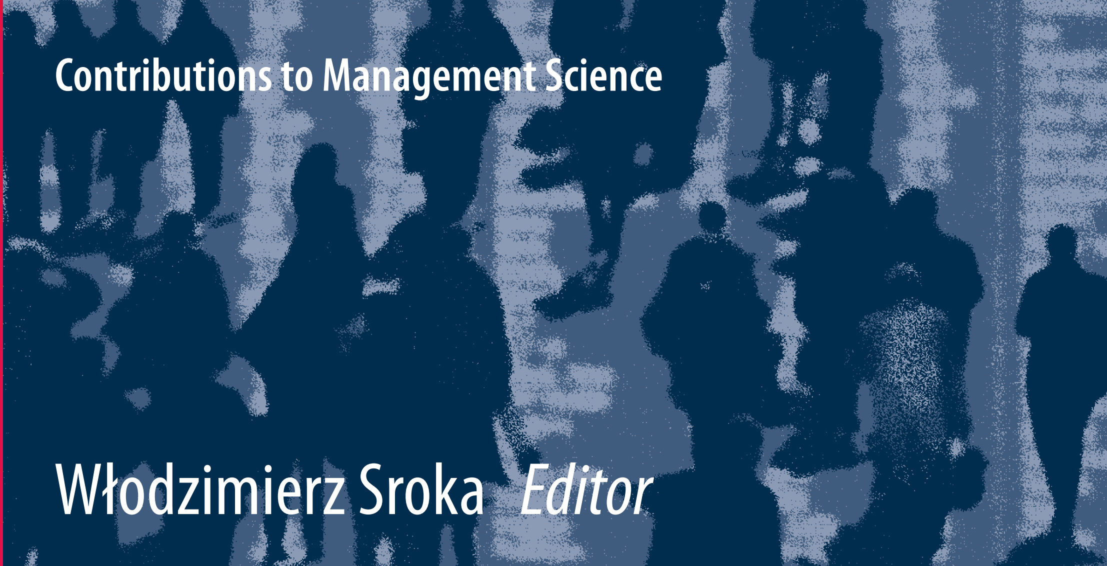

Contributions to Management Science

Włodzimierz Sroka *Editor*

Perspectives on Consumer Behaviour

Theoretical Aspects and Practical Applications

Springer

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Editor

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Foreword

It is highly fitting that the book entitled *Perspectives on Consumer Behaviour: Theoretical Aspects and Practical Applications,* proficiently edited by a Polish scholar working in the field of strategic management and marketing, Professor Włodzimierz Sroka, comes on the 80th anniversary of the first article published on consumer behaviour. The concept of consumer behaviour seems to be highly intertwined with the history of the notion of marketing which was developed in the early 1900s and was expressively recognised by Bartels (1962) in the book *The Development of Marketing Thought*, published by Homewood, Irwin, USA. The traditional school of marketing has emerged from commodities, the functional and the institutional schools of thought. Traditionally, marketing depended on the social sciences (e.g. anthropology, sociology, economics and collective market behaviour). Over the years, managerial schools of marketing realised the importance of individual customers in the early 1950s, and they started to borrow further from the behavioural sciences in order to control market behaviour and then later shifted to consumer behaviour.

The concept of consumer behaviour as a distinct subdiscipline in the marketing area focuses on understanding individuals rather than the social sciences. It could be defined as "how individual customers, groups or organisations select, and all the activities concomitant with the purchase, use, and disposal of goods, services, ideas, and to satisfy their needs and wants". Consumer behaviour is an interdisciplinary concept which resulted in sociology, marketing, psychology (e.g. economic, clinical organisational), ethnography, anthropology, social anthropology and economics (e.g. behavioural). The behavioural schools of marketing state that consumers are psychologically driven in their purchasing behaviour. As the market becomes international, it is vital that organisations understand and manage cross-cultural or global consumer behaviour. Also, based on global market competition, companies should focus on comparative behaviours and perceptions of the market rather than absolute behaviours and perceptions.

This book has tried to demonstrate the reliance of consumer behaviour on marketing. The chapters describe theories related to consumer behaviour and research methodology, which impact on developments in the marketing discipline. By implementing a distinctive and innovative approach to the field, this book has assessed the concept of consumer behaviour from the diversity of present and original perspectives. By providing much food for thought in terms of the aforementioned topics, it delivers an assortment of original, thought-provoking viewpoints.

The remainder of my foreword starts by reflecting on the groundbreaking and characteristic nature of this book: a book which delightfully concentrates on contemporary problems connected to consumer behaviour and management. Building on this, I will go on to reflect on the present and original studies on this territory based on my own perspectives on the area. My purpose is to accompany the main terrain enclosed in this edited book. Based on my personal reflection, I wish I could deliver a valuable counterpoint to the broad-minded understandings skilfully scrutinised in this capable collection. Therefore, I briefly detail the significance and opportunities of consumer behaviour by providing the final reflections on the merits of this book.

What Is the Novelty Value of This Collection, and What Are Its Strengths?

The key strengths of this book are the expertise and experiences of the editor. Włodzimierz Sroka has published over 150 publications (10 books and over 140 papers in peer-reviewed journals). He specialises in theoretical and practical issues relating to management and strategic management. His main research is related to consumer behaviour, strategic alliances, network organisations, strategy, company restructuring, CSR and business ethics, innovations and entrepreneurship. The second strength of this collection is the range of topics covered in each section and the different methodology used. The contributors represent the final differentiators of this collection. All contributors are well known in the domain, from different countries such as Poland, Czechia, Slovakia, Hungary, Romania, Pakistan, Finland, Spain, Mexico and the UK.

The Organisation of the Book

As mentioned, the purpose of this book is to present the main characteristics connected with consumer behaviour, from both practical and theoretical perspectives. The distinction between the practice and theory of consumer behaviour is deliberate and implies that the current book proposes to assimilate theoretical perceptions and models on the field with more practice-based, hands-on, skilled insights from the business world. Adopting this consumer behaviour management perspective, this edited collection is laid out in four sections.

Final Reflections

Perspectives on Consumer Behaviour: Theoretical Aspects and Practical Applications not only delivers contemporary viewpoints on the subject matter but also reminds us of the development and progress within consumer behaviour scholarship since 1962. This book is testimony to the significance of consumer behaviour scholars from all over the world with diverse methodological and theoretical approaches.

Readers of this collection will welcome the perspectives of leading marketing researchers, the worldwide standpoints extended and the diverse methodological viewpoints marshalled. Furthermore, the use of case study insights helps managers and students to understand the topic in more depth. As such, Professor Włodzimierz Sroka is to be congratulated in bringing this meaningful initiative to completion.

This book is a reminder for all of us to manage and research in the critical and important area of consumer behaviour management, not only to integrate up-to-date advances but also to re-assimilate and reconsider the essential precepts of marketing. Again, my Polish colleague is to be cordially thanked for designing and delivering a book which is of remarkable interest.

Read on and enjoy!

Middlesex University, London, UK Pantea Foroudi

Acknowledgements

Several colleagues contributed to the preparation of the monograph and I wish to thank them for their work. They include Jana Majerova and Maria Kovacova from the University of Zilina (Slovakia), Katarzyna Bilińska-Reformat from the University of Economics in Katowice (Poland), Vita Jukneviciene from Siauliai University (Lithuania), Elena Gurgu from Spiru Haret University, Bucharest (Romania) and Jelena Titko from the University College of Economics and Culture in Riga (Latvia). Thank you very much for your evaluation and constructive comments regarding particular chapters as well as advice regarding the structure of the book.

Dąbrowa Górnicza, Poland Włodzimierz Sroka

Introduction

The twenty-first century has become the age of the consumer—an educated, conscious consumer, but also one who is impatient, disloyal and capricious. Enterprises wishing to maintain or increase their competitiveness are forced to continuously and actively track changes in consumer behaviour, not only to keep up with buyers of their products, but to overtake them, creating a world in which consumers would like to live. Given these facts, the idea of this monograph is to present the key aspects associated with consumer behaviour, from both theoretical and practical points of view. The concept of the book is prepared on the basis of the rule of "from the general to the specific". The monograph has been written by scholars representing several countries, including the following sections:

Part 1. Economic and legal aspects of sustainable consumer behaviour
Part 2. Understanding the cross-cultural specifics of consumer behaviour
Part 3. Factors influencing consumer behaviour across products and services
Part 4. Consumer behaviour: implications for business strategy

Three papers have been presented in the first part. In the chapter entitled "Expectations for trends in household living standards and different perceptions in selected Central European countries", Naďa Hazuchová, Jana Stávková, Agnieszka Siedlacka and Ľudmila Nagyová state that consumer behaviour and theoretical knowledge of this topic are a prerequisite for its effective use in practice. They focus on the factors that influence this behaviour, especially changes therein which are taking place in society and which reflect the change in consumer behaviour in general. As they claim, the hierarchy of values is changing; the family has changed its character and many other changes are also visible, brought about by a change in the importance of the effects of individual factors on consumer behaviour. It accelerates the importance of interdisciplinarity in consumer behaviour and the importance of differentiation between products, services, experiences and activities and their consumption and disposal. Recognising all these changes is currently a basic requirement when it comes to determining and making successful use of marketing tools. The authors study the changes in consumer behaviour when buying and using selected commodities (food and non-alcoholic beverages) in selected EU countries.

Adnan ul Haque, Fred A. Yamoah and Włodzimierz Sroka, the authors of the second chapter entitled “Willingness to reduce food choices in favour of sustainable alternatives—the role of government and consumer behaviour” claim that despite greater emphasis on ethical consumer behaviour research, there is still no clear visibility of the magnitude of willingness to reduce food choices in favour of sustainable alternatives (WTRFCIFOSA), while the role of government is also under the microscope in terms of how willing it is to take the initiative in keeping only organic food on the shelves. Their study advances a new concept in the form of “willingness to reduce food choices in favour of sustainable alternatives”. The concept emerged from the assessment of consumer behaviour, ethical attributes, health attributes, the role of government and the role of food producers in relation to naturalness. It is theorised that WTRFCIFOSA would lead to the consumption of natural and organic food. At present, consumers themselves have no desire to switch to organic consumption. Moreover, ethical and health attributes, government and food producers have no significant impact on inducing consumers to opt for organic/natural food. It is therefore suggested that governments should introduce the concept of mandatory consumption of sustainable alternatives by reducing the range of unnatural and less ethical food choices for consumers, as naturalness is a significant moderator in the due process.

In the third chapter, “Harmonised protection of consumer behaviour: the holistic comparative message about its effectiveness and efficiency from legislative and judicial perspectives”, the author Radka Macgregor Pelikánová concentrates on legal aspects of customer behaviour. She explores the legislative and judiciary perspectives of the Unfair Commercial Practices Directive vis-à-vis consumer behaviour and protection. Based on comparative mapping, she also recognised the case law generated by its ultimate judiciary authority, the Court of Justice of the European Union. The information produced is assessed by focusing on whether the UCPD regime effectively and efficiently protects consumer behaviour. This generates a message about consumer behaviour which is genuinely or allegedly boosted by the (semi-)harmonised legislation and case law and points to both positive and negative aspects.

The second part of the monograph relates to the cross-cultural specifics of consumer behaviour and includes four chapters. The first chapter by Armenia Androniceanu, Jani Kinnunen, Irina Georgescu and Ane-Mari Androniceanu, entitled “Multidimensional analysis of consumer behaviour on the European digital market”, analyses the behaviour of EU consumers within the online environment. The authors selected a group of indicators and variables of consumer behaviour from the Eurostat database and identified the clusters according to the key characteristics based on the analysis of clustering and principal components. This gave rise to the identification of five clusters in which the EU states are grouped according to the characteristics of consumer behaviour in the online environment.

Jana Majerova and Anna Križanová, the authors of “The black box of consumer behaviour and brand value perception: Case study of the Slovak Republic” claim that building and managing brand value is an increasing challenge for managers in the present globalised market environment. According to the authors, brand value, as subjectively perceived by customers, represents a valuable source of competitive advantage for the enterprise. However, there are a plethora of theoretical approaches to brand value building and management, which raise many problems in terms of practical application. These are related to the variation of approaches to measuring brand value as well as to strategies for brand value building and management. Therefore, the aim of this study is to identify specifics in the perception of sources of brand value in the scope of the traditional quadratic typology of purchasing behaviour, based on a case study of the Slovak Republic. To fulfil this aim, the data obtained from the authors' own survey is statistically evaluated by means of factor analysis, supported by the implementation of a KMO Test, Barlett's test of sphericity and the calculation of Cronbach's Alpha. Thus, the specifics in terms of perception of brand value across traditional quadratic typology of purchasing behaviour can be identified, and the platform for future research into the relevant disparities in the cross-cultural investigation of sources of brand value can be created.

The next chapter by Lubica Gajanova and Margareta Nadanyiova is entitled "Analysis of consumer behaviour in the networked environment: Case study of the Slovak Republic". The authors analysed the factors which influence the purchasing decision-making process of Slovak customers in a networked environment (i.e. price, availability, social proof, scarcity, product details, conditions and social media activity). Based on the analysis, a proposal for customer segmentation based on the collected information was presented.

In the next chapter entitled "Sustainable consumption behaviour in Poland through a PLS-SEM model", Juan J. Garcia Machado, Edna C. Figueroa Garcia and Agnieszka Jachowicz identified the social factors that act as determinants of sustainable behaviour based on a survey of the Polish community. This study recognised the key motivational forces that drive consumer choice so that more effective direct and indirect action can be taken in favour of sustainable consumption. Consequently, governmental institutions and companies that operate in this sector, as well as pro-environmental and prosocial groups, will be able to work on the design of strategies, which are correctly aimed at obtaining a more desirable and positive response concerning the environment, the economy and society in general.

The third section presents the factors influencing consumer behaviour across products and services. Four papers have been presented herein. Grzegorz Maciejewski, Sylwia Mokrysz and Łukasz Wróblewski are the authors of the first chapter "Coffee consumer segmentation—implications for producers and sellers". They used segmentation analysis to identify relatively homogeneous groups of consumers on the coffee market and to determine the size of these segments among Polish coffee consumers. They employed Ward's hierarchical method and the non-hierarchical k-means method. Their study shows that consumers on the Polish coffee market constitute a heterogeneous group. Demographic, economic and behavioural variables proved to be distinguishing characteristics in terms of coffee consumers.

The purpose of the next chapter, “Identification of reasons why individual consumers purchase dietary supplements” (author: Katarzyna Hys), is to establish the determinants affecting consumer behaviour in terms of purchasing decisions on the global dietary supplement market. Furthermore, the intent was to present the issue of excessive consumption of these products around the world. The study was conducted using a systematic literature review consisting of the following stages: specification of the purpose of the study (1), subject literature selection (2), the application of bibliometrics and content analysis techniques (3) and development of the study report (4). The scope of literature studies mainly covered licensed electronic sources (Scopus, Web of Science, Elsevier, Proquest and Ebsco), Open Access (Directory of Open Access Journals), electronic science library catalogues (Springer Link) and commercial Internet resources (reports, assessments, forecasts).

Edyta Ropuszyńska-Surma and Magdalena Węglarz are the authors of the chapter “The behavioural profiles of energy consumers: Comparison of the decision tree method and the logit model”. They explored the behavioural profiles of Polish household energy consumers. The research identified the correlation between households’ willingness to install RES (to become prosumers) and (1) socioeconomic variables, (2) pro-ecological and pro-efficient behaviour variables and (3) attitudinal variables. The importance of the variables was verified by means of a logit model and by the decision tree method. The authors used both methods to determine the key features of energy consumers and to make predictions as to whether they are inclined to invest in RES and to become energy prosumers. The results obtained from these two methods were compared.

More profound insights into the everyday decisions of buyers regarding their amateur pricing strategies, and thus a deeper understanding of their real microeconomic behaviours, were gained by Anita Derecskei Kolnhofer in the chapter entitled “How much might a beer cost in a fancy resort? A possible replication of Thaler’s well-known experiment”. She conducted a study of university students in Romania and Hungary, finding that the consumer surplus which relies on preferences is confused by various situations in the framework of behavioural economics, such as different environments or currencies.

Deliberations in the last part of the book concentrate on consumer behaviour, especially the implications for business strategy. Four chapters are presented in this part. Ioana Nicoleta Abrudan, Dan-Cristian Dabija and David B. Grant prepared the chapter “Omni-channel retailing strategy and research agenda”. They reviewed previous studies related to the concept of omnichannel retailing strategy to differentiate between omnichannel retailing and its precursors, multi- and cross-channel retailing; delineate omnichannel strategies evolving from a retailing perspective; and present a research agenda to address a lack of research on and inconsistencies in this topic. This study recognised the key definitions of the concept and approached the practical aspects of implementing the strategy. The authors also identified the three approaches to defining omnichannel retailing: (1) integrated selling channels, (2) seamless shopping experience and (3) a combination of the two.

Magdalena Sobocińska developed a chapter entitled “How marketing shapes the behaviour of culture participants”. She documented the role of marketing in shaping the behaviours of culture consumers and the typology of cultural institutions that takes into account the scope of their orientation towards managers of cultural institutions in Poland. This research differentiated the key types of cultural institutions by the extent to which they are market-oriented, with the changes in the marketing paradigm taken into consideration.

The third chapter in this section is entitled "Determinants of purchasing decisions of restaurant consumers: a case study analysis". According to a case study analysis based on L'Olivo restaurant in Warsaw, this chapter presents the determinants of purchasing decisions made by customer review statistics data from TripAdvisor, Google, Facebook, the websites of suppliers such as Pyszne and Uber and the "Poland on a Plate" report. They discovered the key factors which are important in the purchasing decision-making process in the restaurant industry.

Jarmila Sebestova and Dana Sebestova are the authors of the last chapter in the monograph, entitled "Consumer behaviour and private donations: the effect of marketing communication and the reputation of non-profit organisations". They explored the concept of the communication mix in non-profit organisations within the social marketing concept based on a mixed-method approach, combining surveys and interviews. Four research questions are answered, pertaining to (1) the means of communication by which to share information about donations, (2) which communication channels are negatively ranked by donors, (3) the best concept of the communication mix in case studies and (4) the worst concept of communication. They found the optimal communication strategy to minimise barriers and motivate donators to support chosen non-profit projects.

In general, one should stress that a wide spectrum of topics which are important for a better understanding of consumer behaviour in the modern world has been presented here. Therefore, the monograph has a number of advantages, including the presentation of the point of view of different scholars from several countries; simple and understandable language; and the application of practical cases. We believe that a combination of theory and practice, given the nature of the texts presented here, allowed the authors to fulfil the mission of this monograph. It is designed for a wide group of recipients, including scholars, managers and students of marketing science.

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Włodzimierz Sroka

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About the Editor

Włodzimierz Sroka, PhD, is an associate professor at the Management Department of WSB University, Dąbrowa Górnicza (Poland), as well as extraordinary professor at North-West University (South Africa). The research interests of Prof. Sroka, who has published over 150 publications (10 books and over 140 papers in peer-reviewed journals), include strategic management, with a particular emphasis on inter-organisational cooperation, marketing, CSR and business ethics, entrepreneurship and social entrepreneurship as well as innovations. Professor Sroka is the co-author of *Management of Alliance Networks: Formation, Functionality and Post-operational Strategies*, as well as co-editor of the monograph *Management of Network Organizations. Theoretical Problems and Dilemmas in Practice*, which were published by Springer (in 2013 and 2015, respectively). He is Editor-in-Chief of the journal *Forum Scientiae Oeconomia* as well as Deputy Editor-in-Chief of the *European Journal of International Management*. He is also a member of the editorial boards of numerous scientific journals, e.g. *Sustainability*, *Amfiteatru Economic*, *Engineering Management in Production and Services*, *Marketing and Management of Innovations*, *Central European Business Review*, *Cultural Management: Science and Education, Administrative Sciences, Central European Journal of Public Policy* and *Organizacija.*

He has had work published in reputable journals, e.g. *European Journal of International Management, Transformations in Business and Economics*, *Engineering Economics*, *Polish Journal of Management Studies, Sustainability, Social Sciences, Scientific Annals of Economics and Business, Entrepreneurial Business and Economic Review, European Integration Studies, Engineering Management in Production and Services, Central European Journal of Public Policy, Central European Business Review, Journal of Eastern European and Central Asian Research*, *Information* and *Amfiteatru Economic.*

Currently, he combines his scientific activity with his role as the CEO of a medium-sized engineering company. He was previously employed in different managerial positions (Director, Member of the Management Board, Vice President of the Board and Managing Director) in both the steel and machine industries, including very large (over 10,000 employees), large (over 1000 employees) and medium-sized enterprises. He has also been a member of the Supervisory Boards of different companies from the steel, machine and chemical industries.

Part I
Economic and Legal Aspects of Sustainable Consumer Behaviour

Current Aspects of Consumer Behaviour in Central European Countries

Naďa Hazuchová, Jana Stávková, Agnieszka Siedlecka, and Ľudmila Nagyová

Abstract The paper deals with the issue of changes in consumer behaviour in connection with the ongoing changes in the lifestyles of members of society, focusing on the markets of the Czech Republic, Slovakia and Poland. Due to the multidisciplinarity of consumer behaviour, attention is paid to three areas of deeper research interest. The first area deals with the income level required in order for households to meet their needs. The EU SILC survey is the main data set. The differences in the income deciles of households revealed income inequalities, households living at the poverty line and those whose incomes do not reach the expenditure component of households. Welch's ANOVA is used to verify the differences in income. The second area of interest was from the results of an extensive questionnaire survey to identify the perception of their life situation by households themselves, and to understand their expectations for the future, by means of an analysis based on the model of multinomial logistic regression. The third area concerns the knowledge of consumer behaviour in terms of meeting the basic needs on the food market with a focus on the impact of food waste, based on a sample of Czech consumers. The investigation examined how consumer behaviour in marketing tools changes in relation to the amount of consumption. By using cluster analysis, three segments of consumers with similar behaviour and approaches to food waste were formed. Given the importance of the problem related to the amount of waste, including food, these segments as target groups offer the possibility of a suitable way of communicating and influencing their change in behaviour, resulting in reduced waste products.

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Keywords Living standard · Expectations · Household · Income · Quality of life · Satisfaction

1 Introduction

Consumer behaviour and its theoretical knowledge are a prerequisite for effective use in marketing practice. The subjects of interest here are knowledge of consumer behaviour, factors influencing this behaviour, the form and strength of their influence, and above all the changes that are occurring in society, which reflect the change in consumer behaviour.

The current rapid technological and economic development of society on the one hand, and the problem of social communication on the other, is reflected in changes in the behaviour of the individual. The individual adapts to the environment in a certain way by changing his/her behaviour. The hierarchy of values is changing, as are the lifestyles of individuals and informal groups, households or families. The character of the family is changing, as are many other things, brought about by a change in the importance of the effects of individual factors on consumer behaviour. It accelerates the importance of interdisciplinarity in consumer behaviour and the importance of differentiation between products, services, experiences and activities and their consumption and disposal.

Recognising all these changes in the lives of individuals, and the associated effects, is currently a basic requirement for determining marketing tools and using them successfully. The continuous and accelerating development of society, which reflects changes in the behaviour of an individual, is a sufficient and recurring motive to study consumption behaviour. In addition, the issue of consumer behaviour offers a number of perspectives for deeper studies due to multidisciplinarity. Three areas are of further interest.

The first such area of interest is the study of the impact of household income on consumption behaviour. Household income in today's consumer society has a decisive influence on the standard of living. The often-simplified replacement of living standards with economic prosperity at the national level is a simplistic and misleading statement. It is based on macroeconomic indicators and obtained average values; neither the individual, their standard of living, nor their perception of living conditions is taken into account. Therefore, the distribution of achieved values is important if one wishes to study the impact of income on consumer behaviour.

The second area of interest is the study of individual consumer behaviour. The changing society, means of communication, the changing hierarchy of values, a change in the meaning of social concepts, and interpersonal relationships all contribute to the individualisation of society and thus to a fundamental change in behaviour and satisfaction of the individual's needs. Satisfying the needs of products is becoming a matter of course and attention is focused on services, safety and the higher levels of the Maslow Pyramid.

This observation suggests a third area of interest, which is related to meeting needs to a greater extent that can be consumed. For example, a household which has enough money to meet the basic needs and hunger thirst behaves in such a way that some of the products it purchases are not consumed to meet this need, and there is a problem of disposing of these unused foods. The amount is so large that the solution to the disposal of unused food is becoming a global problem, an environmental problem and, due to the uneven economic development around the world, a sociological and political problem. The problem of food waste is one of the problems of the society of surplus. A similar problem is overuse or excessive consumption of products and the associated consequences. Examples include excessive alcohol consumption, which leads to a change in the behaviour of an individual with consequences for human health, material damage, crime, the cost of remedying such harm, social exclusion and, in extreme cases, loss of life. To deal with the above-mentioned problems, it is necessary to harvest a large amount of secondary data obtained from European or world databases and primary data obtained from a survey of a large number of respondents. A prerequisite for successful research is knowledge of exact methods and a creative way of selecting suitable methods for processing.

2 Literature Review

Consumer behaviour and the endeavour to recognise it is the subject of theoretical analysis by and interest of all market participants appearing on the market in any sort of role. Consumers are not just affected by external factors in the form of the effect of marketing tools at a given time; their personality over the course of time is shaped by the influence of the cultural, social and social conditions of the society in which they live. These factors are of a long-term nature and, together with the influence of the family environment, create the personality of the individual and his lifestyle. The broadest level of predetermination of consumer behaviour is the cultural environment. Culture creates a basic framework for consumer decision-making in a certain cultural space. Culture represents values, opinions and attitudes which are shared by a homogenous group of people that pass them on to future generations (Cateora et al. 2009; Noel 2017). Culture is a daily part of our lives and affects us throughout the course of our lives (Lantos 2011). It has an impact on how we spend money and our consumer behaviour in general. The differences between individual cultures must always be consistent with national borders. For example, the establishment of the EU brought with it many changes, including the breaking of many barriers that divided countries in Europe, such as the free movement of people and goods, as well as the harmonisation of regulations and legal standards. However, despite these changes, there are still intercultural differences between individual EU countries, and it can be assumed that these will not disappear even in the future. Even though many countries have already given up their national currencies and adopted the euro, each nation retains its own language, cultural opinions, customs and rituals (Peter and Olson 2010).

