change.

People resist change because of several reasons like rationale for change not clear; nonparticipation of the users in the change process; modification in the working relationships between people; no proper communication with the users; threat of job, power, or status; and benefits not adequate for the effort involved in learning. The employees usually do not resist technical change, but the social change that accompanies it is resisted. Therefore, at the outset, it is very important for an organization to understand the nature of resistance, before adopting any strategy for minimizing this resistance. The most frequently used strategies to overcome resistance to change are communication, user participation, user involvement, and training.

6 Implications and Limitation of the Study

The contributions of the paper are important for industry practitioners, researchers, and policy makers. The impediments and their dimensions will provide a useful guide for industry practitioners who are planning to implement SCMIS in their organizations. The study can help them to improve decision making for successful implementation of SCMIS right from inception and subsequent realization of the enormous benefits that will accrue with right implementation.

The major limitation of this study is that the findings were limited to only two major players of the automotive sector of the national capital region of India. Thus, it is recommended that similar research studies should be conducted by taking a larger

sample of organizations in automotive industry from other parts of India so as to include any other dimension whatsoever that might have been left out while covering these two organizations only of the automotive industry. Secondly, the study does not include the views, opinions, and perceptions of software experts that are involved in the development of SCMIS from organizations like IBM, Oracle, and SAP.

References

Alballaa H, Al-Mudimigh AS (2011) Change management strategies for effective enterprise resource planning systems: a case study of a Saudi company. Int J Comput Appl 17(2):14–19

Al-Mashari M, Ghani SK, Al-Rashid W (2006) A study of the critical success factors of ERP implementation in developing countries. Int J Internet Enterp Manag 4(1):68–95

Altekar RV (2005) Supply chain management: concepts and cases. PHI Learning Pvt. Ltd., New Delhi

Bhatti TR (2005) Critical success factors for the implementation of enterprise resource planning (ERP): empirical validation. In: The second international conference on innovation in information technology, p 110

Billington C, Callioni G, Crane B, Ruark JD, Rapp JU, White T, Willems SP (2004) Accelerating the profitability of Hewlett-Packard's supply chains. Interfaces 34(1):59–72

Bingi P, Sharma MK, Godla JK (1999) Critical issues affecting an ERP implementation. IS Manag 16(3):7–14

Boddy D, Macbeth D, Wagner B (2000) Implementing collaboration between organizations: an empirical study of supply chain partnering. J Manag Stud 37(7):1003–1018

Chan CK, Lee HWJ (Eds) (2005) Successful strategies in supply chain management. IGI Global

Esteves JM, Pastor J, Casanovas J (2003) A goal/question/metric research proposal to monitor user involvement and participation in ERP implementation projects. In: Information Resources Management Association conference (IRMA), Philadelphia (USA), pp 325–327

Fawcett SE, Fawcett AM, Watson BJ, Magnan GM (2012) Peeking inside the black box: toward an understanding of supply chain collaboration dynamics. J Supply Chain Manag 48(1):44–72

Finney S, Corbett M (2007) ERP implementation: a compilation and analysis of critical success factors. Bus Process Manag J 13(3):329–347

Fitzgerald G, Russo NL (2005) The turnaround of the London ambulance service computer-aided dispatch system (LASCAD). Eur J Inf Syst 14(3):244–257

Françoise O, Bourgault M, Pellerin R (2009) ERP implementation through critical success factors' management. Bus Process Manag J 15(3):371–394

Gargeya VB, Brady C (2005) Success and failure factors of adopting SAP in ERP system implementation. Bus Process Manag J 11(5):501–516

Gaur V, Giloni A, Seshadri S (2005) Information sharing in a supply chain under ARMA demand. Manag Sci 51(6):961–969

Gebauer J, Buxmann P (2000) Assessing the value of interorganizational systems to support business transactions. Int J Electron Commer 4:61–82

Gunasekaran A (2004) Supply chain management: theory and applications. Eur J Oper Res 159(2):265–268

Hawking P, Stein A, Foster S (2004). Revisiting ERP systems: benefit realization. In: Proceedings of the 37th annual Hawaii international conference on System sciences, 2004, pp 8. IEEE

Herzig SE, Jimmieson NL (2006) Middle managers' uncertainty management during organizational change. Leadersh Organ Dev J 27(8):628–645

Jarrar YF, Al-Mudimigh A, Zairi M (2000) ERP implementation critical success factors-the role and impact of business process management. In: Proceedings of the 2000 IEEE International Conference on management of innovation and technology, 2000. ICMIT 2000, vol 1, pp 122–127. IEEE

Kang Y, O'Brien WJ, O'Connor JT (2012) Analysis of information integration benefit drivers and implementation hindrances. Autom Constr 22:277–289

Khurana MK, Mishra PK, Singh AR (2011) Barriers to information sharing in supply chain of manufacturing industries. Int J Manuf Syst 1(1):9–29

Kim Y, Lee Z, Gosain S (2005) Impediments to successful ERP implementation process. Bus Process Manag J 11(2):158–170

Koh SCL, Gunasekaran A, Rajkumar D (2008) ERP II: the involvement, benefits and impediments of collaborative information sharing. Int J Prod Econ 113(1):245–268

Koh SL, Gunasekaran A, Goodman T (2011) Drivers, barriers and critical success factors for ERPII implementation in supply chains: a critical analysis. J Strateg Inf Syst 20(4):385–402

Leon A (2008) Enterprise resource planning, 2nd edn. Mc-Graw-Hill, New Delhi

Li G, Yang H, Sun L, Sohal AS (2009) The impact of IT implementation on supply chain integration and performance. Int J Prod Econ 120(1):125–138

Lindley JT, Topping S, Lindley LT (2008) The hidden financial costs of ERP software. Manag Financ 34(2):78–90

Mentzer JT, Min S, Zacharia ZG (2000) The nature of interfirm partnering in supply chain management. J Retail 76(4):549–568

Møller C (2005) ERP II: a conceptual framework for next-generation enterprise systems. J Enterp Inf Manag 18(4):483–497

Moon YB (2007) Enterprise resource planning (ERP): a review of the literature. Int J Manag Entrep Dev 4(3):235–264

Ngai EW, Law CC, Wat FK (2008) Examining the critical success factors in the adoption of enterprise resource planning. Comput Ind 59(6):548–564

Sarker S, Lee AS (2003) Using a case study to test the role of three key social enablers in ERP implementation. Inf Manag 40(8):813–829

Schoorman FD, Mayer RC, Davis JH (2007) An integrative model of organizational trust: past, present, and future. Acad Manag Rev 32(2):344–354

Shah SIH, Khan AZ, Bokhari RH, Raza MA (2011) Exploring the impediments of successful ERP implementation: a case study in a public organization. Int J Bus Soc Sci 2(22):289–296

Subramoniam S, Tounsi M, Krishnankutty KV (2009) The role of BPR in the implementation of ERP systems. Bus Process Manag J 15(5):653–668

Supramaniam M, Kuppusamy M (2011) Analysis of critical success factors in implementation enterprise resource planning systems in Malaysian business firms. Electron J Inf Syst Dev Countries 46(6):1–19

Tapp R, Hesseldenz J, Kelley G (2003) The role of project acceptance in the successful PeopleSoft human resources management system implementation for the Kentucky community and technical college system. In: AMCIS 2003 proceedings. Paper 172. Available at http://aisel.aisnet.org/amcis2003/172

Terziovski M, Fitzpatrick P, O'Neill P (2003) Successful predictors of business process reengineering (BPR) in financial services. Int J Prod Econ 84(1):35–50

Umble EJ, Haft RR, Umble MM (2003) Enterprise resource planning: implementation procedures and critical success factors. Eur J Oper Res 146(2):241–257

Vangen S, Huxham C (2003) Nurturing collaborative relations building trust in interorganizational collaboration. J Appl Behav Sci 39(1):5–31

Weston ECT (2003) ERPII: the extended enterprise system. Bus Horiz 46:49–55

Wong ACP, Scarborough H, Chau PYK, Davison RM (2005) Critical failure factors in ERP implementation. In: Proceedings of the 9th Pacific Asia conference on information systems, Bangkok, Thailand

Zhang K, Lee A, Zhang Z (2002) Critical success factors of enterprise resource planning systems implementation success in China. In: Proceeding of the 36th Hawaii international conference on system sciences, pp 61–75