The consumer's links and relationships to various social groups also affect him within a given cultural space. The groups that are closest to the consumer, particularly family, have the strongest effect. Large social groups, as well as social classes, are also projected in consumer behaviour. It depends what reference role social groups play in consumer decision making, what the role of the individual in these groups is and what the individual's lifestyle is (Lantos 2011).

Among the personal factors of the individual, which include age and its individual segments (children, youths, middle age and senior citizens), are the associated age stereotypes. It is these stereotypes that are currently being justifiably questioned, since great differences in behaviour can be observed in individual age segments. Children have much more information than they had before, they mature quicker, are more independent and are aware of the price-quality ratio. Youths have the freedom to create their own style; it is important for them to be able to enjoy themselves, have great opportunities to travel and get to know different lifestyles and cultures, and feel that they can change many things. Above all, permanent change is typical of them (Chaudhary 2018). Likewise, due to the aging population in Europe the segment of seniors is increasing in importance. In terms of their consumer behaviour, this segment is currently characterised by its heterogeneity, which seems to be the largest among all groups. Therefore the focus should be more on the group called cohorts, who share the same or similar interests in activities or events. The consumer behaviour of seniors is typically orientated toward reliability, security, comfort, as well as dynamic vitality and sensitive communication (Van der Zanden et al. 2015).

Certain factors affecting consumer behaviour increase in importance according to the development level of a society. Among such factors are psychological factors, which show that recognising consumer action and behaviour is based on the influence of deeper motivational structures, i.e. the way in which unknowing motives are projected into consumer behaviour. Motivation is a sufficiently strong need which forces a person to act. Motivational theory is based on the assertion that real psychic forces that influence human behaviour are, by their very nature, unknowing. The driving forces of human motivational behaviour are their needs, which are hierarchically structured according to the level of importance. Physiological needs are basic needs, which are essential for the preservation of life and survival of the human population. These are followed by needs which relate to safety and security, in order to maintain the existence of human life. Following on, there is the social need for a sense of belonging and good relationships with other people. The need for recognition and praise by others is important only to some parts of society, as is the need to realise one's abilities and talent.

A person lives and moves about in a certain environment, and the situation in which he currently finds himself may be perceived differently by various individuals. To this end, when studying consumer behaviour, careful attention must be paid to the way the situation is perceived by the consumer. A different perception of the same situation is influenced by selective attention (we perceive those messages that momentarily meet our needs), selective distortion (adapting information to one's own needs) and selective retention (we forget most information, but remember information obtained when choosing suitable shopping alternatives). The issue of subjective perception becomes important—perception is crucial above all for assessing the quality and price of a product or service.

Other psychological factors include experience, which we gain from previous situations or experiences that gradually form our convictions and attitudes to the goods on offer. The diversity of mental dispositions appears in the intersection of mutually subjective forms, features, perception, learning, attitudes and motivation for a specific personality.

All the above factors affect the consumer, and shape his personality, which causes him to perceive external incentives differently. Marketeers need to know how to accept this fact and, among other things, use it in the form of suitable marketing tools when satisfying the needs of the customer. The use of suitable marketing tools becomes important, but is not the subject of interest of the submitted publication. Consumer behaviour is a dynamic, increasingly developing process which not only applies to the moment when the customer exchanges his money for a good or service. It is also necessary to stress the process of consumption, the effect of which appears before, during and after shopping (Solomon 2010).

Consumer behaviour is one of the most important displays of human behaviour in terms of its application to economic activities. This concerns the decision-making process, or how to use one's own available resources (time, money and effort) in connection with the consumption of specific products and services. The immediate effect on consumer behaviour can be expected above all from a given household's economic situation and the impact of marketing tools (Schiffman et al. 2008).

The household income situation testifies to the wealth and living standard of the population of a specific country. The living standard is particularly affected by the level of income, but economic growth, fiscal policy and the redistribution instruments of a country are also important. The key subject of interest of individual countries, in terms of the creation of their policies, is above all the population's standard of living, a significant component of which is the income situation. The problem when measuring the standard of living is that the term itself does not have a single, widely accepted definition. The main sciences engaged in the issue of the standard of living are economics, sociology and psychology above all. In economic terms, living standards are considered from a financial and material point of view, usually at national level. This therefore decides the size of income, consumption and unemployment. Gross domestic product per capita is most commonly used as a general international comparison of the standard of living. However, there is a whole series of critical arguments for its unsuitability when it comes to expressing the living standard. In society there are entire scientific teams that raise arguments for and against its use (Chong and Calderón 2000; Li 2018; Veneri and Murtin 2019).

The Cambridge Dictionary states that the standard of living is the amount of money and comfort people have in a particular society (Matthews 2007). In contrast, the Encyclopaedia Britannica (2012) defines the standard of living in two ways. The first relates to the need and necessity, comfort and luxury used by an individual or group, or to which an individual or group aspires to. The second sees the standard of living as the minimum level of necessities, comfort and luxury which is necessary to maintain the living status of an individual or group.

It is not surprising that living standards are much higher in rich countries. Göltenboth (2018) notes that in rich and developed countries such as Japan or the USA, the price paid for a high standard of living is heavy industrialisation, which has reduced the quality of life in several ways. Additionally, such progressive development has left a significant negative impact on the environment in which people live. Some also believe that the most developed countries reached their current level by usurping many more global resources than their fair share (Trainer 2011; Siohansi 2011). Trainer (2011) further argues that this injustice to the rest of the world is partially caused by the prevailing global market-based principles which motivate companies to produce what is demanded rather than what is needed.

Cottam and Mangus (1942) claim that we should realise that nowadays the behaviour of the individual is mostly habitual. This is part of the culture that is passed on from generation to generation. This then serves as the basic model of individual behaviour in a given society. It stresses that the standard of living is mostly a social phenomenon. They also state that living standards are not derived from material things, but from the aggregate sum of satisfaction.

Wolff (2009) shifts the financial aspect of the standard of living, stating that one of the most important factors which determines this is income. A household income situation testifies to the wealth and living standard of the population of a specific country, an important component of which is the income situation. Saunders et al. (2002) explains the relationship between income and the standard of living as an increase in income corresponding to an increase in the standard of living, because it provides funds for an increased level of consumption in the present, but also deferred consumption in future. We can engage in polemics concerning this assertion, because there is no important aspect of distinguishing between the level of consumption and standard of consumption, i.e. the standard of living. The level of consumption represents the current consumption of goods and services, whereas the standard is considered a goal which a household tries to reach.

If we respect the living standard as the rate of satisfaction of the material and non-material needs and wishes of an individual or a group, and their perceptions of it, measurement involves the expression of real income (disposable income) per capita, economic inequality and the rate of poverty, but also the expression of access to and quality of healthcare and level of education (Nolan and Whelan 2010; Corak 2013). These definitions automatically assume an economic ratio of quality of life, expressed objectively using numerical characteristics. Based on the values achieved, the fiscal policy of a country can significantly affect the living conditions of the population. Through redistribution, a country attempts to mitigate income inequality among individuals, particularly aided by cash transfers (social benefits, family allowances etc.). Furthermore, some necessities are more costly than others, and most of the commonly used indicators do not respect this financial burden on the family budget (Fox et al. 2015; Longford et al. 2010). As part of the redistribution, household incomes are increased through transfer payments and subsequently reduced by means of taxes, benefits, fees and other levies to the state budget. The most important redistribution process is through the system of state social security. Each country should endeavour to reduce the number of people threatened by poverty (Fusco et al. 2011; Reardon and Bischoff 2010).

The question to consider is how these findings pertaining to the objective income situation are perceived by the given subject in a particular situation and at a particular time, what expectations are created by the given subject and according to which it gradually intends to meet its needs. Whether these expectations are rational and feasible for an individual or a household must be considered (Muth 1961). This rational awareness is important above all for satisfying the needs of an investment nature (access to housing, mortgages). Any of the individual's identifiers (gender, age, education, economic activity, size of place of residence, study of the life cycle and permanent income—LCPIH, etc.) may certainly have an impact on the perception of an individual's economic situation, as well as the individual's lifespan or current mental condition. These facts have a strong impact on the perception of one's economic situation or levels of life satisfaction (Acemoglu 2003). Förster (2006) believes that one of the reasons for such instability are demographic changes.

Values that play an important role in consumer behaviour and have a cultural and ethnical basis are usually created during an individual's development, passed on through generations, and can be influenced (Cova et al. 2007). The role of a given individual in consumer behaviour tends to be overlooked in empirical research, but the influence on awareness of life sustainability, together with values and moral judgement, is presented on a theoretical basis (Bamberg 2003). Food is a commodity which can be used to identify an individual's behaviour and approach to consumption. The process that affects shopping expressed by consumption can be monitored, but does not always have to be triggered by need, and this leads to surplus expressed in food as waste. It is not only the income situation and the price of food that contributes to the size of this phenomenon, but also opinions and attitudes created during one's life, upbringing and the environment in which the individual lives and that affect him. Priefer et al. (2013) state that growth in prosperity also brings about a trend towards increased overconsumption. Household food waste can be expressed as the function of the price of food and disposable household income (Lusk and Elison 2017). Priefer et al. (2013) draws attention to the fact that the trend towards falling food costs is causing a loss of respect for food in society. Human consumption, in terms of its environmental impact, is dangerous above all due to its constant growth. The size of consumption differs not only among but within individual countries. Durning (1992) draws attention to the impact of levels of income and lifestyle. Using level of income, he divides the world into three consumption classes: the poor, middle income and consumers. Both extreme classes are dangerous. The consumer class is characteristic of the high and constantly increasing volume of consumption of its members, expensive waste disposal and negative environmental impact. In its struggle to survive, the poor consumer class has no regard for nature. When analysing household consumption and its impact on food waste and the environment, following the motivation for consumption and the formation of consumer preferences is appropriate. Simmel (1999) examines this associated quantitative individualisation in his models. Sanne (2002) and Røpke (2003) place individualisation and consumption in context, one of only a few to do so. According to these authors, today's economically developed countries build on the traditional values of the past; with the onset of the industrial era, including free speech, they compensate for their position in society with higher consumption. The outcome is an increasing number of households and higher demands on material household goods and food security. Quested and Murphy (2014) add that consumption increases the strong individualisation of society, creating more single-person households of elderly and young people.

From the summary of opinions on the latest findings to the definition of the standard of living, options for meeting needs and the importance of factors that affect overall consumption and consumer behaviour, what comes to the forefront is the strengthening importance of the subject and the perception thereof.

The aim of the chapter is to support the objective results gained from secondary data analysis (GDP, household income and expenditure) with results of a subjective nature gained from opinion polls conducted on the populations of selected central European countries, examining how they regard their income situation and quality of life. A substantial part of this article consists of the results of a questionnaire survey on the perception of income and living standards from the point of view of individuals as to how they regard their standard of living and what expectations they have as regards household trends in the Czech Republic, Slovakia and Poland in the future. Equally important as the views of individuals are their identifiers such as age, gender, economic activity and others, whose degree of effect on the perception of the quality of life is a further aim of this text. Differences in perception will be visible not only among individuals in a given country, but also between countries in which the survey took place. This involves countries of a given zone of cultural affinity, with similar political and social systems. Differences in the relationship with the overall consumption of the population and the importance of the subject in this process, above all the perception of overconsumption by an individual, arises from the behavioural analysis. The issue of the size of consumption will be monitored in the form of a case study of Czech respondents concerning food consumption.

In order to meet the aim of contributing to the recognition of consumer behaviour from different points of view, the text consists of three sections corresponding to three points of view concerning the issue of consumer behaviour: the importance of the economic conditions of society, above all the impact of the household situation; a subjective perception of the income situation and standard of living of the population of the Czech Republic, Slovakia and Poland; and finally the impact of the individual on the consumption of selected food commodities, including unconsumed food.

3 Research Methodology

The data source for the objective assessment of the household income situation is the information obtained from the European Union—Statistics on Income and Living Conditions (EU-SILC) project which deals with household income and living conditions. The main variable is the equivalised disposable income per household (which in extreme cases makes the occurrence of negative values possible). Disposable or net cash income is converted to a unit (person), which is a very important conversion for the subsequent household comparison. This conversion not only takes the number of members of a household into account, but also their age structure. This is a so-called conversion of consumer units, whose explanatory power is much higher.

Eurostat methodology was used in the paper for the conversion, i.e. the person at the head of the household has a coefficient of 1.0, children aged 0 to 13 have a coefficient of 0.3, and other children and people in the household have a coefficient of 0.5. Therefore, the equation has the following structure: $EJ_{DEF.EU} = 1 + 0.5 * (n_{ADULTS} - 1) + 0.3 * n_{CHILDREN}$.

Another source of secondary data is the Eurostat database which provides data not just on income, but also on household expenditure. Overall household income and expenditure is analysed for the Czech Republic, Poland and Slovakia, with the possibility of making a comparison with the averages of all EU countries. Part of the analysis involves the distribution of households into quintiles according to the level of income and expenditure. Given the nature of the data and length of processing, the year 2015 will be used for all analyses. Both databases provide sufficient data on households, their income situation, source and structure, as well as a sufficient amount of household identification data.

The results of the 2016 survey (based on data availability) in three countries, namely the Czech Republic, Slovakia and Poland, are used for an analysis of the household income situation, quality of life and the perception thereof. These countries represent a group which joined the EU in 2004, comprised of countries which experienced similar economic-political development after World War Two followed by economic transformation with comparable results. The structure of respondents is representative according to all the control characters.

The data was processed using descriptive statistics and a method of testing the conclusiveness of the difference between average household incomes, i.e. ANOVA, by verifying the conditions of normality of the distribution of the dependent variable (income) in all monitored groups (countries) and verifying the conditions of the homogeneity of the variance using Levene's test.

Based on box plots, extreme and remote data were removed from the cohort. A few remote values were kept in the cohort. Based on the great scope of choice and calculation of Cook's distances, it was found that these values do not distort the results of the analysis. The normality of data was slightly violated, but in this case, when we have a great number of measurements, we can ignore the slight violation of normality. Given that the assumption of the match of variances in the groups was not met, Welch's ANOVA was used, which addresses this problem. After finding statistically significant differences between the groups of the dependent variable, (Games-Howell) multiple comparisons tests are used showing which two countries statistically differ significantly in terms of average incomes.

A questionnaire survey focusing on subjective assessment took place in 2018, with 992 respondents in Poland, 513 respondents in Slovakia and 1125 respondents in the Czech Republic. The expected improvement of the life situation of households in future is expressed using four scales: totally agree—somewhat agree—somewhat disagree—totally disagree. The difference in expectations of an improvement in living standards between the selected countries will be determined using ordinal logistic regression and multinomial regression based on the odds ratio.

The independent variables are as follows:

- in what way (where) a household lives,[1]
- whether a household should go into debt to acquire housing,
- how it rates its income in terms of covering needs and achieving a better quality of life,
- how difficult it is to maintain work-life balance.

These are supplemented by variables that play an important role in assessing the behaviour of households in life situation issues:

- type of household,
- gender,
- age,
- education,
- size of residence,
- economic activity.

The model therefore consists of 10 independent variables. The model will be modified according to partial results of significance. The observed reference category of the dependent variable is the option "I totally agree". In view of the nature of the ordinal variable, there will be an interpretation for extreme values, i.e. "I totally agree" or "I totally disagree". The ordinal logistic regression model is based on cumulative logits in the form of

$$ln\frac{F_j}{1-F_j} = \frac{(P(Y \le y_j))}{P(Y > y_j)} = ln\frac{(\pi_0 + \pi_1 + \cdots + \pi_j)}{\pi_{\ j+1} + \pi_{1j+2} + \cdots + \pi_{s-1}}, j = 0, 1 \cdots, s-2. \quad (1)$$

The regression function using the cumulative logit model then appears as follows:

$$ln\frac{F_j}{1-F_j} = x\beta_j, j = 0, 1 \cdots, s-2. \quad (2)$$

The parameters β0j are threshold parameters for individual categories of quantity Y and represent the logarithm of the likelihood that Y will acquire a maximum of the category j.

Data on food consumption, the amount of wasted food, differences in the approach to overconsumption and waste respectively will be obtained in the form

[1]Own apartment, cooperative apartment, state or municipal apartment, rented apartment, rented house, own house, other.

of an opinion poll on a cohort of respondents. The information obtained will be, above all, food shopping habits, attitudes to surplus food, causes of waste, how the issue of consumption is perceived by the individual and his opinions regarding the issue of waste and the associated consequences. The questionnaire survey was conducted at the end of October and start of November 2017 on 1582 respondents. The questionnaire consisted of 21 questions regarding the issue of waste and nine identification questions. A 10-point scale was used to express the attitudes in the same way as for the opinion questions.

To process the survey results, descriptive statistical methods will be used; the cluster analysis method will be used in view of the possible effective targeting of groups of respondents with similar opinions. The task of the cluster analysis is to divide the cohort into several groups so that the objects in the cohort are as similar as possible in the given group-clusters. Clustering will be based on the k-means method and the Euclidean distance will be used as the distance from the Centroid. Data is arranged into clusters based on its properties. The endeavour is to incorporate objects into clusters to minimise the variability within the clusters. The individual objects will be allocated to the nearest pattern point until a stable breakdown is achieved. During the analysis the defining criteria which have a significant impact are determined. Because the number of cluster variables can have an impact on the homogeneity of a segment, criteria are selected whereby the respondents differed most in their answers. Furthermore, questions will be determined that have a significant impact on the clusters.

Subsequently, an interdependence analysis will be transferred between the individual criteria to prevent the incorrect allocations of the disproportionate significance of some variables. This analysis is performed using a cross analysis and the dependence is analysed using Cramer's coefficient. The critical value of the statistical variables will be fixed at 0.7 for coefficients and 0.05 for the significance level. The SPSS Statistics and Statistica by StatSoft programmes are used to process the data.

4 Research Results and Discussion

The application of the above-mentioned methods achieved the following results. The GDP per capita indicator is used to measure the living standard of the population of each state. The values of this indicator for individual European Union states in the monitored year of 2016 are shown in Fig. 1. The EU average is fixed at the level of 29,300 EUR in purchasing power parity (PPS). All three monitored states are located below this limit. Czechs have the highest standard of living, followed by the Slovaks and finally the Poles. These states are part of the same cultural affinity zone, which is also seen in the countries' economic strength among other things. When measuring the standard of living using the GDP per capita indicator, the share of individual components must also be taken into account (consumption, formation of gross capital, exports and imports) and, above all, the share of total consumption (Table 1).

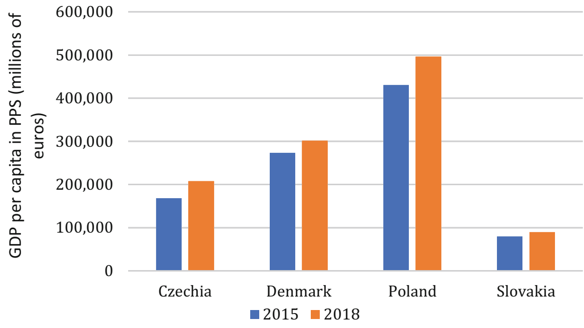

Fig. 1 GDP per capita in PPS (million EUR) for the years 2015 and 2018. Source: Eurostat 2019a, b

Table 1 GDP per capita in PPS (million EUR) for the years 2015 and 2018

	2015	2018
European Union—28 countries	14,854,106	15,898,312
Czechia	168,473	207,772
Denmark	273,018	301,341
Poland	430,258	496,361
Slovakia	79,758	89,721

Source: Eurostat 2019a, b

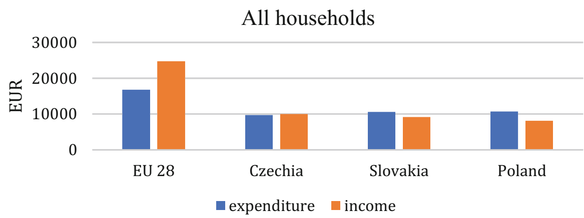

Fig. 2 Equivalised average disposable annual income and expenditure per household member in 2015. Source: Eurostat 2019b

Figure 1 shows the rising GDP in all the monitored countries. Given the absolute level of GDP achieved (as shown in the table), due to the explanatory power of the graph, it was not appropriate to graphically express the GDP value achieved for the entire EU, which is several times higher. GDP per capita describes the performance of the economy of a specific country, but does not directly reflect the living conditions of the population. This is also the main reason for criticism of using GDP as a living standard indicator. Therefore, a more appropriate use of indicators is seen as those reflecting the real situation of the population, as obtained from the European Union Statistics on Income Living Conditions (EU SILC) survey, where the household is the basic unit.

The income situation of the household and individual respectively is one of the objective indicators. Countries are guided by the endeavour to, above all, address income inequality amongst the population and implement an appropriate social policy. Given the importance of the results, conclusions cannot be deduced from the calculations of average values for the entire cohort. The distribution of the values of disposable monthly income and expenditure according to the countries we have monitored shows the extent to which income inequality is a significant characteristic (Fig. 2).

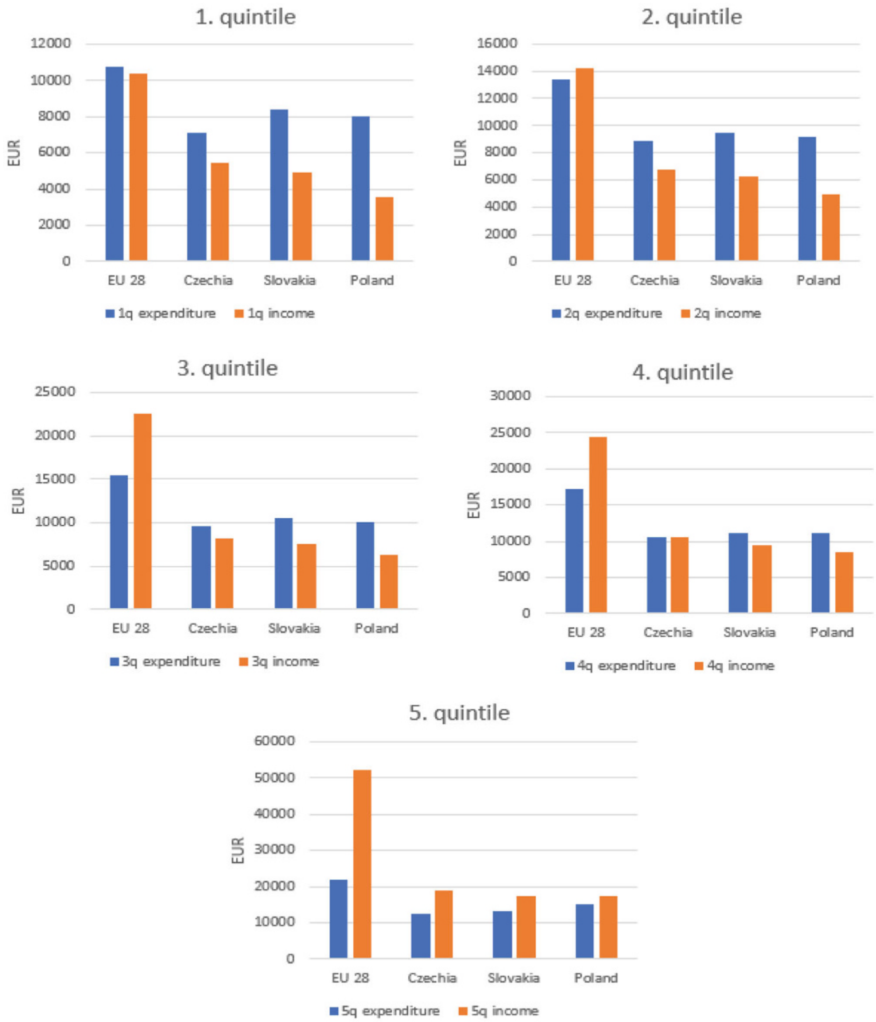

Fig. 3 Equivalised average disposable income and expenditure per household member in quintiles, 2015. Source: Eurostat 2019b

Figure 3 shows that the use of average annual income and expenditure characteristics for the equivalised household member is insufficient for the creation of measures as part of economic and social policy. The total income and expenditure indicates rising living standards. The values arranged in individual quintiles provide more details about income and expenditure as well as the living standard of the population. The graph shows that in the first quintile incomes do not reach the level of the required expenditures in any of the monitored countries, or even in the EU as a whole. Across the entire EU, which contains a significant representative population of countries with developed economies, incomes cover 96.83% of expenditure. In the Czech Republic, incomes managed to cover only 76.83% of expenditure, in Slovakia 58.54%, and in Poland income does not cover even half of expenditure (44.10%). In the second quintile and others, where income and expenditure values increase in size in view of the rising trend, only in the EU 28 cohort does income exceed expenditure. In all three monitored countries, expenditure exceeds income, albeit with different ratios. The best income and expenditure ratio is achieved in the Czech Republic where expenditure reaches the same level as income in the fourth quintile and income exceeds expenditure in the fifth quintile. In Slovakia and Poland this is not the case; income equality, i.e. income exceeding expenditure, is not achieved until the fifth quintile. The situation described shows that in the Czech Republic approximately 60% of the population must adjust the size of their expenditure with regard to income, while in the other two countries this applies to 80% of the population. Insufficient income corresponds with the size and number of mortgages, loans and other forms of debt. The structure of expenditure is crucial in achieving a higher level of living standards and satisfaction of the population. The results of the survey not only help to create a country's economic and social policy, but are also an important indicator for the formation of corporate marketing strategies and for the effective use of marketing tools.

4.1 Income as an Indicator of Living Standards

The income situation of the population is correlated with GDP per capita. In Table 2 the approximate average household disposable income in the selected countries is converted to the equivalised member.

The highest equivalised disposable monthly income is achieved by households in the Czech Republic (620 EUR), followed by households in Slovakia (570 EUR) and Poland (470 EUR). There is no negative value for households in the Czech Republic and Slovakia in terms of minimum values, which cannot be stated for households in Poland. It must be reiterated that the basic variable is the equivalised disposable

Table 2 Equivalised disposable monthly income in EUR, 2016

	N	Mean	Std. Deviation	Minimum	Maximum
PL	11,982	526.554	329.4627	−844.5	6384.5
SVK	5738	607.506	314.7049	−270.0	10157.3
CZ	8507	691.103	403.1719	−520.8	12047.1
Total	26,227	597.638	359.3550	−844.5	12047.1
Data minus extreme values					
PL	11,085	466.738	207.1747	−52.2	1023.1
SVK	5281	566.876	186.3065	79.3	1051.2
CZ	7880	617.733	205.1389	89.9	1162.6
Total	24,246	537.623	213.1346	−52.2	1162.6

Source: own elaboration

Table 3 Robust tests of equality of means

	Statistic[a]	df1	df2	Sig.
Welch	1313.641	2	13,732,745	,000

Source: own elaboration

Table 4 Games Howell

(I) Country	(J) Country	Mean difference (I–J)	Std. Error	Sig.	95% Confidence interval	
					Lower bound	Upper bound
Poland	Slovakia	−100.1379*	3.2318	.000	−107.713	−92.562
	Czech Republic	−150.9948*	3.0352	.000	−158.109	−143.881
Slovakia	Poland	100.1379*	3.2318	.000	92.562	107.713
	Czech Republic	−50.8570*	3.4515	.000	−58.947	−42.767
Czech Republic	Poland	150.9948*	3.0352	.000	143.881	158.109
	Slovakia	50.8570*	3.4515	.000	42.767	58.947

Source: own elaboration
*The mean difference is significant at the 0.05 level

income; therefore, in view of household indebtedness, negative values occur in minimum values.

A one-factor analysis was applied to determine conclusive income differences between the countries. In view of the fact that there is significant variability of income values in the monitored countries, the most appropriate method seemed to be Welch's ANOVA, which is not sensitive to dispersion homogeneity (Table 3).

It is clear from the result that there is at least one significant difference in household incomes between two countries. Multiple comparisons were applied to find two specific countries with conclusive differences between household incomes (Table 4).

The multiple comparison supplements the results from the previous analysis. All three countries significantly differ from each other in terms of statistics pertaining to the achieved level of average income of households. Given that the Czech Republic has the highest income and Poland the lowest, the difference between these two countries is the highest.

The objective point of view related to the income situation need not necessarily reflect the perception of the income situation of households. Therefore, it is also necessary to deal with the subjective assessment of the living standard of the populations and their expectations of the trend in future. The key statement from the opinion poll that "the expected economic situation of a given household will improve" allowed four possible responses ranging from "I totally agree" to "I totally disagree".

Ordinal logistic regression for three or more levels of strength of a monitored character is used to analyse the answer concerning the expected future. The

Table 5 Model fitting information

Model	−2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	6289.723			
Final	4820.922	1468.801	30	.000

Source: own elaboration

Likelihood Ratio Test in Table 5 shows that the model is statistically significant and the determination index explains 46% of variability.

The expectations of households in relation to the individual variables (country, personal and work-life balance, household indebtedness, and identifiers) can be found in Table 6.

Households in Poland have the highest expectations when it comes to an improvement in their economic situation, whereas Czech households have the lowest expectations. The level of Polish expectations is approximately five times higher than that of Czechs in terms of expected improvement. In other words, when a Pole and Czech are asked the same question, the likelihood of the Pole answering that he expects an improvement in the current situation is five times greater. For a Slovak, this likelihood is only 1.09 times higher than for a Czech. Therefore it can be deduced that Czechs and Slovaks have similar expectations.

People aged 65 and more have the greatest expectations, whether this refers to individuals or couples without dependent children. This corresponds to the finding that pensioners have the greatest expectations according to economic activity. Thus, in my opinion, their future income situation seems to be secure.

The parallel curve test tells us whether it is appropriate to have all variants of a dependent variable in one model; however it comes out negative. Therefore, we attempted to optimise the model using multinomial logistic regression, as this solution appeared to be the most suitable for recognising answers to the question pertaining to expectations, and how individual answers are affected by further aspects. This analysis can also be applied to the dependent ordinal variable in the event that we reject the parallel curve test. In this case it is more appropriate to study the dependent variable category separately, regardless of the fact that the dependent variable has a category constituting a certain sequence. Firstly, the "age" variable was removed due to its insignificance, i.e. this means that age has no effect on expectations. The model was adjusted accordingly.

In Table 7, which relates to the appropriateness of the model, we see that the model is statistically significant according to the Likelihood Ratio Test. The model explains 57% of the dependent variable.

The results of multinomial logistic regression are shown in Table 8. It is clear that all the variables have an impact on the dependent variable "expectations."

The chi-square statistic is the difference in −2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.

Table 8 can be interpreted as follows.

Table 6 Parameter estimates

		Estimate	Std. Error	Wald	df	Sig.
Threshold	[We estimate that the economic situation of our household will improve in the future = 1]	−1.711	.248	47.649	1	.000
	[We estimate that the economic situation of our household will improve in the future = 2]	.004	.246	.000	1	.987
	[We estimate that the economic situation of our household will improve in the future = 3]	1.405	.248	32.061	1	.000
Location	[Country = SK]	.334	.077	18.695	1	.000
	[Country = PL]	1.592	.091	309.349	1	.000
	[Country = CZ]	0[a]	.	.	0	.
	[At present it is difficult to maintain a work-life balance = 1]	−.060	.088	.467	1	.494
	[At present it is difficult to maintain a work and personal life balance = 2]	−.211	.079	7.184	1	.007
	[=3]	−.188	.079	5.684	1	.017
	[At present it is difficult to maintain a work-life balance = 4]	0[a]	.	.	0	.
	[If possible the household should not get into debt = 1]	−.723	.095	58.408	1	.000
	[If possible the household should not get into debt = 2]	−.736	.095	60.307	1	.000
	[If possible the household should not get into debt = 3]	−.625	.086	53.018	1	.000
	[If possible the household should not get into debt = 4]	0[a]	.	.	0	.
	[In terms of housing, select the assertion that applies to your household = 1]	−.232	.066	12.426	1	.000
	[In terms of housing, select the assertion that applies to your household = 2]	−.167	.095	3.097	1	.078
	[In terms of housing, select the assertion that applies to your household = 3]	−.015	.070	.044	1	.834
	[In terms of housing, select the assertion that applies to your household = 4]	0[a]	.	.	0	.
	[Type of household = 1]	−.088	.161	.300	1	.584
	[Type of household = 2]	.969	.226	18.383	1	.000
	[Type of household = 3]	.039	.154	.063	1	.802
	[Type of household = 4]	.746	.198	14.251	1	.000
	[Type of household = 5]	.029	.161	.033	1	.855
	[Type of household = 6]	.124	.189	.428	1	.513
	[Type of household = 7]	.009	.156	.003	1	.953
	[Type of household = 8]	−.094	.159	.353	1	.553
	[Type of household = 9]	.114	.191	.355	1	.551

(continued)

Table 6 (continued)

		Estimate	Std. Error	Wald	df	Sig.
	[Type of household = 10]	0a	.	.	0	.
	[Gender = 1]	.086	.052	2.741	1	.098
	[Gender = 2]	0[a]	.	.	0	.
	[Educational attainment = 1]	−.092	.184	.249	1	.618
	[Educational attainment = 2]	.434	.097	19.981	1	.000
	[Educational attainment = 3]	.004	.060	.004	1	.952
	[Educational attainment = 4]	.133	.079	2.873	1	.090
	[Educational attainment = 5]	0[a]	.	.	0	.
	[Economic activity = 1]	.320	.173	3.434	1	.064
	[Economic activity = 2]	.318	.183	3.004	1	.083
	[Economic activity = 3]	.817	.216	14.251	1	.000
	[Economic activity = 4]	.186	.204	.829	1	.362
	[Economic activity = 5]	.127	.185	.472	1	.492
	[Economic activity = 6]	0[a]	.	.	0	.

Note: [a]This parameter is set to zero as it is redundant
Source: own elaboration

Table 7 Likelihood Ratio Test and Pseudo R-squared

Model Fitting Information			
	Likelihood Ratio Tests		
Model	Chi-Square	df	Sig.
Intercept only			
Final	1982.524	147	.000
Pseudo R-squared			
Cox and Snell	.530		
Nagelkerke	**.570**		
McFadden	.284		

Source: own elaboration

1. We will comment on the reference category “expectations” with the second alternative answer *I somewhat agree*.

   Country: Poles who answered “I somewhat agree” have a 4.151 times greater likelihood of totally agreeing with expectations of an improvement in the situation when compared with Czechs who gave the same answer.

   The type of household has no impact on expectations.

   Household income assessment: People rating income as low, sufficient, or satisfactory have a greater likelihood of responding “I totally agree” with a positive trend than those who have a high income. Those with a high income no longer expect improvement, but those with a lower income do. People with an insufficient income are more sceptical and do not expect an improvement of the situation. This may perhaps also relate to a low level of education.

Table 8 Results of multinomial logistic regression

Model Fitting Information			
	Likelihood Ratio Tests		
Effect	Chi-Square	df	Sig.
Intercept	.000	0	–
Country	406.849	6	.000
Where does your household live?	30.011	18	.037
How do you rate your income in terms of covering quality-of-life needs?	36.050	12	.000
At present it is difficult to maintain a work-life balance	59.813	9	.000
If possible the household should not get into debt	131.549	9	.000
In terms of housing select the assertion that applies to your household	29.103	9	.001
Type of household	73.213	27	.000
Gender	19.709	3	.000
Educational attainment	37.129	12	.000
Size of the place of residence	50.945	27	.004
Economic activity	47.460	15	.000

Source: own elaboration

Work-life balance: Those who feel that they have a good work-life balance have a greater likelihood of belonging to the group that totally agrees with the expectation of an improvement in the situation.

Type of debt: Those who have taken out a loan have a greater likelihood of belonging to the group that totally agrees with the expectation of an improvement in the situation.

Education: In this category, the answer "I somewhat agree" has no impact on expectations.

Size of residence: Only the first and third category have an impact (up to 199 inhabitants and 500–999 inhabitants). People from these two types of municipalities have a greater likelihood of expecting a total improvement in the situation than those from towns with more than 100,000 inhabitants.

Economic activity: Only category 3 and 5 (pensioners and students) have an impact in terms of expectations of an improvement in the income situation.

2. We will now comment on the reference period "expectations" of the improvement in the economic situation with the modification of the variable "*I totally agree*".

Country: Poles who answered "I totally disagree" have a 130 times greater likelihood of totally agreeing with the expectations of an improvement in the situation when compared with Czechs who answered *I somewhat agree*.

Type of household: In this category the answer "*I somewhat disagree*" has no impact on expectations.

Household income assessment: Only the second category affects the likelihood of falling into the category "*I totally agree*". People who rate their income as sufficient have a 2.3 times greater likelihood of falling into the category "*I totally agree*" than those who have a high income.

Work and personal life balance: In this category the answer "I totally disagree" has no impact on expectations.

Indebtedness: Those who think that a household should get into debt have a somewhat lower likelihood of being satisfied than people that do not agree with indebtedness.

Type of debt: Those who have a mortgage or loan have a somewhat greater likelihood of belonging to the group that totally agrees with the expectation of an improvement in the situation than those who have no loans.

Type of household: Only category 2 and 4 have an impact. Hence, people aged over 65 either living alone or as part of a couple have a greater likelihood expecting a total improvement in the situation.

Education: People with a secondary-level education without having completed the Maturita school leaving exam have an almost four times greater likelihood of expecting an improvement in their life situation.

Size of residence: In this category the answer "*I totally disagree*" has no impact on expectations.

Economic activity: Only category 3 (pensioners) has an impact on expectations of an improvement. Pensioners have a 47 times greater likelihood of feeling that an improvement in the situation will occur than respondents from the category 'Other economic activity'.

4.2 Behaviour of Czech Consumers with Regard to Food Waste

For the purposes of consumer behaviour, research was conducted in the area of food waste by Czech consumers. In the next text, we deal with the attitudes of Czech consumers to food waste and segmentation. Food waste is fundamentally associated with the standard of living of the population.

The questionnaire survey conducted in the Czech Republic for the purpose of recognising consumer behaviour with a selected commodity, namely food, focused above all on the analysis of factors that influence consumers and the attitudes of the consumer towards the size of consumption, unconsumed food and waste. The consumer expressed his attitude to the issue of the disposal of unwanted food affecting the quality of life on earth, including the costs associated with this disposal, in a certain way. The results of the survey show that the typical Czech consumer regularly shops for food (about 80% of respondents) and that a similar percentage prepares for food shopping (checking the stock of food in the fridge, larder, etc). A smaller percentage agreed with the assertion that they travel less often to shops and tend to do a bigger shop all at once. It can be deduced from this that food shopping is not a problem for consumers, and that they find it more convenient to go shopping in stores which provide them with an opportunity to take advantage of occasional special offers, so that shopping becomes a way of spending their leisure time.

Another interesting finding applies to food prices. Only approximately 25% of respondents admitted that price is important to them. 50% of respondents consider the price, while the remaining quarter of respondents say that the price is not important to them at all. The same frequency distribution was also found in responses to the question of whether they prefer larger packaging given that the price per unit of specific goods is cheaper. Senior households, above all single-member households, showed the necessity of smaller food packaging. The view concerning special offers of selected goods is different. Respondents responded in significant numbers to the marketing tool of a special price offer. Almost 70% indicated that they would take up such special offers even though they do not need the goods. This finding points to one of the possible causes of food waste. The prevailing answer to the question of whether consumers plan their shopping in such a way so that everything is consumed showed that most consumers do not think about waste when shopping. However, in the next question, more than 75% of respondents stated that they consume all their food. What consumers mean when they say they consume all their food (e.g. with regard to the answer about buying goods subject to a special offer) remains to be determined.

The issue of food waste is considered by most respondents (almost 90%) as a current topic, and the same number think that waste is a future threat to society. Despite this, respondents admit that they waste food. The main reason for wasting food is that their food (65%) becomes spoiled during storage. The second most common reason is the expiry of the "use by" and "best before" dates. Other reasons are, in the following order: we cook a lot of food; we do not like the taste of the food; the packaging of the product was damaged; at home I did not like the look of the food. All these reasons indicate that the consumer has bought more food than he needs.

When discerning attitudes regarding food waste, respondents stated that it is necessary to talk and write in the media about this issue of waste, including the negative impacts associated with its disposal, and they would welcome more information about the ways to reduce food waste. They believe that encouraging a positive attitude towards food, as well as better knowledge of the negative impact of waste on the environment, can be taught in childhood through education and practical experiences with growing crops. It is important to better explain the terms "best before" and "use by"; and finally consumers lack sufficient information about food banks. 10–20% of respondents stated that they were not interested in the issue of food banks and food waste. The results of the survey also showed insufficient knowledge of the activities of food banks. Only 17% of respondents donated to a food bank, however 67% expressed their willingness to donate, while almost 30% of respondents gave a negative answer and the rest (3%) did not know.

Existing findings concerning food waste agree that in developed societies waste in the supply chain applies, above all, to the end consumer and is a consequence of a surplus of food. The results of our survey agree with these findings. All means of communication, from educating the younger generation in primary schools to the use of communication tools for all age categories, are needed in order to change behaviour.

The most effective way of addressing people is not in general terms, but by targeting individual segments of the population. Therefore, the results of the questionnaire survey were processed using the cluster analysis method in order to determine the existence of groups with similar views and attitudes concerning food waste. The application of this method based on behavioural matching created three separate segments (Macková et al. 2019):

4.3 "Unknowing Food Savers" Segment

This segment consists mostly of women rather than men, and is 95% comprised of respondents aged 65 and more. A third of respondents belonging to this segment live in single-person households, while approximately half are spouses. They usually have primary or secondary school education. 25% describe their income as insufficient, a further 30% as sufficient to meet their basic needs, and the remaining respondents answered that they had a sufficient income. They mostly live in towns with a population of less than 3000.

They do not distinguish between the terms "use by" and "best before", nor do they have any reasons for wasting or not wasting food. 648 respondents claim that they can explain the difference between the "use by" and "best before' dates, but 218 of them admit that they throw away food after the expiry of the "best before" date (the interpretation of the term means that the food can be consumed). It is the lack of knowledge concerning these terms that may be a reason behind food wastage. These respondents do not know a great deal about food waste. They are unaware of adverts and publications concerning this issue and do not read about it. They realise that waste is harmful to the environment, but do not state this. Approximately 20% of them are aware of food banks. This segment is identifiable and characterised by the fact that people do not waste food. They behave on the basis of how they were brought up and from their life experiences. We can describe their behaviour as unknowing food saving. Targeting this segment is unnecessary, just as changing their behaviour is not necessary or even desirable and evidently can even be unachievable.

4.4 "Influenced by Systematic Education Starting at Primary School" Segment

The segment consists of men and women, for the most part (almost 95%) consisting of the younger generation in the age category of 18–29 years. Most of them have a secondary school education, and live with their parents or siblings, while a certain number live with friends or as a single individual. A great majority of them are students, and thus we cannot evaluate their income situation with any degree of accuracy (generally they describe it as average, covering all their needs). Their place of abode is not a typical characteristic across the entire group, as they live in both smaller towns and in cities.

The most common reason given by members of this group for disposing of food is the expiry of the “use by” and “best before” dates; another reason is food spoilage or loss of quality; or they simply do not like the taste of the food. They are aware of links between food waste and the environment, as well as having already learned something about the issue of waste in many cases (from advertisements or articles on the internet), and they recognise that this issue should be the subject of wider discussion. It can be stated that they know about, are interested in, and would like more information about the issue. This segment should be a priority target. Any such targeting should be systematic, i.e. as part of compulsory education. Targeting or educating (good preparation) should be highly effective in this segment.

4.5 “Difficult to Re-educate” Segment

The segment consists of an equal number of men and women, mostly of middle age, and this segment can be described as the working-age segment. These are mostly secondary school and university educated people. The household consists above all of couples and their children. Most of them fall into the category of employees or self-employed. The segment includes women on maternity leave. They live in towns of all sizes (with populations of under 3000, 90,000, and over 90,000) which are represented almost equally across the sample. They judge their income as being adequate or more.

Respondents belonging to this category state their reason for wasting food as the expiry of the “best before” or “use by” dates as well as food losing its quality, becoming spoiled during storage, looking bad and no longer tasting good. Any reason can be a pretext for throwing food away, and respondents seem to have no problem wasting it. Food waste in the hierarchy of values is subject to health concerns if consuming food that has been stored for a longer period of time.

They are relatively well-informed about food waste, know about the harm caused by food waste to air quality, understand the issue of waste and know about food banks. However, they are not concerned about the issue of reducing the amount of spoiled food as this problem does not apply to them. They prioritise other factors such as healthcare, financial opportunities and social status which, in their opinion, enable them to consume only fresh, high-quality, attractive-looking food. This segment can be described as one which represents a difficult target when it comes to changing behaviour. It will require a sophisticated approach, with a challenging use of communication tools.

The results of the food waste survey of Czech consumers, which determined attitudes concerning this issue and identified the causes leading to waste, confirm the views published in professional literature. The outcome of our survey also shows that waste is characteristic of groups of the population that are financially well-off. Such behaviour stems from a surplus of food, which is typical of a consumer society. This underlines the need to hold more discussions in public about the issue of food waste and present it having a negative impact on the environment, as well as the need to publicise the economic consequences of food waste and provide food to other groups of the population that do not have enough food. The main contribution of the conducted survey is the result of the process of clustering consumers into segments which include those with similar views and attitudes to the issue of food waste. This creates the precondition for their effective targeting.

5 Conclusions

The chapter deals with an assessment of the income situation in the Czech Republic, Slovakia and Poland. The measured values concerning the household income situation show that Czech households achieved the highest equivalised disposable income, while households in Poland earn the lowest income. The lowest minimum household income, even with a negative value, occurred in Polish households, and is due to the significant indebtedness of particular households. This situation did not arise during the monitored year in the Czech Republic or Slovakia. If we want to express the standard of living of the population (a significant component of which is the income situation) through the most commonly applied method, i.e. using GDP per capita, all three countries fluctuate below the EU average. The order of the countries when compared to GDP per capita is the same as for the income situation - the Czech Republic comes closest to the EU average, followed by Slovakia and Poland. The statistical conclusion of the differences in income among the countries was verified and confirmed using Welch's ANOVA.

The income situation, expressed objectively, need not necessarily be in accordance with the subjective perception of household living standards. A subjective analysis of the income situation, quality of life and its perception was acquired from a total of 2620 households (1125 in the Czech Republic, 992 in Poland and 513 in Slovakia). The dependent variable "expectations of the economic situation in future" was selected as the variable that best captures the differences in expectations, the achievability of these expectations and their rationality. Respondents expressed their expectations through four possible responses as follows: they totally agree with the positive trend for the future, somewhat agree, somewhat disagree, and totally disagree. The impact of 10 independent variables on the likelihood of particular responses was monitored. Multinomial logistic regression revealed how expectations are affected by the action of independent variables, while ordinal logistic regression was applied to determine the difference in expectations of an improved living standard. Expectations in the sense of an improvement of the situation are indirectly related to level of income. Polish households have greater expectations (as many as five times greater) compared with Czech households and 1.09 times greater expectations compared with Slovak households. Men expect improvement more often than women; those who find it difficult to maintain a work-life balance have lower expectations; and those households that agree with indebtedness have greater expectations of a better financial situation than those that do not agree with indebtedness. It is interesting that people aged 65 and over have the greatest expectations of a good financial situation in future. This confirms that seniors feel they are financially secured by the state. The paper also contains a more detailed analysis affected by independent variables for individual groups of answers ranging from ‘totally agree’ to ‘totally disagree’ with the likelihood of an improvement in their financial situation and quality of life. Although the statistical conclusion was proved for all independent variables apart from age, the greatest changes in expectations are recorded for the variable ‘Country’.

The conclusions of the analysis of the subjective perception of life situations, the expected positive trend and the achievability of this improvement confirms that the standard of living and its perception is strongly linked to the habitual behaviour of the individual, his upbringing, the model of behaviour in society, the value chain created in society, and is part of the culture passed down from generation to generation. Obviously, these conclusions apply to a developed society where most of the population has a secure supply of basic necessities.

The example of the Czech Republic shows the segmentation of consumers in relation to the handling of food and waste. It identifies three different segments: the “unknowing food savers” segment, characterised by for not wasting food and not accepting a different option other than to live economically, behaving the way they were brought up and through life experience. There is no need to influence this segment.

The “influenced by systematic education starting at primary school” segment includes consumers who realise all the negative consequences, have a certain awareness of them, but still sometimes waste food given that they have financial security at a certain required standard. A comprehensive educational system concerning this issue needs to be created for these consumers, which will contain information about all the negative impacts of food waste on society, the environment and conditions of life on earth. Positive results can be expected through systematic education. Consumers that fall into this group and are at an age no longer influenced by mainstream education can be targeted and their opinion shaped based on modern marketing tools, such as guerrilla marketing and an effective online marketing campaign, which should present the educational content in an imaginative form.

The third segment, described as “difficult to re-educate”, is a group that is a typical example of behaviour towards food in terms of sufficiency, or surplus income. Changing the behaviour of the consumers who make up this segment and their attitude towards food waste will be the most challenging, both in terms of time and chosen arguments that will contribute to change (human health, environmental protection, natural resource depletion, etc.). A good way of targeting this group will be through a mass media campaign.

The attitudes of Czech households concerning food waste differ as shown in the results of the conducted analyses. The causes and reasons are also different;

however, the main underlying reason applies to human awareness which is a part of society as a whole—a society that is described as economically successful and has population groups with a high standard of living and groups that strive for this. An important role is played here by the value orientation of a society, which should be built from an early age within the family and subsequently in educational institutions. Therefore, it is important to focus on educating the population. It is here that marketing activities play a supporting role.

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Willingness to Reduce Food Choice in Favour of Sustainable Alternatives: The Role of Government and Consumer Behaviour

Adnan ul Haque, Fred A. Yamoah, and Włodzimierz Sroka

Abstract Despite greater emphasis being placed on research into ethical consumer behaviour, there is still no clear view of the magnitude of willingness to reduce food choices in favour of sustainable alternatives (WTRFCIFOSA), while the role of government is also under the microscope—more specifically, how willing it is to take the initiative in keeping only organic food on the shelves. This study advances a new concept by theorising "willingness to reduce food choices in favour of sustainable alternatives". The concept emerged from an assessment of consumer behaviour, ethical attributes, health attributes, and the roles played by both government and food producers in relation to naturalness. It is theorised that WTRFCIFOSA would lead to the consumption of natural and organic food. At present, consumers themselves have no desire to switch to organic consumption. Moreover, ethical and health attributes, government, and food producers have no significant impact on convincing consumers to opt for organic/natural food. It is therefore suggested that governments should introduce the concept of mandatory consumption of sustainable alternatives by reducing the range of unnatural and less ethical food choices for consumers, because naturalness is a significant moderator in the process.

Keywords Food · Ethical consumer behaviour · Sustainable alternatives

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1 Introduction

Over the most recent decades, there has been an escalation in the production of sustainable food as well as consumption, as it has emerged as a key issue with an increased level of awareness among consumers. A plethora of research has showed that social, ethical, and environmental problems are multiplying across the globe because of the various conventional methods of production and consumption of food (Garnett 2013; Reisch et al. 2013; Verain et al. 2015; Yamoah et al. 2014). In particular, a high level of concern remains for the agri-food sector; therefore, several attempts have been made to improve the ethical (Sroka and Szanto 2018), social and environmental situations as well as the food supply chain by using labelling, certification and various differentiation strategies that are effective in creating sustainability within specific markets (Abeliotis et al. 2010; Aikin 2011, 2014; De Haen and Requillart 2014; Verain et al. 2012; Yamoah et al. 2014).

In the last two decades, sales of ethical products that follow one or more social, welfare, and environmental principles (Shaw and Clarke 1999; Tallontire 2000; Bezençon and Blili 2010; Davies and Crane 2010) have grown in relative terms, and have therefore led to the assumption that levels of consumer understanding have improved, as they consider various social and ethical aspects when buying products (Auger and Devinney 2007). Ethical consumerism has gained importance due to growth in sales of ethical products (Carrigan and De Pelsmacker 2009). However, though the focus of marketing studies has remained on ethical consumption, willingness to reduce consumption choices in favour of sustainable alternatives is still under research (Yamoah et al. 2014). There is no specific definition for "sustainable food"; thus, there is a perception regarding what the contributing factors forming sustainable food are. In this regard, various factors such as the environmental and economic situations, motives, values, and culture play a role (De Carvalho et al. 2015; Grunert et al. 2014; Sautron et al. 2015).

Conversely, apart from the frequent labelling of items or simply focusing on ethical and/or environmental attributes of sustainability, there is no comprehensive scheme explaining what sustainable food is. Such attributes of sustainability play a pivotal role in creating differentiation in the global food sector (Codron et al. 2005; Franz et al. 2010; Grolleau and Caswell 2006; Jahn et al. 2005). As a result, it is essential that further research investigates effective and efficient communication along with the differentiation strategies related to food products and their respective sustainable contribution. Thus, this study aims to investigate the willingness to reduce food choices in favour of sustainable alternatives on the UK food consumer market, while considering ethical and healthy attributes, naturalness, and the role of the government and food producers.

2 Literature Review

A plethora of research has showed that, in the majority of economies, sustainability has emerged as a major concern, especially in the agri-food sector where it is the centre of discussion (Codron et al. 2005; Grunert et al. 2011; Reisch et al. 2013; Vermier and Verbeke 2006). Interestingly, in relation to sustainable food consumption, a wide range of attributes are evident in relation to product differentiation, enabling and assisting agri-food ventures that enhance the worth and value of commodities (Codron et al. 2005; Dosi and Moretto 2001; McEachern and McClean 2002; Sidali et al. 2016). Furthermore, a constructive corporate image develops and is nourished due to sustainable businesses that take ethical, social, and environmental responsibility into account (Carlson et al. 1996; Morris et al. 1995). Presently, however, there is no widely accepted definition of sustainability. Equally, there is no standard approach to the concept of sustainable food (Johnston et al. 2007). Looking at food production, however, there are already quite a few products that are marketed as being more sustainable than others due to their specific attributes, such as environmental or ethical aspects. These businesses used credible and accepted attributes such that they are labelled and certified in a manner that enables consumers to identify them directly (Caswell and Padberg 1992; Jahn et al. 2005). As of now, there is no general label for sustainable food, but ethical, social, and environmental dimensions being the focus of any scheme is reflected in fair trade, organic, or eco labels (Sidali et al. 2016). Over the years, there has been a steady increase in such market niches (Fair Trade 2013; Sahota 2013). Consumers often affiliate themselves with more sustainable types of products, with higher environmental benefits, health benefits, or which demonstrate greater fairness towards food producers (von Meyer-Höfer et al. 2015). With the rise in awareness of consumption issues across the globe, there is higher demand for sustainable products (BBMG, GlobeScan and SustainAbility 2012; National Geographic and GlobeScan 2012; SustainAbility and GlobeScan 2012).

The global consumer market has expanded due to the emergence of globalisation because there are no boundaries for the exchange of goods, information, and people as the market has shrunk into one global village (Sidali et al. 2016). Hence, researchers have found that due to the globalisation phenomenon, there is not only a global segment of increasingly global consumer markets for fashion, products, and music, but also for sustainable goods, particularly among middle-class, well-educated segments (Craig and Douglas 2006; Court and Narasimhan 2010; Douglas and Craig 2011; Miller 1998; Shermach 1995). However, there is no denial of the increasing importance of sustainable food across the globe (Nash 2009), yet research related to the subject still remains fragmented to some extent (Grunert et al. 2014). A large number of studies have concentrated on environmental sustainability while only focusing on the single dimension of sustainable food consumption (Sidali et al. 2016). A plethora of research has revealed that the well-established literature related to sustainability has tended towards environment-friendly consumption and organically produced product consumption (Aertsens et al. 2009; Honkanen et al. 2006;

Loureiro et al. 2001; Roberts 1996). There is conventionalised criticism regarding the organic sector being unable to capture consumers' market potential. Yet, attempts to do so have been made by researchers who viewed fair trade as a component of ethical consumption (Adams and Raisborough 2010; McCluskey et al. 2009) or animal welfare (Honkanen and Olsen 2009; Lagerkvist and Hess 2011).

In such a scenario, research by De Carvalho et al. (2015) and Sautron et al. (2015) are just two examples of studies that have focused solely on sustainability. Even the recent study by Sidali et al. (2016) has explored naturalness, heath-related attributes, and ethical attributes to some extent, but the role of government in this regard is not explored in any great detail. The study by Sautron et al. (2015) considered sustainability concerns as a choice motivator among a variety of food choices, whereas De Carvalho et al. (2015) primarily drew attention towards sustainability consciousness among consumers while opting for food consumption. They considered sustainability a five-dimensional construct. Often researchers have used a uni-dimensional approach to study sustainability consumption (Grunert et al. 2014), which is a reason behind the low level of generalisability. Furthermore, there is limited evidence regarding how those five-dimensional constructs, namely health-related attributes, naturalness, ethical attributes, the role of government, and the role of producers interlinked with consumer choices, and which factor among them is more dominant in terms of its overall effect.

Sidali et al. (2016) argued that ethical attributes, naturalness, and health-related attributes showed that consumer expectations are relatively higher and diverse in terms of sustainable food from social, ecological, and economic perspectives. Similarly, the FAO (2010) and the United Nations Environment Programme (2010) found that these three aspects are highly effective in determining consumer behaviour in terms of sustainable consumption. A plethora of studies have showed that consumer behaviour could largely be influenced by these different dimensions (De Carvalho et al. 2015; Lee and Wall 2012; Sautron et al. 2015; Sidali and Hemmerling 2014). Interestingly, those studies provided evidence in the context of both advanced and emerging countries. However, the role of producers and government has not yet been sufficiently explored to assess its effectiveness in terms of ethical, health-related and naturalness issues. Stevens (2010) argued that sustainable development relies strongly on consumers as well as the approach and initiative taken by the producers. The government has a greater part to play in promoting sustainable consumption and ensuring producers follow national schemes for reducing negative impact (Stevens 2010). However, there is a visible gap in sustainable consumption due to the weakened role of the government in implementing national schemes to ensure that food choices of consumers tend towards sustainable alternatives. Moreover, (1) market failures (regulations, taxes, subsidies) or (2) systems failures (labels, communications, education, public procurement) are found to be less effective public policy tools for promoting sustainable production and consumption (Stevens 2010). Zaccaï (2008) argued that environmental product regulations suit the general perspective of sustainable consumption, while consumers' role in the process is a more vital aspect. Additionally, the same study revealed that adequate knowledge of the diversity inherent in consumers' attitudes, as well as their actions being taken into consideration in terms of product policy formulation even on a limited basis, is the key to sustainable consumption (Zaccaï 2008). However, the study also revealed that environmental product regulations are well constructed, but it is essential for consumers to understand the situation and improve their sustainable alternative choices.

Sidali et al. (2016) revealed that the ethical dimension hinted at the visible fact of consumers, in contrast to social attributes (e.g. fair trade), having relatively higher expectations when it comes to environmental friendliness attributes (for instance, environmentally friendly packaging, or reduction of greenhouse gas emissions) on an international scale. It reflects the fact that environmental consciousness is higher among consumers, irrespective of its type; however, an interesting feature has been the higher level of environmental consciousness when compared to social consideration in relation to sustainability. This was due to the fact that environmental awareness is spreading far and wide among global consumers and they are indeed affected by climate changes and environmental degradation (Sidali et al. 2016). Nevertheless, as yet there is no conclusive evidence regarding the links between ethical attributes and willingness to change food choices in favour of sustainable alternatives.

The second dimension is naturalness, explored by Sidali et al. (2016), whose work revealed that this dimension primarily consists of various promises related to produce being original and organic—in other words, free of artificial and chemical substances—while there is no genetic modification to the inputs of the product. It is an essential aspect of organic products that the items are produced in accordance with organic production standards, which is a common agenda among consumers who are conscious of using produce that has an adverse effect on the environment (Sidali et al. 2016). The work of von Meyer-Höfer et al. (2015) revealed that safety, freshness, and good taste are some of the personal health-related benefits interlinked with sustainable food as vital altruistic motivation for consumers. Sautron et al. (2015) also argued from the empirical perspective that naturalness differs from health when a methodological approach is applied to examining sustainable consumption. Therefore, although health and naturalness are highly correlated, these are distinctive sub-dimensions of sustainability that should be treated as standalone dimensions. In particular, food safety has emerged as the most important feature for consumers, as there have been recent scandals across the globe reflecting the fact that foods are not often dealt with in a safe manner (Sidali et al. 2016).

The study by Sidali and Hemmerling (2014) revealed that, in relation to sustainable food, consumers have higher expectations that producers will respond in an ethical and appropriate manner to seasonal production. However, consumers are less willing to take the initiative to travel significantly longer distances in order to consume sustainable food. For instance, the findings of a study by Sirieix et al. (2011) showed that consumers are not enthusiastic about travelling long distances to buy seasonal food from particular regions, instead choosing to consume food which is easily accessible. There is a likely visible trend indicating that sustainable food is often associated with trendy lifestyles, healthy living and sustainability (Sidali et al. 2016).

The major contribution of this study is that it helps to understand the willingness of the consumers to alter their food choices in favour of sustainable alternatives. Furthermore, the study also offers an opportunity to enhance the body of knowledge from a managerial perspective in relation to the expectations of consumers, especially the use of sustainable goods for agri-food in advanced economies; as well as providing an insight into how the government can use an effective strategy to promote sustainable consumption in the market. Additionally, the distinctive sub-dimensional approach, viewing health and naturalness as different components, is a further reason to move from a traditional to a more diverse approach to investigating consumer behaviour in relation to sustainable consumption.

Based on the analysed literature, the following hypotheses were formulated:

H1: *Consumers significantly affect their own willingness to reduce food choices in favour of sustainable alternatives.*

H2: *Ethical attributes significantly affect consumer willingness to reduce food choices in favour of sustainable alternatives.*

H3: *Food producers significantly affect consumer willingness to reduce food choices in favour of sustainable alternatives.*

H4: *Government significantly affects consumer willingness to reduce food choices in favour of sustainable alternatives.*

H5: *Health-related attributes significantly affect consumer willingness to reduce food choices in favour of sustainable alternatives.*

H6: *Naturalness significantly affects consumer willingness to reduce food choices in favour of sustainable alternatives.*

3 Research Methodology

To test the research hypotheses in this explanatory study, a large-scale survey of UK supermarket Fairtrade shoppers was undertaken from November 2018 to February 2019 by means of an online consumer survey developed through SurveyMonkey, enabling participants to fill it out at any time on the Internet. Using loyalty card data from UK supermarkets attained through networking and connections, sampling methodology was employed, as this technique helped to identify (and filter) particular participants who were responsible for the better part of their household shopping. Hence, as part of the research strategy, area cluster sampling was employed by targeting supermarket shoppers in six regions in the UK (Northern Ireland, Scottish Borders, Wales and the West of England, Northern Scotland, the East of England, and Southern England). We used area cluster sampling to ensure we had fair representation through regional quotas; 16% is thus the quota for each region. A total of 1601 usable questionnaires were completed and returned which were used in this study, reflecting a response rate of over 58%. This ensured that there was an appropriate ratio of sample size to the observed variables (Hair et al. 2010; Faizan and Haque 2019). The selective extrapolation method which was employed in this study helps to avoid non-response bias (Armstrong and Overton 1977).

The questionnaire was conducted in English, and was partially adapted from the work of Sidali et al. (2016). The questionnaire asked the respondents the following question: Which characteristics should a sustainable healthy food product have? Respondents were obliged to consider the dimensions of ethical attributes, naturalness, and health-related attributes containing a total of 15 items. The options on a seven-point Likert scale were as follows: 1 = strongly disagree; 2 = disagree; 3 = somewhat disagree; 4 = neither agree nor disagree; 5 = somewhat agree; 6 = agree; 7 = strongly agree. The following questions contained the ranking of chief actors (i.e. consumers, government, or producers) responsible for ensuring the availability of sustainable alternatives for consumption. The first part of this question asked participants who they think should be responsible for ensuring or deciding that sustainable food should be available on the market. The second part sought participants' views on which chief actor (i.e. consumer, government, or producer) must do more to make sustainable healthy food highly visible on the market. There was also an open-ended question to facilitate thematic analysis regarding the issue of whether governments should be allowed to reduce consumer food choice by asking food producers and retailers to supply exclusively sustainable healthy food products. Subsequently, respondents were asked: "Without considering price, how much of your freedom in terms of food choice are you willing to give up to ensure that your regular supermarkets supply sustainable healthy foods?" by offering the following options: (1) none of my food choice, (2) some of my food choice, and (3) all of my food choice. Lastly, respondents were asked to prioritise the following factors in response to the question: "What will it take for you to eat only sustainable healthy foods all the time?"—(1) good taste, (2) freshness, (3) ease of preparation, and (4) the right portion size. The responses were saved in an Excel spreadsheet and converted into a SmartPLS file for analysis. It took the respondents approximately 15 min to answer the questions.

4 Results, Analysis, and Discussion

The current study employed SmartPLS 3.2.8 software to validate the partial least square structural equation modelling (PLS-SEM) (Ringle et al. 2018). The PLS-SEM contains two-steps: firstly the reliability and validity of the measurement scale is determined through the measurement model, followed by a structural model that examines the relationship between variables of interest (Hair et al. 2014).

4.1 Measurement Model

The measurement model was used to test the reliability and validity of the scale. The reliability of the model was evaluated by means of Cronbach's alpha and composite values. According to Nunally & Bernstein (1994), the acceptable values of Cronbach's alpha and composite reliability should be greater than 0.6, which is the minimum acceptable value. Moreover, the average variance extracted (AVE) values should be more than 0.50 to validate the internal consistency of the scale (Hair et al. 2014; Haque et al. 2019; Kot et al. 2019). The present study found the values of Cronbach's alpha, composite reliability and AVE to meet the threshold criteria—the

Table 1 Reliability and validity

	Cronbach's Alpha	rho_A	Composite reliability	Average Variance Extracted (AVE)
Ethical attributes	0.619	0.634	0.787	0.554
Health attributes	0.839	0.911	0.898	0.747
Naturalness	0.89	1.163	0.917	0.734

Source: own elaboration

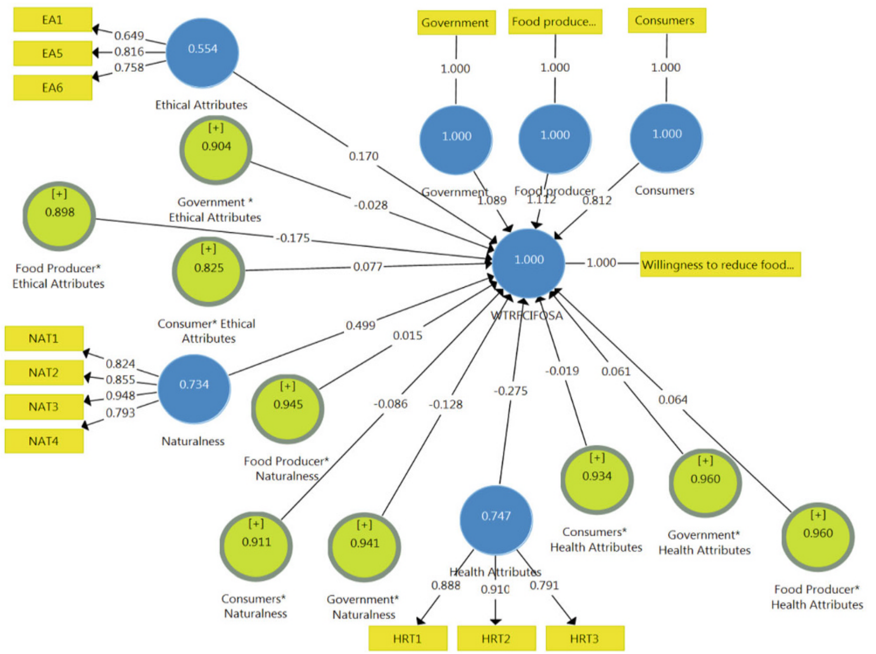

Fig. 1 Average Variance Extraction. Source: own elaboration

Table 2 Fornell and Larcker Criteria (discriminate validity)

	Ethical attributes	Health attributes	Naturalness
Ethical attributes	0.744		
Health attributes	0.543	0.864	
Naturalness	0.553	0.541	0.857

Source: own elaboration

Table 3 Heterotrait-monotrait ratio (HTMT)

	Ethical attributes	Health attributes	Naturalness
Ethical attributes	0.781		
Health attributes	0.775	0.671	
Naturalness	0.721	0.631	0.598

Source: own elaboration

results can be seen in Table 1 and Fig. 1. Hence, the measurement model is acceptable.

Furthermore, the measurement model used the Fornell and Larcker Criteria to validate the discriminant validity of the scale. This was tested by comparing the correlation matrix values with the square root of the AVEs in the diagonals. The current study presented the results in Table 2. All values of the square root of the AVEs in the diagonals are higher than the intercorrelation with other constructs, thus confirming the discriminant validity.

Moreover, the heterotrait-monotrait ratio of correlations (HTMT) is a new criteria by which to evaluate the discriminant validity (Hair et al. 2014). The values of HTMT should be less than 1. The results of this study gave all values of HTMT as less than 1. The results can be seen in Table 3.

Furthermore, the cross-loadings showed that three each of ethical attributes and health-related attributes and four items of naturalness have been considered; the rest were excluded because the scores did not meet the minimum required criteria. Ensuring animal welfare, environmentally friendly packaging and reducing greenhouse gas emissions are the ethical factors which contribute most in relation to sustainable consumption because these factors have loaded accepted values, whereas ensuring fair payment of producers, ensuring working and living conditions for food producers and environmentally friendly production scored below par. Among health-related attributes, safe and fresh products and health benefits are essential aspects, while high nutritional value is found to be insignificant in relation to sustainable consumption. Interestingly, all the components of naturalness considered, namely being free from genetically modified organism, free from chemical pesticides, free from synthetic fertilisers and free from artificial additives, are all important elements in relation to sustainable consumption.

R^2 is too low (0.05; Table 5), therefore good fit should be used to determine if the model is a good fit for analysis (Table 6).

According to Garson (2016), there are many methods of validating the fitness of a model such as R^2, f^2, VIF and SRMR. The current study employed the SRMR method to validate the fitness of the model. SRMR calculates the approximate fitness of the research model. Hu and Bentler (1998) opined that the research model has sufficient fitness if SRMR is less than 0.08. Moreover, according to Henseler et al. (2014), the lenient cut-off value is 0.10 of SRMR. The present study found acceptable values, the results of which can be seen in Table 6. The saturated model and estimated model are low but acceptable in the social sciences. Subsequently, the next step was to measure the path analysis by establishing the direct relationship between research variables.

4.2 Structural Model

After the successful validation of the measurement model, the current study evaluates the structural model using three different criteria such as path co-efficient and model fitness. The bootstrapping option was used to test the statistical significance of the path co-efficient. The hypotheses of this study have been tested through the T-value 1.96 at the 0.05 significance value. However, the path co-efficient values should be greater than the 1.96 t-value and less than the 0.05 significance value in order to be retained; otherwise they should be rejected. Therefore, the results of the direct relationship can be seen in Table 4. H6 is retained as its obtained values are more than 1.96 at the 0.05 significance level (t-value: 1.97 > 1.96, $p < \alpha$;

Table 4 Cross loading

Cross loading	Ethical attributes	Health attributes	Naturalness
EA1	**0.649**	0.452	0.41
EA5	**0.816**	0.577	0.505
EA6	**0.758**	0.239	0.345
HRT1	0.459	**0.888**	0.465
HRT2	0.498	**0.91**	0.48
HRT3	0.469	**0.791**	0.489
NAT1	0.529	0.463	**0.824**
NAT2	0.482	0.525	**0.855**
NAT3	0.473	0.461	**0.948**
NAT4	0.496	0.533	**0.793**

Source: own elaboration

Table 5 Regression analysis

R^2		
	R Square	R Square adjusted
Willingness to Reduce Food Choice in Favour of Sustainable Alternatives	0.05	0.041

Source: own elaboration

Table 6 Fitness of the model

Model Fit	Saturated Model	Estimated Model
SRMR	0.07	0.093

Source: own elaboration

Table 7 Structural model

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Consumers (C) → Willingness to reduce food choices in favour of sustainable alternatives (WTRFCIFOSA)	0.795	0.243	4.816	0.165	0.869
Ethical Attributes (EA) → Willingness to reduce food choices in favour of sustainable alternatives (WTRFCIFOSA)	0.17	0.09	0.136	1.252	0.211
Food producer (FP) → Willingness to reduce food choices in favour of sustainable alternatives (WTRFCIFOSA)	1.095	0.508	4.992	0.219	0.827
Government (G) → Willingness to reduce food choices in favour of sustainable alternatives (WTRFCIFOSA)	1.069	0.429	5.459	0.196	0.845
Health Attributes (HA) → Willingness to reduce food choices in favour of sustainable alternatives (WTRFCIFOSA)	−0.275	−0.318	0.248	1.108	0.268
Naturalness (N) → Willingness to reduce food choices in favour of sustainable alternatives (WTRFCIFOSA)	0.499	0.466	0.253	1.97	0.049

Source: own elaboration

0.049 < 0.05; Table 7). In other words, naturalness statistically significantly affects the willingness to reduce consumers' sustainable food choices. In this regard, present findings partially support the work of Sautron et al. (2015) and Sidali et al. (2016) that naturalness should be treated as a separate dimension of sustainability, rather than mixing it with health-related attributes. Since this study found naturalness to be significant and health-related factors to be insignificant when it comes to willingness to reduce food choices in favour of sustainable alternatives, we therefore have conformation that the two components represent separate dimensions of sustainability. However, this finding contradicts the earlier work of Sirieix et al. (2011) and von Meyer-Höfer et al. (2015). On the other hand, H1, H2, H3, H4 and H5 are rejected as their recorded values are less than 1.96 at the 0.05 significance level (C → WTRFCIFOSA t-value: 1.65 < 1.96, $p > \alpha$; 0.869 > 0.05; EA → WTRFCIFOSA t-value: 1.25 < 1.96, $p > \alpha$; 0.211 > 0.05; FP → WTRFCIFOSA t-value:

$0.219 < 1.96, p > \alpha; 0.827 > 0.05$; GOV → WTRFCIFOSA t-value: $0.196 < 1.96, p > \alpha; 0.84 > 0.05$; HA → WTRFCIFOSA t-value: $1.108 < 1.96, p > \alpha; 0.268 > 0.05$; Table 7). In other words, consumers, ethical attributes, health attributes, food producers and government do not statistically significantly affect the willingness of consumers to reduce their food choices in favour of sustainable alternatives. Hence, the present findings differ from the work of De Carvalho et al. (2015), Lee and Wall (2012), Sidali and Hemmerling (2014), Sidali et al. (2016), Stevens (2010), Sautron et al. (2015), and Zaccaï (2008) by finding no significant relationship with the different aspects considered in relation to WTRFCIFOSA, while confirming only the work of Sautron et al. (2015) and Sidali et al. (2016) in the sense that naturalness and health attributes are different. In particular, the work of Zaccaï (2008) contradicts the viewpoint that consumer willingness plays an important role in sustainable consumption. On the other hand, the work of Stevens (2010) supports the thesis that government has a role in promoting sustainable consumption through the formulation and implementation of public policy to a large extent. Nevertheless, the finding that only naturalness is interlined closely with WTRCIFOSA while all others are insignificant is unique. Detailed analysis also revealed that being free of genetically modified organisms, chemical pesticides, synthetic fertilisers and artificial additives are all important components of naturalness that play a role in improving the consumption choices of consumers.

Since all considered attributes in the direct relationship except for naturalness have been found insignificant, we therefore hypothesise that perhaps these attributes may have a significant moderation effect. As a result, the following hypotheses are generated:

H7: *Ethical attributes significantly moderate the relationship between consumers and willingness to reduce food choices in favour of sustainable alternatives.*

H8: *Ethical attributes significantly moderate the relationship between food producers and willingness to reduce food choices in favour of sustainable alternatives.*

H9: *Ethical attributes significantly moderate the relationship between consumers and willingness to reduce government in favour of sustainable alternatives.*

H10: *Health attributes significantly moderate the relationship between consumers and willingness to reduce food choices in favour of sustainable alternatives.*

H11: *Health attributes significantly moderate the relationship between food producers and willingness to reduce food choices in favour of sustainable alternatives.*

H12: *Health attributes significantly moderate the relationship between government and willingness to reduce food choices in favour of sustainable alternatives.*

H13: *Naturalness significantly moderates the relationship between consumers and willingness to reduce food choices in favour of sustainable alternatives.*

H14: *Naturalness significantly moderates the relationship between food producers and willingness to reduce food choices in favour of sustainable alternatives.*

H15: *Naturalness significantly moderates the relationship between government and willingness to reduce food choices in favour of sustainable alternatives.*

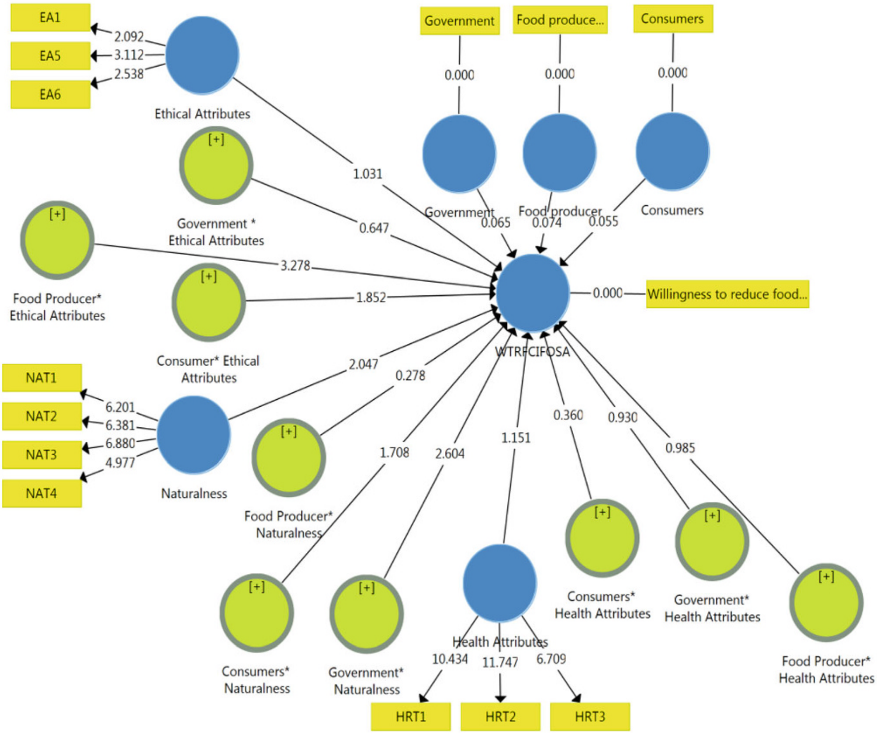

Fig. 2 Relationship between variables and moderation effect. Source: own elaboration

After determining the direct relationship, the next step was to investigate the moderating effect of consumers, government and food producers between ethical attributes, health attributes and naturalness and WTRFCIFOSA in Fig. 2. Again, the values are measured by assessing the obtained values against the threshold value (more than 1.96 at the 0.05 significance level). Interestingly, ethical attributes have a significant moderating effect between consumers and willingness to reduce consumer food choices (t-value: $2.033 > 1.96$, $p < \alpha$; $0.043 < 0.05$; Table 8) as well as food produces and willingness to reduce consumer food choices (t-value: $3.489 > 1.96$, $p < \alpha$; $0.001 < 0.05$; Table 8); thus, H7 and H8 are retained while H9 is rejected as ethical attributes do not significantly moderate the relationship between government and willingness to reduce consumer food choices (t-value: $0.741 < 1.96$, $p > \alpha$; $0.459 > 0.05$; Table 8). Health attributes have been found to have no statistically significant moderating role between variables of interest. Therefore, H10, H11 and H12 are rejected. In other words, health attributes do not moderate the relationship among consumers, food producers and government and willingness to reduce consumer food choices (t-value: $0.326 < 1.96$, $p > \alpha$; $0.744 > 0.05$; t-value: $0.948 < 1.96$, $p > \alpha$; $0.344 > 0.05$; t-value: $0.952 < 1.96$, $p > \alpha$; $0.342 > 0.05$, Table 8). Lastly, naturalness is a significant moderator between

Table 8 Moderation results

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
Consumers∗Ethical Attributes → Consumer Food Choice	0.077	0.089	0.038	2.033	0.043
Food producer∗Ethical Attributes → Willingness to Reduce Consumer Food Choice	−0.175	−0.15	0.05	3.489	0.001
Government∗Ethical Attributes → Willingness to Reduce Consumer Food Choice	−0.028	−0.013	0.037	0.741	0.459
Consumers∗Health Attributes → Willingness to Reduce Consumer Food Choice	−0.019	−0.011	0.058	0.326	0.744
Food producer∗Health Attributes → Willingness to Reduce Consumer Food Choice	0.064	0.067	0.067	0.948	0.344
Government∗Health Attributes → Willingness to Reduce Consumer Food Choice	0.061	0.07	0.064	0.952	0.342
Consumers∗Naturalness → Willingness to Reduce Consumer Food Choice	−0.086	−0.077	0.053	1.612	0.108
Food producer∗Naturalness → Willingness to Reduce Consumer Food Choice	0.015	0.02	0.055	0.28	0.78
Government∗Naturalness → Consumer Willingness to Reduce Food Choice	−0.128	−0.122	0.049	2.591	0.01

Source: own elaboration

government and willingness to reduce consumer food choices (t-value: 2.59 > 1.96, $p < \alpha$; 0.01 < 0.05) while it has no significant moderating effect between consumers and willingness to reduce consumer food choices (t-value: 1.612 < 1.96, $p > \alpha$; 0.108 > 0.05; Table 8) nor food producers and willingness to reduce consumer food choices (t-value: 0.28 < 1.96, $p > \alpha$; 0.78 > 0.05; Table 8). Thus, H13 and H14 are rejected while we fail to reject H15.

The findings indicate that, in relation to WTRFCIFOSA, consumer and food producers are moderated by ethical attributes, which nonetheless fail to moderate the relationship between government and WTRFCIFOSA. In other words, government cannot use ethical attributes to ensure there is a willingness among consumers to switch to sustainable alternatives. Previously, health and naturalness were treated as being the same, but recent studies have shown that the two are sub-dimensions of sustainability; therefore, both were separately tested to assess their moderating effect. The results showed that health attributes have no significant moderating role in the relationships among consumers, food producers and government and

Table 9 Effect size

Effect size	
Ethical attributes	0.001
Health attributes	0.002
Naturalness	0.005

Source: own elaboration

willingness to reduce food choices in favour of sustainable alternatives. On the other hand, naturalness, which was previously the only attribute found to have a significant linkage with WTRFCIFOSA, was investigated to assess its moderating effect. The results confirmed that it moderates only the relationship between government and WTRFCIFOSA. This strongly indicates that government is the only body that can use the potential of naturalness as a main factor to make it a mandatory feature in consumer choice because it is the most sustainable alternative in the market. Nonetheless, the work of Stevens (2010) is supported to a larger extent, while Zaccaï (2008) is contradicted through present findings. In other words, government should be able to introduce policy to ensure that consumers and food producers are bound to deal with sustainable food in the market. It could be argued that government is the main body that can have an effect on changing consumer choices by introducing mandatory reform so that consumers switch to sustainable alternatives while giving up their other food choices (Ethical attributes: 0.001; Health attributes: 0.002; Naturalness: 0.005; Table 9).

The next step in the research was to determine the moderation slope. Results showed that all independent variables have a weak moderating effect. Hence, it is found that naturalness has a weak moderating role along with ethical attributes in relation to the considered variables.

5 Conclusions

This study concludes that willingness to reduce food choices in favour of sustainable alternatives is significantly affected by naturalness. Moreover, the moderating effect of naturalness is weak yet statistically significant in determining the relationship between government and willingness to reduce food choice in favour of sustainable alternatives. The study clearly found that health attributes and naturalness are two distinctive sub-dimensions of sustainability and should always be treated separately when measuring the relationship. It is also theorised that the government plays a significant role in the process of ensuring sustainable consumption, because the magnitude of naturalness has been established through this research. Our research found that the responsibility for ensuring the availability of organic food on shelves rests with the government. There is a need for the government to implement a mandatory policy pertaining to naturalness on the market. Detailed analysis also revealed that being free of genetically modified organisms, chemical pesticides, synthetic fertilisers and artificial additives are all important components of naturalness that play their respective roles in improving the consumption choices of consumers. Consumers themselves and food producers have lower levels of willingness to promote health attributes and create ethical awareness to ensure sustainable consumption. Thus, the major responsibility for implementing sustainable consumption by reducing food choices for consumers lies with the government. This could be specifically achieved through using naturalness factors.

This study concludes by advancing the fresh concept of theorising *"willingness to reduce food choices in favour of sustainable alternatives"* by finding the direct and moderating effects of the variables of interest considered. The study continued to propose that organic and natural food consumption is largely possible when governments reduce food choices for consumers by offering only sustainable alternatives. An analysis of the UK consumer market revealed that sustainable consumption is a concern and the majority of people are reluctant to overcome significant obstacles in order to opt for only organic and natural food. Government has the potential to introduce mandatory policy which could have the effect of making organic and natural food a sustainable alternative for consumers by reducing their less ethical food choices.

Despite all ethical considerations taken into account during this study, there are certain limitations therein. As of now, the study is region-specific because only the UK food market has been explored. Ideally, it would be interesting to consider a comparative study to measure the variables of interest in contrasting economies, such as a comparison between emerging and advanced economies, to see if there is higher, lower or no variation among the considered variables. This would also delimit region specificity by having a broader generalisation in the cross-cultural context. Additionally, this study largely focused on numeric expression to determine the relationship. In other words, the study focuses on mathematical objectivity by concentrating on factual truths, while qualitative methods would have revealed hidden embedded useful truths to provide a deeper understanding of the practical implications. It is therefore recommended that future researchers consider the use of a Delphi technique to include an expert panel and individual interviews with consumers to provide a more detailed exploration of the research phenomena.

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Harmonised Protection of Consumer Behaviour: The Holistic Comparative Message About Its Effectiveness and Efficiency from Legislative and Judicial Perspectives

Radka Mac Gregor Pelikánová

Abstract The keystone of European consumer protection, the Unfair Commercial Practices Directive (UCPD), was enacted to contribute to the proper functioning of the internal market and to achieve a high level of consumer protection by approximating the laws of EU member states. The EU, via the UCPD, explicitly banishes unfair commercial practices which could potentially harm consumers and implicitly protects certain types of consumer behaviour. Evidence from over 10 years of the application of this harmonised regime allows one to holistically explore the targeted actions and omissions and the impact of the UCPD on commercial practices and consumer behaviour in the EU. The purpose of this study is to explore the UCPD legislative and judiciary perspectives vis-à-vis consumer behaviour and protection. It is founded upon the comparative mapping of (1) the UCPD and (2) case law generated by its ultimate judiciary authority, the Court of Justice of the EU (CJ EU). The information yielded is assessed by focusing on whether the UCPD regime (3) effectively and (4) efficiently protects consumer behaviour. This generates a message about consumer behaviour genuinely or allegedly boosted by the (semi-)harmonised legislation and case law, and indicates both positive and negative viewpoints. The study culminates in conclusions and proposed improvements.

Keywords EU · UCPD · CJ EU · Consumer protection · Unfair commercial practice

1 Introduction

Regardless of the inherent blurred distinction between historical truth and the reality of modern European integration (Chirita 2014), undoubtedly the sustainable concept (MacGregor Pelikánová 2019a) of the famous four freedoms of movement and

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competition on the single internal market (MacGregor Pelikánová 2019b), along with the emphasis on inventions and innovations (MacGregor Pelikánová 2019c), are absolutely critical to the EU. Indeed, eager—and at the same time fair—competitiveness, especially within the digital setting, should have a symbiotic, if not synergetic, relationship with the current Europe 2020 strategy and its drive for smart, sustainable and inclusive growth (EC 2010) across all sectors (Sroka and Szanto 2018). Consequently, EU law focused on the protection of competition on both levels (MacGregor Pelikánová and MacGregor 2015), i.e. to provide regulatory quantitative protection for the existence of competition via Public Law antimonopoly and antitrust measures, and to provide harmonised qualitative protection for fair play in competition via Private Law measures against unfair competition (MacGregor Pelikánová 2018a). Therefore, the focus entails not only interaction between businesses and states and/or the EU, but clearly interaction between business and consumers, i.e. B2C, as well. Thus, there is a clear overlap between (unfair) competition and the consumer protection setting and an obvious drive to harmonise the regime involving consumers, consumer behaviour and their protection. Nevertheless, it must be emphasised that this harmonised protection is an integral part of EU law, and its objectives and goals are not restricted merely to the protection of (certain) consumer behaviours.

Indeed, economic and political integration, with the dominance of technocratic institutions over political institutions (Lianos 2010), along with the intensification of the supranational approach over the intergovernmental approach, have shaped both the pre-Lisbon EU and post-Lisbon EU and resulted in the Europe 2020 strategy (MacGregor Pelikánová et al. 2017). Undoubtedly, the Europe 2020 strategy is a reaction to, in particular, the internal integration tandem (Burley and Mattli 1993), the European Commission and the Court of Justice of the EU ("CJ EU") reacting to the crises from 2007–2008 (MacGregor Pelikánová 2018a). This tandem has often made its reasoning based more upon the goals and spirit of the primary law incorporated by treaties rather than upon the positive wording of primary or secondary legislation of these provisions (Burley and Mattli 1993).

The Europe 2020 Strategy has five main targets—(i) to raise the employment rate to 75%, (ii) to invest 3% GDP in R&D, (iii) to reduce greenhouse gas emission by 20%, (iv) to increase the share of the population who have completed tertiary education to 40% and (v) to reduce the number of Europeans who are living at or below the poverty level by 25%. These five targets translate into seven flagship initiatives, of which at least five are related to CSR—(i) Innovation Union, (ii) Digital agenda for Europe with the high-speed Internet and the Digital single market, (iii) Resource-efficient Europe, (iv) Industrial policy for the globalisation era and (v) Agenda for new skills and jobs. As with any other element of the EU setting, the Europe 2020 strategy needs to be in compliance especially with the primary EU law represented by the Treaty on the EU ("TEU"), Treaty on the Functioning of the EU ("TFEU") and the Charter of Fundamental Rights ("Charter") as well as with the secondary EU law represented by Regulations and Directives. Consumer protection is chiefly established by a set of Directives, including Directive 2011/83/EU on consumer rights which provides for full harmonisation regarding contracts entered into between businesses and consumers, and a pair of Directives dealing with possible unfairness, i.e. Council Directive 93/13/EEC on unfair terms in consumer contracts and Directive 2005/29/EC concerning unfair B2C commercial practices in the internal market ("UCPD"). Interestingly, the UCPD is exactly at the intersection between EU competition and EU consumer protection law (Durovic 2016). Consequently, the UCPD is the part of EU competition law with the most Private Law features, and at the same time the part of EU consumer protection law with the most Public Law features (MacGregor Pelikánová 2018a).

National laws of EU member states have addressed unfair commercial practices in a dramatically different manner (MacGregor Pelikánová 2017a); these differences typically reflected the roots of common law and continental law traditions and the related cultural, historic, economic and other particularities. The common law tradition does not focus on the term 'unfair competition' and is rather liberal vis-à-vis the interplay of competition. The original common law approach toward the problem of deceptive, misleading, parasitic and other similar behaviour originally consisted of the choice between tolerance of softer forms and criminal law punishment of harder forms (Thünken 2002). The wrongs of unfair trading are covered by general tort law and in particular its "most protean" subpart, the law of passing off (Ng 2016); rules against unfair trading are not included in a statute, but instead they are, as is typical for torts, products of a mass of case law based on the operation of the doctrine of binding precedent (MacGregor Pelikánová 2018a). In contrast, in continental law jurisdictions, the same goal is achieved via a legislatively set general clause with a broad invitation extended to judges. Therefore, judges are here to fill legislative gaps, i.e. to create, in some cases, the foundations as to what constitutes the essence of unfair competition (MacGregor Pelikánová 2019b). Indeed, the continental law tradition targets behaviour considered to contravene the "honest usage" or the "*bonos mores*" (aka *gute Sitten*) of trade (Thünken 2002). They use the term 'unfair competition' and recognise a special branch of law called either unfair competition law or law protecting against unfair competition, which is covered by explicit legislation via statutes—either general (via Codes) or special (via *lex specialis*) (MacGregor Pelikánová 2018a, b). Typically, these statutes prohibit unfair commercial practices which may affect the interests of competition stakeholders, i.e. competitors, consumers and other participants (Henning-Bodewig 2006). Provisions regarding unfair competition are thus included in a *lex generalis* such as the French *Code de Commerce* ("French Commercial Code") or the Czech *Civil Code,* or in a *lex specialis* such as the German *Gesetz gegen den unlauteren Wettbewerb* ("German Act Against Unfair Competition"). These norms typically protect both honest businesses and consumers and include a general clause and a demonstrative list of prohibited unfair commercial behaviour; judges do not decline this invitation to create a precedent in case law with general applicability (MacGregor Pelikánová 2018a, b). Their decisions often refer not only to these statutes but also to general principles of law (MacGregor Pelikánová 2015), values (Málovics 2013), and concepts at the boundary between law, philosophy and ethics, while struggling to find the ultimate answers to what is, and what is not, fair (MacGregor Pelikánová and Císařová 2014).

Although the general principle of fair trading, especially fair trading in B2C relations, had not been fully considered before the twentieth century in Europe (Durovic 2016), by the turn of the millennium each and every EU member state had established a means of dealing directly with unfair commercial practices, to protect consumers against them, and to indirectly influence consumer behaviour. Thereafter, the European Commission decided to bridge differences and autonomously prepared the UCPD as a tool for the protection of both competition and consumers, without engaging in any deeper discussion about such differences and strategies and without considering probably the only common tradition point—Christianity—and its integration potential (MacGregor Pelikánová 2017b). In sum, the UCPD basically replaced any previously existing diverse national regimes with one set of rules to help the internal market and to achieve a high level of consumer protection against unfair commercial practices based on the principle of full, aka maximum, harmonisation (Durovic 2016). However, what exactly does (1) the UCPD and (2) the case law of CJ EU testify to, concerning the harmonised protection of consumer behaviour? Indeed, what business behaviour is prohibited and what consumer behaviour is protected? Is the resulting UCPD regime (3) effective and (4) efficient?

2 Harmonisation Pursuant to UCPD: Prohibited Unfair Commercial Practices and Protected Fair Consumer Behaviour

The UCPD was enacted in 2005, and brought forth a general clause about prohibited unfair commercial practices accompanied by less abstract clauses and a number of specific examples (MacGregor Pelikánová 2018a, b). According to the UCPD, commercial practices, such as marketing and advertising, play a fundamental role in a market economy (Trzaskowski 2011). The UCPD covers misleading and aggressive commercial practices and operates alongside other Directives, such as those dealing specifically with misleading and comparative advertising, labelling, etc., and fully fits into the Europe 2020 Strategy. The EU member states' high level of divergence (Balcerzak 2015) in their approaches to the law on unfair commercial practices was suppressed (Durovic 2016) and the regime protecting the existence of competition was complemented by a full harmonisation consumer protection directive, the UCPD. The mixture of purposes, the move from minimal to full harmonisation, from B2B to B2C protection, from legality concerns to fairness concerns, along with the controversial average consumer test, etc. represent a battery of challenges for the UCPD (MacGregor Pelikánová and Beneš 2017). This naturally has an impact on consumer behaviour and the framework thereof.

2.1 One or a Myriad of UCPD Purposes: Are Customers Included or Excluded?

The UCPD does not have a clear single ultimate purpose (Durovic 2016); instead it is a result of legal conceptual compromises which have progressively been changed due to political concerns, i.e. political factors led to modifications of the original drafts and resulted in such a wording of the UCPD that the original drafters often cannot easily interpret it (MacGregor Pelikánová et al. 2016). Indeed, objections to the UCPD have emerged, including the concepts, such as the full harmonisation or the average-consumer test, as well as the practical details. Perhaps the most fundamental objection involves the purpose(s) and goal(s) of the UCPD (MacGregor Pelikánová et al. 2016).

The literate interpretation of the UCPD points to the wording of Art. 1 of the UCPD which states "*The purpose of this Directive is to contribute to the proper functioning of the internal market and achieve a high level of consumer protection by approximating the laws, regulations and administrative provisions of the Member States on unfair commercial practices harming consumers' economic interests."* However, the EU and EU law prefer teleological and purposive approaches to the interpretation (Holland and Webb 2016) which focus on the systematic and contextual spirit. Consequently, the purposes indicated by the Preamble and Art. 1 of the UCPD should only function as the initial information leading to a true understanding of the key purpose(s). To recapitulate, the UCPD preamble indicates two potentially contradictory purposes: (i) the proper functioning of the internal market and (ii) a high level of consumer protection. This leads to a veritable Sophie's choice—which of the two prevails? A myriad of academic, professional and even lay opinions regarding the main purpose of the UCPD have been presented and published, often stating that consumer protection is the leitmotif of the UCPD which needs to be understood and appreciated in light of the Europe 2020 strategy (MacGregor Pelikánová et al. 2017). Indeed, the Europe 2020 strategy is concerned with "*structural weaknesses in Europe's economy*" in the context of diversity (Balcerzak 2015); its second priority, sustainable growth, requires a *"more competitive economy"* (MacGregor Pelikánová and Beneš 2017). Some authors propose that the main goal of the UCPD has a closer link to competition and markets than to competitors or consumers, i.e. consumers and their behaviour are merely auxiliary, while the pro-integration command and the market as such are the principal (MacGregor Pelikánová 2018a). Consequently, the discussion emerges about (the feasibility of) the EU's (alleged) desire to combine consumer protection and unfair competition protection in order to synergistically support, or even protect, European integration based on the single internal market (MacGregor Pelikánová 2017a).

Perhaps even more challenging is the burning question of "why?" Indeed, why—unlike other EU law instruments—does the UCPD state no single purpose? The post-crisis EU in the second decade of the twenty-first century needs to be more responsive (Šmejkal 2016), consistent and transparent in order to regain its legitimacy (Munir 2011); as such, conceptual confusions are highly undesirable, especially if complete harmonisation is involved (MacGregor Pelikánová 2018a).

2.2 The UCPD and Full Harmonisation: For or Against Consumers and Consumer Behaviour?

The UCPD was enacted to contribute to the proper functioning of the internal single market and achieve a high level of consumer protection by approximating laws (Art. 1), and so "*Member States shall neither restrict the freedom to provide services nor restrict the free movement of goods for reasons falling within the field approximated by this Directive*" (Art. 4). This implies that the EU opted for a very strongly unifying form of harmonisation, i.e. full or complete harmonisation (Stuyck 2011), despite the strong conceptual disparities in the laws of EU Member States (Osuji 2011). Therefore, the UCPD is one of many strongly pro-integration tools employed by the EU within the framework of its policies towards fair digital business (MacGregor Pelikánová 2013), going much further than contract and general consumer protection mechanisms (MacGregor Pelikánová 2018a).

Full harmonisation by the UCPD must be supported by EU primary law, i.e. in the fundamental treaties. According to the TEU and TFEU, there are three sets of competences to be exercised by the EU and/or EU Member States—conferred exclusive, conferred shared and not conferred. Regarding the functioning of the internal single market, the EU has conferred exclusive competence for the establishment of competition rules and conferred shared competence for other issues, such as internal market and consumer protection. The EU can choose between minimum and full harmonisation only where harmonisation is intended to contribute to the completion of the internal market (Loos 2010). This conclusion is backed up by the case law of the CJ EU, such as *C-183/00 González Sánchez/Medicina Asturiana SA*, where the CJ EU made it clear that the requirement of minimum harmonisation only pertains to measures which were not taken in the context of the internal market. The move to full harmonisation is justified not so much by consumer protection *per se*, but rather by the objectives of the internal single market and its operation (MacGregor Pelikánová 2018a). The UCPD has brought radical changes to EU law, and ultimately to the laws of EU Member States, and represents an aggressive approach toward harmonisation (Collins 2010) entailing both a maximum harmonisation character and horizontal effect approach (Durovic 2016). But what is truly evil based on the UCPD and how exactly does this full harmonisation impact consumers and consumer behaviour?

2.3 UCPD Prohibition of Unfair Commercial Practices: How Far Does Consumer Behaviour Protection Go?

The unfair competition law should protect the fairness of the already existing and functioning market by prohibiting certain behaviour which is perceived as being contrary to "honest usages" or "*bonos mores*" (aka *gute Sitten*) of trade (Thünken 2002). However, despite Art. 10bis of the Paris Convention for the Protection of Industrial Property, and in contrast to continental law jurisdictions, common law jurisdictions are specific in their strong legislative and judicial reluctance to "draw a line between fair and unfair competition, between what is reasonable and unreasonable" as stated in the precedential case *Mogul v. McGregor* (MacGregor Pelikánová 2018a). Since the EU wants to overcome this hurdle and even meet additional purposes, it implies that the target(s) of the UCPD might easily be blurred and mutually conflicting. Nevertheless, the UCPD quite clearly states that it applies to B2C (Art. 2) and that prohibited unfair commercial practices are those which are *contrary to the requirements of professional diligence, and materially distort or [are] likely to materially distort the economic behaviour with regard to the product of the average consumer* (Art. 5). This especially entails (i) practices which mislead and/or deceive an average consumer by action (Art. 6) or omission (Art. 7) and (ii) practices which aggressively impair the choice of an average consumer (Art. 8). Annex I of the UCPD includes a blacklist of commercial practices which are considered unfair in all circumstances (MacGregor Pelikánová et al. 2016).

Therefore, it is obvious that the UCPD wants to support the freedom of choice, and perhaps even the choice itself, of the average consumer. Although misleading practices deform truth and the perception thereof, while aggressive practices impair consumer freedom by means of harassment, coercion and undue influence, the UCPD addresses them more or less identically. Although exaggeration and slightly misleading actions, especially in the field of marketing and advertising, are common and generally tolerated, while harassment is generally taboo, the UCPD wants to protect the average consumer - and consumer behaviour - with the same intensity (MacGregor Pelikánová et al. 2017). The actions and omissions against which a consumer is always protected are included in Annex I, aka the blacklist, which includes 31 always unfair commercial practices, 22 which are misleading and 9 aggressive.

This is further magnified by explanatory and interpretation instruments, such as COM (2013) 138 Communication on the application of UCPD ("Communication") (EC 2013a) and COM (2013) 139 Report ("Report") (EC 2013b) adopted by the European Commission in order to explain and enforce efforts to guarantee a high level of consumer protection in a national context, and particularly in the context of the cross-border travel and transport industry (MacGregor Pelikánová 2017a). More importantly, in 2016, the European Commission issued a new explanatory document, COM (2016) 163 Guidance on the implementation/application of UCPD ("New Guidance") (EC 2016), and it appears that finally the Commission is readjusting and embracing a more informed and modest approach to the understanding of unfair commercial practices as the target of the UCPD: see the confirmation of *C-559/11 Pelckmans* and its case-by-case approach to the finding of unfair commercial practices indicated in the blacklist of Annex I (MacGregor Pelikánová 2018a). The New Guidance proclaims that "*The Directive is horizontal in nature and protects the economic interests of consumers. Its principle-based provisions address a wide range of practices and are sufficiently broad to catch fast-evolving products, services and sales methods*". However, the (alleged top) target—unfair commercial practices—still has some limits; the New Guidance clearly repeats that the "*UCPD does not cover national rules intended to protect interests which are not of an economic nature. Therefore, the UCPD does not affect the possibility of Member States to set rules regulating commercial practices for reasons of health, safety or environmental protection. Also, existing national rules on marketing and advertising, based on 'taste and decency' are not covered by the UCPD.*" Hence, it can be stated that the UCPD protects the economic interest of an average consumer against various misleading or aggressive practices of businesses. The freedom of behaviour of the average consumer seems to be the mantra. Yet this inevitably leads to the question—who is the average consumer and what is average consumer behaviour?

2.4 Average Consumer and Average Consumer Behaviour in Light of the UCPD

The UCPD prohibits unfair commercial practices, while referring to the concept of the average consumer, and basically codifies the pre-existing case law of the CJ EU pursuant to which the average consumer test is not a statistical test (MacGregor Pelikánová et al. 2017). This is underscored by the CJ EU drive for the "*Homo Economicus*" (Trzaskowski 2011).

Indeed, cases decided by the CJ EU with reference to the "average consumer" or even the "average internet consumer" are mushrooming, and interesting trends can be observed (Gongol 2013). Typically, the CJ EU understands the "average consumer" as a reasonably well-informed, observant and circumspect consumer, see *C-210/96 Gut Springenheide and Tusky*. The European Commission states in its New Guidance that "*The average consumer under the UCPD is in any event not somebody who needs only a low level of protection because he/she is always in a position to acquire available information and act wisely on it. On the contrary, as underlined in Recital 18, the test is based on the principle of proportionality. The UCPD adopted this notion to strike the right balance between the need to protect consumers and the promotion of free trade in an openly competitive market. Therefore, the average consumer concept under the UCPD should always be interpreted having in mind Article 114 of the Treaty, which provides for a high level of consumer protection. At the same time, the UCPD is based on the idea that, for instance, a national measure prohibiting claims that might deceive only a very* *credulous, naive or cursory consumer (e.g. 'puffery') would be disproportionate and create an unjustified barrier to trade. As explicitly mentioned by Recital 18, the average consumer test is not a statistical test. This means that national authorities and courts should be able to determine whether a practice is liable to mislead the average consumer exercising their own judgment by taking into account the general presumed consumers' expectations, without having to commission an expert's report or a consumer research poll.*" The CJ EU replies via its case law which embraced the approach to the (average) consumer as more qualitative than quantitative; consequently, the CJ EU in *C-388/15 Nemzeti v. UPC* based on the UCPD rejected commercial misleading practices even if only one single consumer victim exists (MacGregor Pelikánová et al. 2016).

3 The Harmonised Protection of the Consumer and Consumer Behaviour Against Unfair Commercial Practices in Light of CJ EU Case Law

Arguably, despite the UCPD wording and the European Commission's rhetoric, the UCPD regime is not so much in the interests of consumers but rather of competitors (MacGregor Pelikánová 2018a). In addition, the case law of the CJ EU demonstrates that neither consumers nor consumer organisations have made much use of the UCPD, as opposed to competitors (Loos 2010). Indeed, the CJ EU has always been (more) aware of national differences regarding unfair competition issues and for over four decades has been developing rather strong case law demanding an advanced level of justification by EU Member States in the case of prohibited unfair commercial practices, see *C-120/78 Rewe Zentral v Budnesmonopolverwaltung für Branntwein (Cassis de Dijon), C-126/91 Schutzverband gegen Unwesen in der Wirtschaft e.V. v Yves Rocher GmbH, C-405/98 Konsumentombudsmannen (KO) v Gourmet International Products AB*, etc. The ultimate message of this case law was that the free movement of goods and services should prevail over national rules and thus protect both the market and the consumers, i.e. the CJ EU has pushed the market-oriented approach to consumer protection (Durovic 2016). As indicated above, the European Commission has always been on the same page and so gladly moved towards the (re)codification of this case law, along with the concept of the average consumer by the UCPD.

3.1 CJ EU Case Law on Full Harmonisation and Scope: Not Necessarily More Choices

The reaction of the CJ EU was not surprising, and consequently the CJ EU vigorously confirmed full harmonisation under the UCPD. As a matter of fact, *C-261/07 and C-299/07 Total Belgium* were the very first cases pertaining to the UCPD; the CJ EU held therein that the Internal Market clause in (Art. 4) means the full harmonisation effect and prohibits the EU Member States from deviating in either direction, see Report. Consequently, no EU Member State is allowed to adopt rules stricter than those in the UCPD, even if such a stricter rule benefits consumer protection, see *C-261/07 and C-299/07 Total Belgium* (MacGregor Pelikánová et al. 2016). Indeed, the CJ EU has demonstrated immense resourcefulness and consistency in supporting full harmonisation, see *C-304/08 Zentrale zur Bekämpfung unlauteren Wettbewerb eV v. Plus Warenhousegesellschaft mbH*, etc. (MacGregor Pelikánová 2017a).

Furthermore, the CJ EU in *C-59/12 BKK v. Zentrale* opted for a large and broad reach regarding subjects covered by the ban on misleading commercial practices. It states that *it must be held that, for the purpose of applying the Unfair Commercial Practices Directive, the terms 'business' and 'trader' have an identical meaning and legal significance. Moreover, 'trader' is the most frequently used in the provisions of that directive. .... Directive 2005/29/EC ... must be interpreted to the effect that a public law body charged with a task of public interest, such as the management of a statutory health insurance fund, falls within the persons covered by the directive.* Therefore, misleading commercial practices, including confusing marketing and *copycat* techniques, are prohibited vis-à-vis basically everybody who is able to do so or accomplish such an effect (MacGregor Pelikánová et al. 2016).

The affirmation of full harmonisation in *C-261/07* and *C-299/07 Total Belgium* and the affirmation of large reach *in C-59/12 BKK v. Zentrale* were confirmed *by C-421/12 EC v. Belgium* in which the CJ EU ruled that "*Since ... Directive 2005/29 has affected a complete harmonisation of the rules concerning unfair commercial practices, the national measures at issue must therefore be assessed solely in the light of the provisions of that directive and not of Article 28 TFEU, ..., by excluding members of a profession and dentists and physiotherapists from the scope of the Law of 14 July 1991, transposing in national law Directive 2005/29; ... the Kingdom of Belgium has failed to fulfil its obligations under Articles 2(b) and (d), 3 and 4 of Directive 2005/29*. Hence, regardless of the nature of public or private law, the type of business activities or of the dichotomy between trade and businessman, the UCPD has to be applied (MacGregor Pelikánová et al. 2016) even if there is only one single victim. Namely, in *C-388/15 Nemzeti v. UPC*, the CJ EU surprisingly held that the UCPD misleading commercial practices regime even extends to situations when the confusion of a single consumer occurs, i.e. *the communication, by a professional to a consumer, of erroneous information, such as that at issue in the main proceedings, must be classified as a 'misleading commercial practice', within the meaning of that directive, even though that information concerned only one single consumer*".

The limits of this approach to a broad and full reach in terms of harmonisation can be detected in *C-559/11 Pelckmans*, where the CJ EU confirmed the non-application of the UCPD to national provisions prohibiting traders from opening their shops 7 days a week by requiring them to choose a weekly day of closing, i.e. the scope of the UCPD does not extend to national legislations preventing a business from being open on Sunday, because such national provisions do not pursue objectives related to consumer protection (MacGregor Pelikánová 2017a). Consequently, full harmonisation is presented as a tool to protect consumers and their behaviour but not as a tool necessarily for extending consumer choices or allowing a broad scope of consumer behaviour.

3.2 CJ EU Case Law for the Average Consumer: Ephemeral and Universal European

Well before the UCPD, the CJ EU started its crusade in the name of the "average customer"; hence, the ephemeral concept has been pushed to become a benchmark for business law and customer protection law issues. For the CJ EU, the average consumer was, is, and shall be "*Homo Economicus*", despite strong extrinsic and even intrinsic criticism (Trzaskowski 2011).

Such an "average consumer" seems to be harmonised if not unified and, pursuant to the CJ EU, exhibits little if any national particularities worthy of judicial or legislative consideration. For example, in *C-544/13 and 545/13 Abcur AB*, the CJ EU emphasised the duty of uniform interpretation across the EU and the direct reference to the teleological approach. The ruling stated: *According to the Court's settled case-law, the need for a uniform application of EU law and the principle of equality requires the terms of a provision of EU law which makes no express reference to the law of the Member States for the purpose of determining its meaning and scope normally to be given an independent and uniform interpretation throughout the European Union; that interpretation must take into account not only its wording but also its context and the objectives pursued by the rules of which it is part.* It even added that the UCPD *is characterised by a particularly wide scope ratione materiae which extends to any commercial practice directly connected with the promotion, sale or supply of a product to consumers.*

Fortunately, the CJ EU does not push this audacious and not truly realistic vision of a one-size-fits-all "average consumer" to the edge. A sign of self-reflection and recognition of limits can be detected in *C-201/96 Gut Springenheide* or *C-313/94 Elli Graffione,* where the CJ EU left it up to national courts and experts to decide on the existence of consumer confusion in IP matters, e.g. whether the use of a trademark or its imitation or a certain reference to it is misleading or not. Another set of limits can be detected in the abovementioned *C-559/11 Pelckmans* in which the CJ EU accordingly confirmed the non-application of the UCPD to national provisions prohibiting traders from opening their shop seven days a week by requiring them to choose a weekly closing day, as shown above. As a matter of fact, the abovementioned *C-544/13 and 545/13 Abcur AB* dealt with the confusing marketing and recognised the inherent particularism and the need for a case-by-case approach by stating that "*a commercial practice is to be regarded as misleading if, in its factual context, taking account of all its features and circumstances and the limitations of the communication medium, it omits material information that the* *average consumer needs, according to the context, to take an informed transactional decision and thereby causes or is likely to cause the average consumer to take a transactional decision that he would not have taken otherwise. Information requirements established by EU law in relation to commercial communication including advertising or marketing, a non-exhaustive list of which is contained in Annex II, are, in accordance with Article 7(5) of Directive 2005/29, to be regarded as material*". This approach is also embedded in further cases, such as the clothes shop case *C-288/10 Wamo* and the e-commerce case *C-13/15 Cdiscount SA* (MacGregor Pelikánová 2018a). As mentioned above, the quantification is irrelevant; thus, following *C-388/15 Nemzeti v. UPC*, the "average consumer" benchmark applies even if only the behaviour of one single customer is involved.

3.3 CJ EU Case Law on Unfair Commercial Practices Prohibited **per se***: Inherent Evilness in Intangible Matters*

The UCPD prohibits unfair commercial practices (Art.), which includes misleading commercial practices (Art. 6 and Art. 7), and the blacklist of always prohibited practices is included in Annex I of the UCPD which names commercial practices that are considered unfair in any and all circumstances. The Communication underlines that "*The benefits of the Directive mainly stem from two of its specific features, namely, its horizontal "safety net" character and its combination of principle-based rules with a "Black List" of specific prohibitions of certain unfair practices*". The black list includes 31 always unfair commercial practices, 22 which are misleading and 9 aggressive, part of which entail IP issues. Therefore, the "eternal" evilness is to be appreciated in the light of conceptual guidelines provided in *C-252/07 Intel*, *C-487/07 L'Oréal*, *C-559/11 Pelckmans*, etc. Interestingly *C-252/07 Intel* is presented as quite tough on superbrands, while *C-487/07 L'Oréal* is presented as a proponent of a very broad concept of unfair advantage. Indeed, the CJ EU held in *C-487/07 L'Oréal* that taking unfair advantage of a mark does not require the likelihood of confusion or the likelihood of detriment to the distinctive character or the repute of the mark (Seville 2011). Nevertheless, basically during the same period, a set of CJ EU rulings dealing with Advertising Words, aka AdWords, were passed, see *C-236 to C-238/08 Google*, pursuant to which "*the fact of creating the technical conditions necessary for the use of a sign and being paid for that service does not mean that the party offering the service itself uses the sign*" (Gongol 2013). Clearly, the UCPD regime is here to catch cases and situations that fail to pass this legislative net or, more precisely, this legislative strainer. It might even be argued that the UCPD is here to address modern digitalised advertising and trading (Thünken 2002).

The CJ EU's teleological and purposive approach, magnified by the drive for an expansive interpretation in order to support integration, is visible even in the spheres where the UCPD and sustainability matters or IP labelling matters overlap

(MacGregor Pelikánová 2018b). This can be illustrated by the quasi-copycat case *C-195/14 Bundesverband v. Teekanne* by which the CJ EU enforces an honest and truthful labelling in the largest sense, *precluding the labelling of a foodstuff and methods used for the labelling from giving the impression, by means of the appearance, description or pictorial representation of a particular ingredient, that that ingredient is present, even though it is not in fact present and this is apparent solely from the list of ingredients on the foodstuff's packaging*. This case law about labelling has to be understood in light of the context of trademark regulation and national practices while keeping in mind that modern trademarks perform many functions (Long 2013) and are leads for customers (Dědková 2012). Pursuant to the CJ EU ruling in *C-403/08 Football Association Premier League v. QC*, sports events do not qualify as works which are protected by EU copyright; consequently the unfair competition rules, with the misappropriation doctrine and the UCPD regime, are becoming instrumental in affording much-needed flexible protection for sporting events and related investments (Margoni 2016).

4 The (In)effectiveness of the UCPD in Harmonising the Protection of Consumer Behaviour

The UCPD banishes unfair commercial practices which harm consumers and implicitly protects certain types of consumer behaviour. Namely, by creating a wide definition of prohibited commercial practices and creating the black list of eternally evil practices, the EU indicates several categories of consumer behaviour via UCPD and related interpretation instruments, such as Communications, Reports and New Guidances and the CJ EU case law. Namely, sorting is done by indicating which category will be subject to harmonised UCPD protection and which will not. Is this correct, i.e. is this an effective approach?

From a positivistic and strictly legal point, the EU did not violate any fundamental treaties and principles and so the legitimacy and validity of the UCPD is beyond any reasonable doubts, as explained above. Therefore, from a legal perspective, the harmonised protection of consumer behaviour via UCPD appears prima facie right and correct, i.e. effective. However, the social and economic perspective leads to a different picture.

Indeed, the UCPD brings a rather rigid vision of what is good and what is bad; both the Commission and the CJ EU seem to be opting more for conclusive interpretations than for allowing national case-by-case approaches. Hence, they are ultimately inclined to influence, if not make, customer choices.

There has always been interplay, perhaps even tension, between the EU and national approaches to competition law, unfair competition law and consumer protection norms (Stuyck 2011). The demands of integration and the single internal market led to the harmonisation of business practices and consequently even to consumer behaviour. This is logical and correct, but the intensity and manner generated by the UCPD raises a set of questions and issues. Firstly, economically and socially, the legal determination of the UCPD to aim for a myriad of purposes seems hardly understandable, leading to the burning question of whether customers are the top priority or not in the case of an inevitable conflict between these purposes, as seen above. Secondly, the UCPD is a full harmonisation legislative instrument, but the EU could opt for less radical measures. Naturally, both ways are in compliance with primary EU law, but if the EU should be closer to its citizens and "united in diversity", then it seems the combination of full harmonisation and the unified benchmark of the average consumer, aka *Homo Economicus*, is a problem undermining the effectiveness of the UCPD. Thirdly, the UCPD defines the distinction between good, sometimes bad and always bad, but often this distinction is motivated by extrinsic motivations, such as an exclusive focus on B2C. As a matter of fact, after 14 years, the EU attempted to correct this and improve its effectiveness in this respect by introducing the Directive (EU) 2019/633 of the European Parliament and of the Council of 17 April 2019 on unfair trading practices in business-to-business relationships in the agricultural and food supply chain. Indeed, the means by which to fulfil the development goals of the food industry have to be created from measures designed to contribute to the fulfilment of the strategic goals and objectives of the food industry as effectively as possible, and to identify the positive impacts on food security, food safety and quality (Pakšiová and Lovciová 2019).

5 The (In)efficiency of the UCPD in Terms of Harmonised Protection of Consumer Behaviour

The UCPD is legislatively correct and legitimate, and thus effective, but its effectiveness from other perspectives is rather problematic. Regarding the correctness and rightness of its operation and application, i.e. its efficiency, close scrutiny regarding individual aspects is necessary. Naturally, this scrutiny must address the co-operation of the internal tandem, the European Commission and the CJ EU, while considering fundamental, as well as special and partial, aspects of performance concepts (Melecký and Staníčková 2019).

Prima facie, the tandem seems to speak with the same tenor regarding the UCPD. However, a deeper study, as seen above, reveals that the single-minded determination of the European Commission to do whatever it can for the internal single market can be counterproductive and produce misleading and confused rules, and that the CJ EU is not so radical. Indeed, the CJ EU has wisely accepted that a competition-driven solution is not the best for every solution pertaining to the issue of competition (Šmejkal 2016), but rather that it has to focus on making the application of the UCPD efficient (MacGregor et al. 2016).

As a matter of fact, the European Commission, with its much too general and not truly binding Communication, Report and New Guidance, did rather too little too late, and has not vigorously supported the effectiveness of harmonisation by the

UCPD. However, the CJ EU stepped in by means of case law and dramatically influenced this efficiency. Each case decided pertained to something important and with a direct impact on consumer behaviour, and the CJ EU provided the ultimate answers. Perhaps these answers might be perceived as not fully correct (not perfectly effective), but the correctness of this action (efficiency) is beyond any doubt, i.e. nobody can accuse the CJ EU of avoiding its rulemaking responsibilities when it comes to harmonised protection via the UCPD. With a touch of exaggeration, it can be proposed that the CJ EU, with its proactive approach, partially offset the passive approach of the European Commission and consequently led to a sufficient level of efficiency of the UCPD.

The list of these cases should start with *C-261/07 and C-299/07 Total Belgium* which went for "no more no less" protection of consumers in the EU and aimed to make the vigorous application of the UCPD in the entire EU a reality. In *C-59/12 BKK v. Zentrale,* it added that the UCPD extends even to public law businesses and that the UCPD regime applies even if one single customer is involved, see *C-388/15 Nemzeti v. UPC*. This extremely broad (long-arm) reach of the UCPD is further magnified by the unified concept of the universal European "average consumer", see *C-544/13 and 545/13 Abcur AB.* Hence, the message generated by the CJ EU is crystal clear and could be reduced to the conclusion that there is a standardised (if not unified) European consumer behaving in a standardised (if not unified) manner, and such behaviour must be protected against commercial practices which would impair it through confusion or aggression. Although the effectiveness of the UCPD in this respect is vast, it is still not absolute.

Paradoxically, some limits to this massive effectiveness are set with respect to increasingly popular consumer behaviour. Indeed, consumers very often demonstrate the drive to shop "whenever and however they want", i.e. consumers develop various behaviours from traditional to high-tech and do not reduce themselves to certain forms or certain times. However, in *C-559/11 Pelckmans*, the CJ EU remarkably did not use the UCPD to strike down national provisions prohibiting traders from opening their shops seven days a week and remain immune to significant demand by businesses and consumers to be free to conduct business and when they wish, rather than beholden to the opinions of the state or labour unions. Other limits to the mass effectiveness seem more logical and appropriate, such as the case law on the overlap of the UCPD and IP (MacGregor Pelikánová 2018b), e.g. *C-252/07 Intel*, *C-487/07 L'Oréal*, *C-544/13 and 545/13 Abcur AB* and *C-195/14 Bundesverband v. Teekanne*.

6 Conclusions

The keystone of European consumer protection, the UCPD, was enacted to contribute to the proper functioning of the internal market and to help achieve a high level of consumer protection by approximating the laws of EU member states. The exploration of the UCPD legislative and judicial perspectives vis-à-vis consumer behaviour and its protection, i.e. the wording and interpretation of the UCPD by the European Commission and the CJ EU, provides a colourful picture of varying degrees of effectiveness and efficiency.

From a strictly legal perspective, the UCPD is correct and has a legitimate right to explicitly banish misleading or aggressive unfair commercial practices which harm consumers and to implicitly protect certain types of consumer behaviour. The economic, social and other perspectives point to certain weaknesses of the presented solutions and potentially challenge the determination for such a full harmonisation, especially when matters which can hardly be reconciled are presented as common purposes, and meanwhile national particularities are underestimated.

Over 10 years of experience with the application of this harmonised regime allows one to address the correctness of its interpretation and application. This study points to a large gap between the determination and eagerness of the pro-integration tandem. The weak and not truly active approach of the European Commission can be contrasted with the casuistic activism of the CJ EU, which enthusiastically makes ultimate rulings. Protection via the UCPD, including consumer behaviour which benefits from the UCPD regime, is real and applied in practice. Exceptions due to IP particularities are well founded. However, certain criticisms might target the CJ EU denial to protect the free “timing and form” of consumer shopping behaviour, i.e. the CJ EU could send an even stronger message about efficiency by supporting freedom of choice regarding the opening hours of shops.

In sum, the protection of consumer behaviour is provided in a rather effective and efficient manner by the UCPD. Nevertheless, more than a decade of experience leads to several recommendations for improvements in effectiveness and efficiency. Regarding effectiveness, a deeper, open-minded and bottom-up review should be done and the EU should be more modest and realistic with respect to national particularities. EU member states and their businesses and consumers are more different than the UCPD admits, and the drive for full harmonisation in order to protect a standardised average consumer should definitely be reviewed. Regarding efficiency, the recommendation is obvious: the European Commission should be much more pro-active and should prepare the interpretation instruments faster and in more detail. Further, it should engage in pro-active dialogue with all stakeholders. After all, the effective and efficient protection of consumer behaviour must be done in the interest of real European consumers, must be clearly understood by them and benefit them by means of prompt enforcement. So far, we are only halfway, or perhaps slightly further, so we need to continue working on the improvement of effectiveness and efficiency.

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Part II
Understanding the Cross-cultural Specifics of Consumer Behaviour

Multidimensional Analysis of Consumer Behaviour on the European Digital Market

Armenia Androniceanu, Jani Kinnunen, Irina Georgescu, and Ane-Mari Androniceanu

Abstract Most marketing specialists recognise that consumer behaviour can be explained by knowing the system of factors and variables that influence it. The purpose of our research is to get to know and analyse the behaviour of EU consumers within the online environment. In order to do so, we have selected a group of indicators and variables of consumer behaviour from the Eurostat database. The specific values for each EU Member State were processed using cluster analysis, by means of which we aimed to identify clusters with as many similar elements of the same class as possible (minimal variability within classes) and as many elements which differ from each other as possible if these elements belong to different classes (maximum variability between classes). Our research led to the identification of five clusters in which the EU states are grouped according to the characteristics of consumer behaviour in the online environment. An overview of consumer behaviour on the digital European market is provided and different types of generally similar consumers are identified. The results of our research could be interesting to specialists and experts in the marketing departments of companies doing business on the digital market of the European Union. We further suggest some future research opportunities.

Keywords E-commerce · *K*-means clustering · Principal component analysis

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1 Introduction

We live in a hyper-connected world. In 2018, the rate of connection between European citizens and the digital environment exceeded 98%. European Union (EU) statistics show that, since 2015, the number of mobile subscriptions is almost equal to the number of people on earth. In 2018, 87% of households in the 28 EU member states (EU-28) had internet access (Eurostat 2018). The digital society is becoming increasingly familiar, decisively influencing people's lives (Lazaroiu 2018). This dependence on technologies that are increasingly used in everyday activities has an effect on many aspects of citizens' behaviour, including their choices as consumers (Braciníková and Matušínská 2017). The complexity of the digital markets offers a multitude of opportunities and risks for consumers (Androniceanu et al. 2019). Currently, consumers purchase "free" goods and services in exchange for their personal data. It is increasingly clear to most citizens that, in a digital economy, consumers need a new set of skills to engage in the online market and to make the right choices for themselves. In this context, marketing experts aim to discover the particularities of consumers within the new digital society (Datculescu 2006). They have set a few key objectives: strengthening brand awareness, discovering the best ways to engage customers, increasing the degree of personalisation of products and services, measuring satisfaction, and increasing transparency and accessibility for consumers on the digital market (Cătoiu and Teodorescu 1997; Çera et al. 2019).

In a study developed by Microsoft researchers, a forecast of the most pressing marketing challenges and technologies that will emerge over the next decade was made. The researchers aimed to provide results that would help organisations to plan their investments in technology, talent and business structures, taking into account the changes in the new digital space (Androniceanu 2019). They found that the main change was increasing the level of consumer expectations and demands. The next generation of consumers has grown up in the digital environment, and they believe that interactivity, connectivity and participation are natural concepts (Fielden et al. 2018; Raišienė et al. 2019). The talent crisis, Generation Y, and employee retention rate are examples of issues that seem to create problems for companies who wish to adapt their products and accessibility to them, the new megatrends and the way the economy looks in the new consumer space 4.0. These forecasts will drive large companies to make major investments in the coming years.

According to the new EU rules for a digital economy, European consumers benefit from a number of advantages: the increased transparency of prices; eliminating unjustified taxes for the use of credit cards (Korauš et al. 2016); a ban on predefined options on the Internet; extending the reimbursement period of products from seven to 14 days on EU territory; rules that prohibit online traps, such as offers on the internet that advertise 'free' products or services, when in reality they are not (e.g. horoscopes or prescriptions); and better protection for digital content, especially for software and hardware information. In this regard, the European Commission has developed a guide for European consumers who decide to purchase online products.

With this guide, the European Commission aims to help consumers to make informed choices on the digital market; to operate safely online; to understand digital marketing and advertising practices; to manage online financial operations; and to understand the risks and benefits of digital data collection.

Consumer behaviour is the result of a complex interaction of several factors (Pride and Ferel 1991). According to the digital agenda, the European Union aims to create a single digital market in which citizens and companies can easily and equitably access online goods and services, regardless of their nationality and place of residence. Consumers are at the centre of the process of ensuring the functioning of this digital single market. Specialists consider that the behaviour of the consumer cannot in fact be explained, except by knowing the system of factors that act in close connection. Studying consumer behaviour and determining their needs and expectations is a complex activity. Most marketing research is focused on products and very rarely on the consumers of those products. Thus, a product is often considered good because it is priced competitively, but it is insignificant compared to the needs of consumers. Our research focuses on individual consumer behaviour in the new context of the European digital market. We aimed to analyse the behaviour of the individual consumer with regard to searching for information, comparing information, evaluating alternatives, approaching commercial communication, managing digital identity, and making responsible and sustainable consumer choices. The most important results are analysed and presented in the third section of this work.

2 Literature Review

In the specialised literature, there is a diverse body of research on consumer behaviour (Musová 2015; Novotný 2015). Some of the most important and relevant approaches are included in this section. In most companies, marketing is product-oriented and less focused on consumer characteristics (Khúlová 2016). Thus, a product is viewed through its pricing, in line with engineers and accountants considering the product to be the best for the respective price, but this is insignificant in relation to the needs of the consumer. The disadvantage of this approach is that a consumer will buy a product at a good price but may not need it. The classic approach to strategic marketing (Kotler et al. 1999) emphasises “the four Ps” (product, placement, price, and promotion). Subsequently the list was extended by Booms and Bitner (1981) to include population, physical parameters and technological processes; indeed Wright (1999) suggested that the marketing mix is comprised of a total of 11 factors. In his extensive analysis of consumer behaviour, Philip Kotler (2012) starts from the analysis of the factors that influence it, grouped into: (1) cultural factors—represented by culture, subculture and social class; (2) social factors—which include reference groups, family, roles and statuses; (3) personal factors—which refer to age and the stage of the lifecycle, occupation, lifestyle, economic circumstances, personality, and self-opinion; (4). psychological factors—motivation, perception, learning, beliefs, and attitudes.

The classification by Gerasimov et al. (2018) is also interesting. It groups the factors that influence consumer behaviour into the following three categories: (1) individual factors of consumer behaviour, which include needs and motivations, personality and self-image, lifestyle, attitudes and preferences; (2) social factors represented by family, reference groups and opinion leaders, role and social status, and social classes; and (3) cultural factors. We also highlight Kanuk's (2007) classification of these factors into two groups: (a) individual factors of consumer behaviour, which include needs and motivations, personality and self-image, lifestyle, attitudes and preferences; and (b) social factors, represented by family. Other marketing specialists, e.g. Žuľová et al. (2018), attempted to group consumers into segments with common needs and desires. Therefore, marketing which focuses on the consumer is a priority (Roberts and Marchais 2018). Some of the most important arguments in this regard are presented and explained here. At the heart of a purchasing decision lies a "problem"/a consumer need (Gavurova et al. 2019; Shuyan and Fabuš 2019). The consumer is motivated by the need to buy a product and identifies the most appropriate way to buy it. In addition to individual psychological variables (needs, motivations, and attitudes), consumer behaviour is strongly influenced by certain relatively permanent individual characteristics (Lazaroiu et al. 2018). In most marketing studies, the individual characteristics that are the subject of research include personality, cognitive style, lifestyle and attitude towards the risk of purchase (Roberts and Marchais 2018). Thus, Solomon et al. (2006) identified patterns of consumer behaviour, one of which is the VALS (Values and Life-Style) Model developed by the Stanford Research Institute. The VALS model is based on a questionnaire of over 800 questions addressed to a panel of 2713 people. Other models are based on lifestyle analysis. Research on consumer behaviour developed in Germany (SINUS) and France (RISC) has become well-known. For example, SINUS highlighted five European socio-lifestyles, namely traditionalists, materialists, spoilers, post-materialists, and post-modernists. Every 3 years since 1972 the Ansata Communication Centre (CCA) in France has published a barometer of French lifestyles (socio-styles), which are matched with consumption levels through AIO questionnaires. The sample used by the CCA consists of 4000 people who are asked questions pertaining to all areas of their lives. After each investigation, the CCA publishes a map of the "French socio-styles" and their behaviour towards products, services and advertising messages.

The results of lifestyle research and socio-cultural models should be approached with sufficient circumspection. In fact, some authors (e.g. Žižka and Pelloneová 2019) dispute the scientific character of the methodology used in this research. However, methods of lifestyles and socio-cultural models are registering increased levels of use, because they offer better information on those who make decisions related to the sociological features of their market. The individual psychological variables and the personal characteristics of the individual can only partially explain the behaviour of consumers (Tamulienė and Pilipavičius 2017). A consumer is an individual who interacts with other people, with whom he/she maintains certain relationships, as part of a social group. Iliadis and Paravantis (2011) undertook a cross-country empirical analysis of ICT diffusion among 141 countries, analysing the relationships between the ICT variables which were chosen according to dependence on other economic, social, educational and political variables. Using principal component analysis (PCA) and cluster analysis, the authors established the existence of two clusters: one containing less developed countries and the other containing more developed ones. Another finding was that economic and social factors were the main determinants of the digital divide.

The aim of our research is to analyse the behaviour of the individual consumers of products purchased online on the European digital market (Androniceanu et al. 2019). In this paper, we propose a cross-country analysis of the EU states based on the choice of 11 indicators for 2016 collected from the Eurostat database, referring to consumer attitudes towards buying or ordering products online. The main methods of analysis are cluster analysis (Hartigan and Wong 1979) and component analysis (Tharwat 2016) of consumer behaviour (Georgescu 2015; Jolliffe 1986). Based on the behaviour of consumers within the European Union, we have identified five clusters into which the EU Member States are grouped. The most important results and findings have been selected and are presented in the next section of this paper.

3 Research on Consumer Behaviour in the EU

Knowing the particularities of the behaviour of individual online consumers is useful for companies that undertake commercial activity in the European digital space. We investigate this firstly by clustering the 28 EU countries into five clusters using the *k*-means clustering algorithm, which leaves us with five clusters of broadly similar countries. Secondly, principal component analysis (PCA) is used to reveal the most important factors explaining the total variance of the 11 variables of consumer behaviour used. The formulas for the principal components (PCs) are presented and their values are also computed for each cluster to allow for the comparison of clusters and the most dominant factors in each cluster. Section 3.1 presents the 11 variables used in the clustering analysis of Sect. 3.2 and the principal component analysis of Sect. 3.3.

3.1 Main Variables of Consumer Behaviour

The selected variables below help us to get to know the profile of the online consumer. The results of our research were processed and analysed to obtain an overview of the behaviour of this type of individual online consumer of computer products. Even though our study is based on a reduced number of indicators and variables (11) of the individual consumer of IT products, it has representativeness for Europe (MacQueen 1967) as we have included all EU member countries in the study.

The variables considered in this research are as follows:

V1 Consumers always or almost always used information from several retailers, producers or service provider websites before buying/ordering online.
V2 Consumers always or almost always used price or product comparison websites or applications before buying/ordering online.
V3 Consumers always or almost always used customer reviews on websites or blogs before buying/ordering online.
V4 Consumers sometimes used information from several retailers, producers or service provider websites before buying/ordering online.
V5 Consumers sometimes used price or product comparison websites or applications before buying/ordering online.
V6 Consumers sometimes used customer reviews on websites or blogs before buying/ordering online.
V7 Consumers rarely or never used information from several retailers, producers or service provider websites before buying/ordering online.
V8 Consumers rarely or never used price or product comparison websites or applications before buying/ordering online.
V9 Consumers rarely or never used customer reviews on websites or blogs before buying/ordering online.
V10 Consumers bought/ordered online by clicking/buying straightaway through an advertisement on a social media website or application.
V11 Consumers did not buy/order online by clicking/buying straightaway through an advertisement on a social media website or application.

The variables V1–V3 measure the share of consumers who *always or almost always* consider and compare information about the seller/producer, the price, and the product details; V4–V6 measure the consumers who *sometimes* do so; V7–V9 measure those who *never or almost never* do so; and variables V10–V11 show what proportion of consumers proceed directly to the purchase transaction through an online advertisement. The clustering analysis builds the clusters based on the similarities between countries using the 11 variables, and the principal component analysis will show which of the variables best characterises European Union (EU-28) consumers as a whole and per each cluster.

3.2 Cluster Analysis

To arrange the EU countries in clusters, we chose the *K*-means algorithm: *n* observations are grouped in *k* clusters. First, the algorithm randomly assigns each observation to a cluster and the centroid of each cluster is established. Subsequently, the algorithm has two iterative steps:

Step 1. Each observation is assigned to the cluster with the smallest Euclidian distance from its centroid;

Table 1 Within cluster sum of squares by cluster

Cluster	SoS
CL1	20.50254
CL2	0.00000
CL3	17.74508
CL4	11.28540
CL5	31.38637

Source: own elaboration

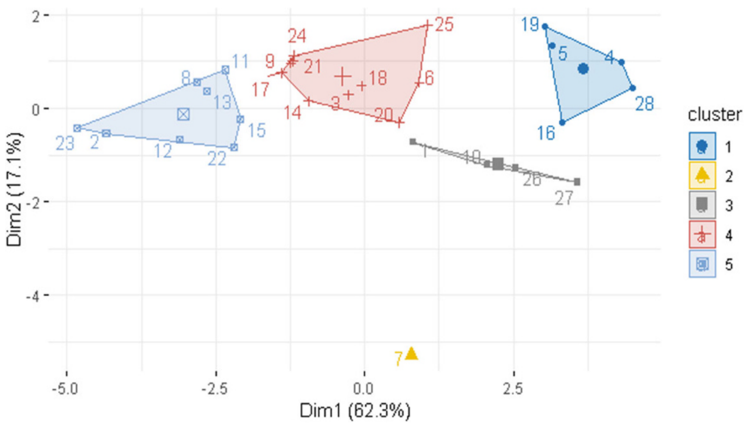

Fig. 1 Cluster plot. Source: own elaboration

Step 2. The new centroid of each cluster is computed again.

We group the 28 countries (EU-28) in five clusters:

Cluster 1: Denmark, Germany, Luxembourg, Netherlands, and the UK;
Cluster 2: Ireland;
Cluster 3: Bulgaria, Romania, Greece, Croatia, Italy, Cyprus, Lithuania, and Portugal;
Cluster 4: Belgium, France, Finland, and Sweden;
Cluster 5: Czech Republic, Estonia, Spain, Latvia, Hungary, Malta, Austria, Poland, Slovenia, and Slovakia.

Based on our calculation, 72.8% measures the total variance in the dataset, and it is explained by the *k*-means clustering (SoS = between_SS/total_SS = 72.8%). The within-group variance is minimised while the between-groups variance is maximised. The 28 countries are assigned to five clusters (Table 1), meaning a reduction in the sum of squares of 72.8%.

The bivariate cluster plot shown in Fig. 1 uses PCA to describe the five clusters. One notices that cluster 2 contains only one element (Ireland) which could be considered an outlier. Ireland shows similar characteristics to Luxembourg, which is the second richest country in the EU but was included by cluster 1.

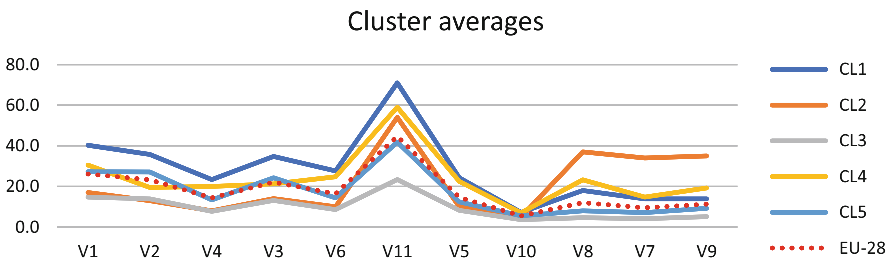

Fig. 2 Cluster means. Source: own elaboration

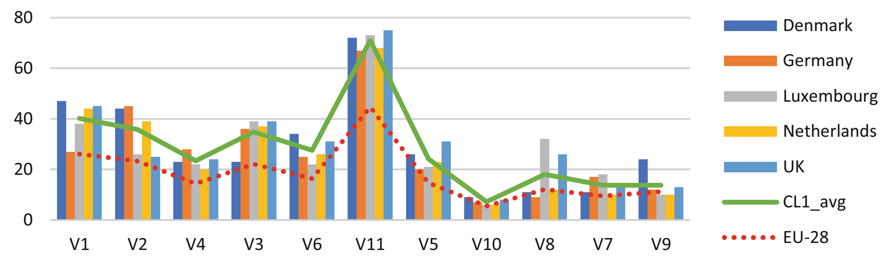

Fig. 3 Cluster 1 means. Source: own elaboration

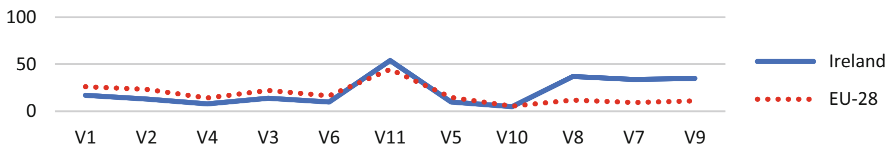

Fig. 4 Cluster 2 means. Source: own elaboration

The mean values of the five clusters for the 11 variables used, V1–V11, and the average of all EU countries (EU-28) are graphed in Fig. 2 and for each cluster in Figs. 3, 4, 5, 6 and 7. The data tables are available in the appendix. We will firstly discuss which variables show the clearest deviations between the five clusters and which variables seem to be less important in terms of cluster comparisons. We then take a closer look at the clusters and point out the main characteristics of each cluster.

Figure 2 shows the largest differences between clusters arising from variables V1–V4 and V7–V9. As seen on the left side of Fig. 2, the clearest deviations between clusters arise from consumers who *always or almost always* use comparative information from *providers* (V1), as well as information pertaining to the *price and product* (V2). Similarly, clear deviations between clusters are seen in V3, reflecting consumers who *always* use reviews, and in V4, i.e. those who *sometimes* use comparative provider information. Thus, customers who *always* compare provider, price and product information as well as utilising reviews (V1–V4) are important factors in determining the clusters, while customers who *sometimes* use

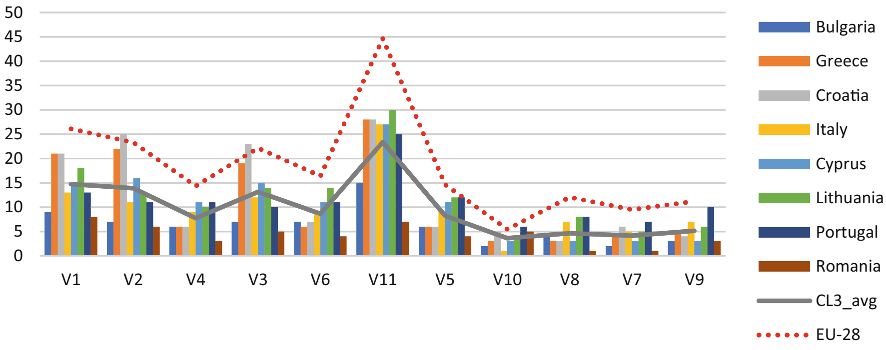

Fig. 5 Cluster 3 means. Source: own elaboration

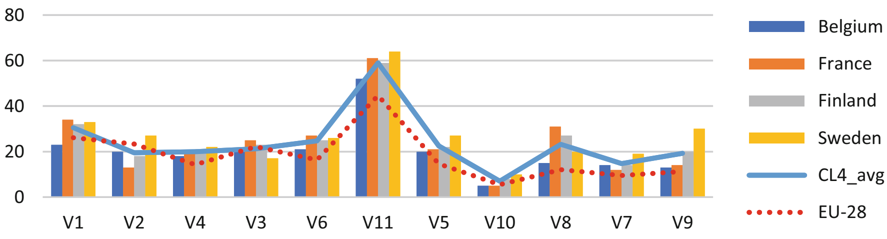

Fig. 6 Cluster 4 means. Source: own elaboration

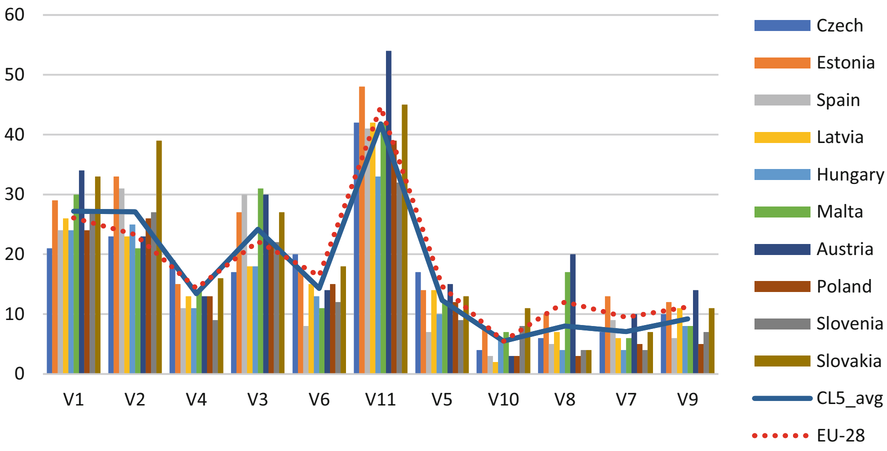

Fig. 7 Cluster 5 means. Source: own elaboration

price comparisons (V5) and customers who *sometimes* use reviews (V6) do not play a key role in clustering. As seen in the centre of Fig. 2, V11 seems to show large deviation as well. V11 measures the share of consumers who *did not proceed to purchase transactions* directly through an advertisement, ranging from 23.4%

(cluster 3) to 71.0% (cluster 1). However, the contribution of V11 in determining the clusters is smallest, together with V10 which measures those who *proceed to purchase transactions* directly from an advertisement.

On the right side of Fig. 2, another set of variables (V7–V9) with large differences between clusters is seen. These variables measure the share of consumers who *rarely or never* use price or product information (V8), nor compare producer/retailer/service provider websites (V7), nor utilise reviews (V9).

On the cluster level, we can focus on differences between variables V1–V4 and V7–V9. In Fig. 2, the Western European and Nordic country clusters 1 (CL1) and 4 (CL4) show the highest values, generally speaking, for variables V1–V4, and the order of cluster means is mostly CL1 > C4 > CL5 > CL2. Androniceanu et al. (2019) show that CL1 and CL4 countries are generally on the highest level of general digitalisation indicators. The Eastern European countries, Czech Republic, Estonia, Latvia, and Hungary, together with Spain, represent an average cluster (CL5), which is very close to the European Union averages (EU-28 in Fig. 2) across all 11 variables. Only Ireland (which alone forms cluster 2, CL2) shows higher values in V7–V9 than clusters 1 and 4. This is interesting, as the same clusters of countries where the largest share of consumers always or often compare providers, prices and products (V1–V4) also have a large share of consumers who rarely or never do this (V7–V9), although the order changes to CL2 > CL4 > CL1 > CL5. The other Eastern-Southern European cluster 5 with Bulgaria, Romania, Greece, Croatia, Italy, Cyprus, Lithuania, and Portugal is the only one which shows consistently lower mean values of all variables than other clusters. CL5 countries, more specifically Romania and Bulgaria, also have the lowest levels of general digitalisation indicators (Androniceanu et al. 2019).

Figure 3 shows the variable means for the five Western and Northern European countries in the form of a bar chart; the solid line depicts the cluster mean (CL1_avg) and the dashed line the EU average (EU-28). Cluster means are consistently above EU averages for all variables. We may observe that all five countries (Denmark, Germany, Luxembourg, Netherlands, and the UK) in the cluster show very similar characteristics. The largest differences between the countries are seen in variables V1–V2 (smaller deviations seen in V3–V4) and V8 (smaller deviations in V7 and V9).

Almost half (38–47%) of consumers *always or almost always* use provider/producer/retailer information (V1) and price and product comparisons (V2) across all countries in the cluster, except in Germany where 27% do so for sellers/producers (but 45% for prices/products) and in Luxembourg and UK where 25–26% do so for prices/products (but 38% and 45% again for sellers/producers). The share of consumers who *never* make price/product comparisons (V8) ranges from around 10% (Germany's 9% being the lowest figure) to the UK's 26% and Luxembourg's 32%. In the richest EU country, Luxembourg, consumers are somewhat less interested in making price and product comparisons before their purchasing decisions.

Figure 4 presents Ireland, which was assigned alone to cluster 2. As the second richest country in EU by GDP per capita, Irish consumers show peculiar attitudes to price/product comparisons and going through seller/provider information. Irish consumers are far below EU averages in V1–V6. For example, only 13% of consumers used price/product comparison websites before purchasing (the EU average is 26.1%), and as many 37% of Irish consumers rarely or never check price/product comparisons (the EU average is 12%).

Cluster 3 is shown in Fig. 5. The main differences are again concentrated in V1–V3. Romania has the lowest values of all variables other than V10 (purchasing straightaway through an advertisement), where their attitude is at the level of the EU average. Only 8% of Romanian and 9% of Bulgarian consumers always or almost always check seller/provider website information (V1) before purchasing (the CL3 average is 14.8%; EU-28: 26.1%) and only 6% and 7% of Romanians and Bulgarians always considered price/product comparisons (V2) respectively (the CL3 average is 13.9%; EU-28: 23.3%). While typically low values in e.g. V1–V2 mean higher values in V7–V9 in all clusters and vice versa, Romanians show the greatest deviance from this: only 1% of Romanians never check seller/provider information (V7) or never use price/product comparisons (V8), while they are also on low levels in terms of V4 and V5, i.e. sometimes doing so (the average for cluster 3 is 4.6% for V7 and 4.1% for V8). Croatians and Greeks show the largest level of interest in seller/provider information (V1) and price/product comparisons (V2) at 21–25%, which are close to the comparable EU-28 averages of 23.3–26.1%. On average, cluster 3 shows levels below EU averages across all 11 variables.

Cluster 4, as demonstrated in Fig. 6, consists of Nordic countries—Finland and Sweden—as well as France and Belgium. Differences between them are only visible in V1–V2 and V8–V9. Belgian consumers comprise the smallest proportion of those who always check seller/provider information at 23%, while in other CL4 countries 32–34% do so (30.5% in all EU-28 nations). French consumers have the lowest interest in always considering price/product comparisons with only 13% doing so; in Sweden 27% do, while the CL4 average is 19.5%. V2 is also the only variable where the cluster average is below the EU-28 average of 23.3%. 15% of Belgians never used price/product comparisons, nor do 31% of French consumers. The CL3 average of 23.3% is above the EU-28 average of 12%. Swedes are high in almost all variables, except that only 17% always read reviews (V3) and as many as 30% never do this (V9) before a purchase transaction (CL4 averages of V3 is 21.3%, and V9 is 19.3%).

Figure 7 demonstrates results from the largest cluster (CL5) consisting of 10 Eastern and Southern European countries. Consumer attitudes in this cluster are closest to the EU-28 averages; only the CL5 averages of V2 (27.1%), V9 (9.2%) and V7 (7.1%) can be said to deviate from EU averages (V2: 23.3%; V9: 11.2%; and V7: 9.5%), but even then, their differences are negligible. Slovak consumers represent the largest number of respondents who always consider both seller/provider information and price/product comparisons, with figures of 33% (V1) and 39% (V2), while the cluster 5 averages are 27.2% and 27.1% respectively; 17% of Maltese and 20% Austrian consumers never or almost never consider price/product comparisons (V8), while only 8% of cluster 5 consumers on average say the same (12% in EU-28).

By means of a cluster analysis, we described the five clusters of the 28 European countries according to country data and the average cluster data. The variation and importance of the factors were considered based on visual presentations of the data. Next, the PCA was applied to show more details, namely which factors explain the total variation in the data and which relevant components can be constructed to characterise the EU consumers.

3.3 Principal Component Analysis

The next step in the analysis was to apply Principal Component Analysis (PCA) (Jolliffe 1986; Georgescu 2015). PCA is a dimensionality reduction technique; by means of a linear transformation, the feature space is reduced to the principal component space. Using SPSS, we computed two tests indicating the usefulness of factor analysis. Table 2 contains the Kaiser-Meyer-Olkin Measure of Sampling Adequacy, which is 0.608, greater than 0.600, showing that a sufficient number of variables have been extracted for each factor. The small value of Bartlett's test of Sphericity (0.000) indicates that the factor analysis is useful.

Table 3 contains the rotation sums of squared loadings. After the varimax rotation, two principal components have been retained, explaining 79.366% of the total variance.

The loadings, i.e. coefficients for each variable, are shown in Table 4. Each principal component (PC) is a linear combination of its attributes and does not allow for their individual importance to be recognised.

We obtained equations for the two principal components:

$$PC1 = a * V1 + b * V2 + c * V4 + d * V3 + e * V6 + f * V11 + g * V5 + h * V10 \tag{1}$$

and

Table 2 KMO and Bartlett's test

Kaiser-Meyer-Olkin measure of sampling adequacy		0.608
Bartlett's test of sphericity	Approx. Chi-Square	599.974
	df	55
	Sig.	0.000

Source: own elaboration

Table 3 Explained share of the total variance

	Rotation sums of squared loadings		
Component	Total	% of Variance	Cumulative %
PC1	5.231	47.555	47.555
PC2	3.499	31.812	79.366

Source: own elaboration

Table 4 Principal component loadings for each variable (from the rotated component matrix)

	V1	V2	V4	V3	V6	V11	V5	V10	V8	V7	V9
Coeff	a	b	c	d	e	f	g	h	i	j	k
Coeffvalue	0.898	0.857	0.840	0.830	0.809	0.787	0.750	0.607	0.897	0.894	0.885

Source: own elaboration

$$PC2 = i * V8 + j * V7 + k * V9 \tag{2}$$

Equation (1) gives us $PC1 = 0.898 * V1 + 0.857 * V2 + 0.840 * V4 + 0.830 * V3 + 0.809 * V6 + 0.787 * V11 + 0.750 * V5 + 0.607 * V10$ and Eq. (2) $PC2 = 0.897 * V8 + 0.894 * V7 + 0.885 * V9$ with values shown in Table 5.

Both PCs are positively dominated by the high values of the attributes (Table 5). PC1 factors focus on consumers who always compare price, product and provider information and use reviews, while PC2 factors instead measure the share of consumers who never do so. Table 5 uses the coefficient values from Table 4 multiplied by the cluster averages presented in the data table available in the appendix. Similarly, the computations can be done for each country.

Figure 8 shows the PC1s relative to the EU average (PC1/136.5, cf. Table 5) and PC2s relative to the EU average (PC2/29.2, cf. Table 5). We may observe that the clusters can be categorised into three types of consumers, where the 'typical' consumer, i.e. close to the average, is seen between the dashed lines, the blue line depicting the minimum relative PC1 level and the orange line depicting the maximum relative PC2 level for a 'typical' EU consumer. In this way, the identified consumer types can labelled as follows: type (i) consumers of cluster 2, which contains only Ireland, show relatively low value of PC1 and relative high PC2 reflecting Irish consumers' low interest in always considering comparisons before purchase decisions; type (ii) consumers of clusters 1, 4 and 5 have relatively high values of PC1 and relatively low values of PC2; and type (iii) consumers of cluster 3 including e.g. Romania and Bulgaria show low values of both PC1 and PC2. Type (ii) consumers represent the "typical" EU consumer.

As a dimensionality reduction technique, PCA was used to characterise European consumers and revealed the two main characteristics represented by the two retained principal components, PC1 and PC2, and the importance of each individual factor in their determination.

4 Conclusions

In our opinion, the essential problem of marketing is placing the consumer at the centre, not the product. As long as consumers live in an economy of abundance, with multiple choices at hand, consumer behaviour is of utmost importance to marketing specialists. Peter Lynch drew attention to the fact that "those who understand the behaviour of the individual consumer make greater profits in the commodity markets than the professional wholesalers who rely on financial data" (Shuster and Dufek 2010, p. 59). In the digital economy, knowing the consumer is fundamental to adapting products and services to their needs and expectations. Companies that do not adapt their products or do not come up with new products for the new consumer profile will have little chance of survival in the Industry 4.0 era.

Table 5 Effects of variables on PC1 and PC2

	Components in PC1								Components in PC2			PC values	
	aV1	bV2	cV4	dV3	eV6	fV11	gV5	hV10	iV8	jV7	kV9	PC1	PC2
CL1	36.1	30.7	19.7	28.9	22.3	55.9	18.2	4.4	16.1	12.3	12.2	216.0	40.7
CL2	15.3	11.1	6.7	11.6	8.1	42.5	7.5	3.0	33.2	30.4	31.0	105.9	94.6
CL3	13.2	11.9	6.5	10.9	7.0	18.4	6.2	2.2	4.1	3.7	4.5	76.3	12.4
CL4	27.4	16.7	16.8	17.6	20.0	46.4	16.9	4.2	20.9	13.2	17.0	166.1	51.1
CL5	24.4	23.2	11.3	20.1	11.6	32.9	9.2	3.3	7.2	6.3	8.1	136.0	21.7
EU-28	23.4	20.0	12.0	18.4	13.3	35.1	11.0	3.3	10.8	8.5	9.9	136.5	29.2

Source: own elaboration

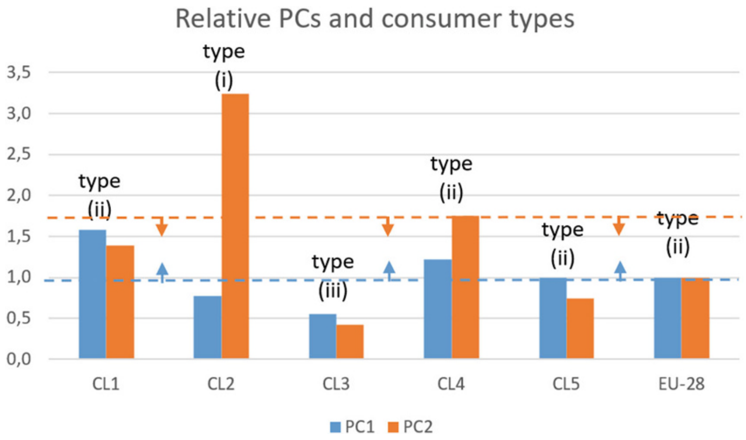

Fig. 8 PC1 and PC2 relative to European (EU-28) average. Source: own elaboration

We studied consumers' attitudes in the European Union (EU-28) countries by means of clustering and principal component analyses. Firstly, five clusters were constructed by means of the *k*-means clustering method, using 11 variables focusing on consumer attitudes to considering seller/provider/producer information on their websites and using price/product comparison sites and applications and/or reviews on blogs and social media, as well as consumers' reported behaviour in terms of proceeding directly (or not) to purchase transactions through advertisements on social media or applications. Principal component analysis was used to find out which variables contributed the most to the two retained principal components, PC1 and PC2, which explained 47 and 31.8% of the total variation, respectively. Variables V1–V6 and V11 were factors of PC1 and variables V7–V9 of PC2.

The most important factors for the first principal component, PC1, which can be called a *PC of an always-comparing consumer,* were found to be V1–V3, measuring how many consumers always considered the relevant information; PC2, which can be described as a *PC of a never-comparing consumer,* was dominated by the corresponding opposite measures of never considering such information, V7–V9. The consumers in the five clusters of countries were shown to have three types of combinations of PC1 and PC2: (i) *low PC1-high PC2:* rich consumers of cluster 2 including Ireland, but also to a lesser extent consumers from Luxembourg in cluster 1, showed relatively low interest in the same information and comparisons and had a high share of consumers who never consider it; (ii) *high PC1-low PC2*: the most typical EU consumers from clusters 1, 4 and 5 were found to have relatively high values of PC1 and relatively low values of PC2, meaning that they tended to have a relatively high proportion of consumers who always or almost always consider seller, price, and product information and comparisons, while having a low share of consumers who never consider such comparisons; (iii) *low PC1-low PC2*: consumers from cluster 3, specifically from Romania and Bulgaria, who showed the lowest levels of interest in always checking seller, pricing and product comparisons, while also having the smallest share of consumers who never consider such information before an online purchasing decision. The reasons behind consumer attitudes and purchasing behaviour with respect to types (i)–(iii) is an open question. It has been suggested in earlier literature that general digitalisation of countries may partially explain this as, specifically, countries of type (iii) generally have the lowest state of digitalisation, while many countries of type (ii) have a very high level of general digitalisation. The results also suggest that the countries with the highest GDP per capita have consumers of type (i).

The main limits of our research are the small number of variables involved in the research (11), and the research period which was reduced to 1 year (2016). A suggestion for future research could be to focus on the mechanics which create different types of consumer attitudes. The cluster level analysis can be broadened to a more detailed country level analysis, where the presented 'typical' consumer type (ii) would be further divided into finer consumer types. Furthermore, we would like to expand this research to include more of the relevant indicators and specific components of consumer behaviour and to extend the period of analysis in order to obtain a dynamic overview of the behaviour of European consumers in the digital environment.

Appendix: Data in Clusters

Cluster	V1	V2	V4	V3	V6	V11	V5	V10	V8	V7	V9
CL1	40.2	35.8	23.4	34.8	27.6	71.0	24.2	7.2	18.0	13.8	13.8
CL2	17.0	13.0	8.0	14.0	10.0	54.0	10.0	5.0	37.0	34.0	35.0
CL3	14.8	13.9	7.8	13.1	8.6	23.4	8.3	3.6	4.6	4.1	5.1
CL4	30.5	19.5	20.0	21.3	24.8	59.0	22.5	7.0	23.3	14.8	19.3
CL5	27.2	27.1	13.4	24.2	14.3	41.8	12.3	5.5	8.0	7.1	9.2
EU-28	26.1	23.3	14.3	22.1	16.4	44.6	14.6	5.5	12.0	9.5	11.2

Cluster 1	V1	V2	V4	V3	V6	V11	V5	V10	V8	V7	V9
Denmark	47	44	23	23	34	72	26	9	11	11	24
Germany	27	45	28	36	25	67	20	7	9	17	12
Luxembourg	38	26	22	39	22	73	21	6	32	18	10
Netherlands	44	39	20	37	26	68	23	6	12	10	10
UK	45	25	24	39	31	75	31	8	26	13	13

Cluster 2	V1	V2	V4	V3	V6	V11	V5	V10	V8	V7	V9
Ireland	17	13	8	14	10	54	10	5	37	34	35

Cluster 3	V1	V2	V4	V3	V6	V11	V5	V10	V8	V7	V9
Bulgaria	9	7	6	7	7	15	6	2	4	2	3
Greece	21	22	6	19	6	28	6	3	3	4	5
Croatia	21	25	6	23	7	28	6	5	3	6	4
Italy	13	11	9	12	9	27	9	1	7	5	7
Cyprus	15	16	11	15	11	27	11	3	3	3	3
Lithuania	18	13	10	14	14	30	12	4	8	5	6
Portugal	13	11	11	10	11	25	12	6	8	7	10
Romania	8	6	3	5	4	7	4	5	1	1	3

Cluster 4	V1	V2	V4	V3	V6	V11	V5	V10	V8	V7	V9
Belgium	23	20	18	20	21	52	20	5	15	14	13
France	34	13	19	25	27	61	21	5	31	12	14
Finland	32	18	21	23	25	59	22	8	27	14	20
Sweden	33	27	22	17	26	64	27	10	20	19	30

Cluster 5	V1	V2	V4	V3	V6	V11	V5	V10	V8	V7	V9
Czech Rep.	21	23	19	17	20	42	17	4	6	7	10
Estonia	29	33	15	27	17	48	14	8	10	13	12
Spain	24	31	11	30	8	41	7	3	5	9	6
Latvia	26	23	13	18	15	42	14	2	7	6	11
Hungary	24	25	11	18	13	33	10	6	4	4	8
Malta	30	21	14	31	11	42	12	7	17	6	8
Austria	34	23	13	30	14	54	15	3	20	10	14
Poland	24	26	13	22	15	39	12	3	3	5	5
Slovenia	27	27	9	22	12	32	9	8	4	4	7
Slovakia	33	39	16	27	18	45	13	11	4	7	11

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The Black Box of Consumer Behaviour and Brand Value Perception: Case Study of the Slovak Republic

Jana Majerova and Anna Krizanova

Abstract Brand value, as subjectively perceived by customers, represents a source of valuable competitive advantage for an enterprise. However, there are numerous theoretical approaches to building and managing brand value, which bring about many problems in practice when it comes to its application. These are related to the variety of approaches to measuring brand value as well as to strategies of the building and management thereof. In order to avoid undesirable impacts associated with the implementation of an inappropriate branding pattern, marketing managers should primarily consider the nature of the socio-cultural profile of a country where the branding concept is to be applied and the country of origin of the concept itself. However, the awareness of the need to respect the socio-cultural profile of the country is not sufficient. It creates a space for identifying causalities and correlations among attributes of socio-cultural profiles and subjectively perceived sources of brand value. In accordance with the abovementioned factors, the aim of this chapter is to identify specifics in the perception of sources of brand value in the scope of the traditional quadratic typology of purchasing behaviour, based on a case study of the Slovak Republic. To fulfil this aim, the data obtained from our own survey has been statistically evaluated by means of factor analysis supported by the implementation of the KMO Test, Bartlett's test of sphericity and the calculation of Cronbach's Alpha. Thus, the specifics in brand value perception across traditional quadratic typology of purchasing behaviour can be identified, and a platform for future research on the relevant disparities in the cross-cultural investigation of brand value sources can be created.

Keywords Consumer behaviour · Brand · Branding · Brand value · Brand value building · Brand value management · Loyalty

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1 Introduction

Building and managing brand value is an increasing challenge for managers in the current globalised market environment (Stonkute et al. 2018). One of the keys to success is the need for the critical revision of patterns of brand management applied to date with respect to the specific conditions of national environments and behavioural attributes of consumer purchasing behaviour (Fox 2018). With the acceleration of globalisation, the importance of building and managing brand value is also growing on both international and national markets. Berger et al. (2015) state that these markets are currently consistently characterised by: (1) the increasing level of competition in the distribution of consumer goods; (2) the decline in the number of competing firms and the increase in the number of brands; (3) the significant reduction of the life cycles of both products and businesses; (4) the information revolution caused by digital technologies; (5) the sharp increase in the number of modifications of products; (6) the strong fragmentation of markets; and (7) media fragmentation, which reduces the effectiveness of the implemented communication strategies. Based on the abovementioned factors, the shift towards the need to build a stable competitive advantage through value perception is noticeable. Thus, in the current economic reality, companies face a choice between two ideologically supported marketing directions. Marketing managers have to decide whether to implement so-called recurrent marketing, the nature of which is the belief of consumers that the supplied consumer value of products is still high enough, or to choose so-called transformation marketing, in which marketing efforts are focused on finding ways to maximise the value delivered to the consumer. Therefore, the transition from recurrent marketing (value-oriented towards the product) to transformation marketing (value-oriented towards the consumer) has become an imperative of the company's success. The proclaimed evolutionary shift should arise as a priority within brand management in order to achieve optimum market share and sustainable competitive advantages.

The purpose of this chapter is to present the results of research which focused on identifying specifics in the perception of sources of brand value in the scope of the traditional quadratic typology of purchasing behaviour, based on a case study of the Slovak Republic. The content of this chapter follows our own research which has been undertaken to date in the scope of specific sources of brand value across products and markets (Kliestikova and Kovacova 2017; Valaskova et al. 2018; Kliestikova et al. 2019). It is coherent, complex material which discusses the specifics that have to be taken into account when revising universal patterns of brand value building and management applied so far in Slovak market conditions. However, the material not only supports managerial decision-making in the specific conditions of the Slovak Republic, but is also a valuable outline of how national socio-cultural specifics should be taken into account in the theory and practice of building and managing brand value across products in other markets. The case study of the Slovak Republic has deeper reasoning consisting of its relevant socio-cultural specifics when analysing the sociocultural profiles of OECD countries identified by

Hofstede et al. (2019). By providing a cluster analysis of these profiles, the Slovak Republic has been grouped into an autonomous cluster as a unique country according to the criteria (Kliestikova and Janoskova 2017). This fact only supports our original presumption that research on consumer perception of building and managing brand value in specific national socio-cultural conditions is the way to achieve effective brand management as a basic condition of the long-term sustainable development of national economies.

2 Theoretical Background

Tanusondjaja et al. (2015) states that international brands are expanding their business into emerging markets, seeking new consumers for their products, which creates a platform for revising segmentation approaches as a prerequisite for the success of a given brand. Thus, the issue of national psychographic specifics as a significant factor of brand effectiveness has been opened. Similarly, Kicova and Nadanyiova (2017) consider behavioural specifics of consumers from a wider sociological perspective as an important phenomenon when analysing brands as a tool of strategic marketing in practice. Also, Basle et al. (2018) discuss the impact of market knowledge on the internationalisation of brands in a case study of small and medium-sized enterprises in Slovenia. By doing so, the paradigmatic change in the theory of building and managing brand value can be observed. So far, the aspect of the company has been highlighted, while nowadays, the consumer dimension of branding effectiveness is experiencing a renaissance. This is supported by the research of Asberg and Uggla (2019), who state that traditional research on brand architecture has primarily focused on bipolar, structural models describing brand constellations viewed from the brand owner's angle of incidence. Their paper further extends previous theorisation within strategic brand management by offering the Conceptual Integrated Multi-dimensional Architecture model as an incorporation of existing research on brand architecture, arranged according to hierarchical structure, degree of collaboration with third parties and alignment with consumer perceptions. Their model implies that strategic brand management should consider the possible effects of third-party collaboration, in conjunction with consumer beliefs, on the efficiency of the brand strategy pursued and the chosen go-to-market approach. They conclude that by including these two additional dimensions, marketing executives may find a more nuanced view of the potential challenges and obstacles that stand in the way of the successful execution of brand strategy. Based on this, further research focuses on the cross-cultural investigation of building and managing brand value (Gilal et al. 2020).

Thus, the need to revise patterns of branding applied to date in accordance with the specifics of national socio-cultural consumer profiles has been proven. However, recent research in this field has indicated that a general approach is not convenient, and also that brand specifics should be taken into account. These specifics are mainly connected with brand typology (sector of the national economy, product type, luxury character of the brand, phase of brand life cycle etc.). The first signs of such an approach are contained in the research of Brakus et al. (2009) who have stated that brand experience is conceptualised as sensations, feelings, cognitions, and behavioural responses evoked by brand-related stimuli that are part of a brand's design and identity, packaging, communications, and environments. The authors distinguish several experience dimensions and construct a brand experience scale that includes four dimensions: sensory, affective, intellectual, and behavioural. Since then, the trend of the dimensional approach has risen with the increasing importance of behavioural aspects of brand management that are also inherently connected with the existence of brand loyalty as a main pillar of the effectiveness of brand value building and management.

The phases of the brand life cycle reflect the existence or absence of loyal consumers. Only in the case of brands with a solid base of loyal consumers (logically assuming a longer duration of market performance and life cycle phases) does the research aspire to be a source of valuable information that could potentially serve as a useful information platform for managerial decision making. Kim and Song (2019), drawing upon construal level theory, state that there is a need to investigate the impact of brand experience on consumers' psychological distance from a brand and their construal levels. Their study demonstrates that strong brand experience leads consumers to reduce their psychological distance from the brand and to lower their construal level. By contrast, weak brand experience is associated with greater psychological distance and higher construal levels. Thus, brand loyalty is one of the most frequently studied constructs in the marketing literature, and is of great interest to both marketing scholars and practitioners, due to its close link to superior results and competitive advantage for firms. Despite having been part of empirical studies since the 1950s, the conceptualisation and operationalisation of this construct is still under discussion (Costa 2019). Also, Adhikari and Panda (2019), who have analysed the role of consumer-brand engagement in driving brand loyalty, highlight the importance of providing research into brand value building and management based on a sample of loyal consumers. A combined approach to the issues of brand loyalty research and national socio-cultural specifics has been applied by Gajanova et al. (2019), who have discussed the use of demographic and psychographic segmentation to create a brand loyalty marketing strategy.

Similarly to the case of brand loyalty, the first signs of a sectoral approach to research on brand value building and management also dated back to almost ten years ago. de Lanauze and Aurier (2012) focused their research on brand value sources in the packaged goods sector. However, this approach was quite inaccurate from today's perspective, as the brand type was selected without any reasoning in the scope of the specifics of brands from the packaged goods sector. Thus, we can mainly consider it a singular attempt to highlight the need to avoid the general research of brand value building and management. Recently, the situation has been different. Contemporary research focuses on reasonable product categories. Thus, Kennedy and Hartnett (2018) stated that marketers need to understand the differences between buyers in their category so that they can extend the reach of their brand. In a similar vein to the abovementioned studies, Sroka and Szanto (2018) discussed the specifics of controversial sectors; Abbes et al. (2020) analysed brand value sources and the specifics of their management based on the example of second-hand shopping for clothes; Kim et al. (2020) conducted research into smartphone branding patterns; and Phua et al. (2020) identified the specifics which are significant for branding in grocery retailing.

Research on brand value sources across product categories has identified that quality is the leading source of brand value among the entire portfolio of possible sources of brand value identified so far. The results of research undertaken by Kataria and Saini (2019) indicate that, for the oral care segment, customer satisfaction is significantly related to the perceived quality, brand trust, perceived value of cost and lifestyle congruence. Moreover, customer satisfaction partially mediates the relationship of perceived quality and perceived value of cost with brand loyalty, whereas it fully mediates the relationship of lifestyle congruence and brand trust with brand loyalty. Thus, even for low-involvement products, consumer purchases are based on the attributes of the brand rather than being merely habitual. However, the authors of this chapter suppose that national socio-cultural specifics are so significant that quality will not prove to be a main source of brand value based on the national case study.

Referring to the abovementioned issues, a gap in contemporary research on brand value building and management has been identified, consisting of the need for a complex study of brand value sources which are relevant for the specific types of brands which are characterised by consumer loyalty in the national socio-cultural environment.

3 Methods and Data

According to the literature review above, the main aim of the chapter is to identify specifics in brand value perception across the traditional quadratic typology of purchasing behaviour in the specific conditions of the Slovak Republic. Thus, it will be possible to create a platform for future research on the relevant brand value disparities in the scope of cross-cultural investigation. To achieve this aim, we have used primary data which was obtained from our own research undertaken during the first 6 months of 2019 on a socio-demographically representative sample of 2000 respondents (the sample without outliers and incompatible units consisted of 697 respondents). This primary data was collected by means of our own questionnaire survey in the form of computer-assisted web interviewing in accordance with the ICC/ESOMAR International code on Market, Opinion and Social Research and Data Analytics. The respondents were Slovak residents aged over 15 years (the reason behind such a limitation was their legal labour subjectivity, which forms a basic condition for autonomous purchase-related decision making). The questionnaire has been structured as follows:

	High involvement	Low involvement
Significant differences between brands	*Complex buying behaviour* (car brands - 1)	*Variety-seeking behaviour* (sport clothes brands - 2)
Few differences between brands	*Dissonance-reducing buying behaviour* (bank brands - 3)	*Habitual buying behaviour* (cola flavoured beverage brands - 4)

Fig. 1 Traditional typology of buying behaviour. Source: based on Liu et al. (2020) and own research

- The first part covered the general socio-demographic profile of respondents,
- The second part covered questions about the perception of brand value sources in general, and
- The third part covered questions about the perception of brand value sources in detail across the traditional typology of buying behaviour and representative product categories.

To provide our own research on brand value sources in the scope of buying behaviour typology, we used the traditional quadratic typology of buying behaviour. In this typology, we can identify product categories according to the level of involvement and differentiation, as shown in Fig. 1.

To analyse brand value sources across representative products for each of the types of buying behaviour, the traditional model as defined by Aaker (1996) has been used. This model consists of: (1) imageries; (2) attitudes; (3) attributes and (4) benefits. Individual components of brand value sources in the scope of these brand value sources were subsequently set in accordance with the literature review and with regard to the specifics of the psychographic profile of Slovak consumers defined by Hofstede which have been identified to date (Park et al. 2010; Kliestikova and Janoskova 2017). Brand value sources and their relevant components which have been tested in terms of their importance across product categories which are relevant to the types of buying behaviour were coded individually for each type of buying behaviour (respective product category) (Table 1).

Factor analysis has been chosen as the main statistical tool for the evaluation of consumer perception of brand value sources in terms of the absence versus the presence of brand loyalty. This analysis is one of a group of multidimensional statistical methods which are used to create so-called factors (previously unobservable variables) to reduce the amount of attributes originally set without losing the relevant information obtained inside the data set (Lizbetinova et al. 2019). Recently, this statistical tool has been used more frequently in the social sciences due to the boom in information technology development and the need to reduce subjectivity. The definition of the relevant statistical model, as well as the identification of rational assumptions, are the basis of this analysis. In the process of the identification of relevant factors, it is primarily important to identify and test the dependence

Table 1 Coding of brand value sources and their components which are relevant to further research evaluation

Brand value sources	Components of brand value sources	Code 0	1	2	3	4
Imageries	Happiness			3		4
	Expectations	11		2	8	5
	Satisfaction	12	12		6	1
	Certainty	13	11	1	7	2
	Modernity	14	13	4		
	Prestige	15	15	5	10	
	Memories		14			
	Positive associations				9	3
Attitudes	I aim to buy branded products	18	16	17	11	13
	I am interested in branded products on a regular basis	17	17	16	12	12
	Branded products attract my attention because I consider them better	16	19	18	14	11
	Branded products attract my attention because I consider them more prestigious	19	18	19	13	14
Attributes	Quality	9	6	10	16	19
	Creativity of advertising	8	9	9	19	16
	Popularity	6	10	6		15
	Availability				15	17
	Innovativeness				18	18
	Image making	10	7		17	
	Modernity	7	8	8		
	Attention catcher			7		
Benefits	Branded products make me happier	5	5	15	5	10
	Branded products increase my social status	2	1	12	1	8
	Branded products make it easier for me to make friends	1	3	11	3	6
	Branded products attract the attention of others	3	2	13	2	7
	Branded products suit my lifestyle	4	4	14	4	9

Source: Authors' own research, 2019, where coding is as follows: 0—general approach; 1—complex buying behaviour; 2—variety-seeking behaviour; 3—dissonance-reducing buying behaviour, and 4—habitual buying behaviour

between originally defined variables through the correlation matrix. The basic presumption for data reduction is the correlation of these variables verified by the creation of a correlation matrix, as well as the fulfilment of the assumption that the identified correlation exists because of a lesser number of undetected hidden variables (factors). Based on this, it is possible to diversify originally defined variables into partial groups. These groups contain unified factors that correlate more inside the group than in comparison with other groups.

We assume that x is a p-dimensional random vector of the considered variables with a vector of mean values μ, a covariance matrix $C(X) = \Sigma$ and a correlation matrix of simple correlation coefficients P (X) = P. One of the basic assumptions of factor analysis is the existence of R common background factors $F_1, F_2, \ldots, F_R$; trying to minimize their value, preferably less than p. The P-dimensional random vector consists of the j-observable random variables x_j, j = 1, 2, . . ., p; which can be expressed by equation (Eq. 1) as:

$$X_j = \mu_j + \gamma_{j1}F_1 + \gamma_{j2}F_2 + \cdots + \gamma_{jR}F_R + \varepsilon_j, \tag{1}$$

where $\varepsilon_{1,}\ \varepsilon_{2,}\ldots,\ \varepsilon_p$; is p stochastic error terms referred to as specific factors. If we write this in matrix, we get the equation (Eq. 2):

$$x = \mu + \Gamma f + \varepsilon, \tag{2}$$

where Γ is a matrix of factor; *f* is the R-member vector of common factors and ε is the p-member vector of specific factors. Factor loadings can be considered as regression coefficients p of observed variables on R non-observable factors, and when certain conditions of solution are met, they are also covariance between the original and the new variables. Factor loadings can be interpreted as the contribution of the r-factor of the j-specified variable when the same units of measurement are used. To determine the adequacy of the statistical sample, we use the KMO (Kaiser-Meyer-Olkin) Test (Eq. 3)

$$KMO = \frac{\sum_{j\neq j'}^{p} \sum_{j\neq j'}^{p} r^2\left(x_j, x_{j'}\right)}{\sum_{j\neq j'}^{p} \sum_{j\neq j'}^{p} r^2\left(x_j, x_{j'}\right) + \sum_{j\neq j'}^{p} \sum_{j\neq j'}^{p} r^2\left(x_j, x_{j'} \cdot other\ \ x\right)} \tag{3}$$

where r^2 $(x_j, x_{j'})$ are simple correlation coefficients and r^2 $(x_j, x_{j'} \cdot \text{other } x)$ are partial correlation coefficients under the condition of statistically constant remaining p-2 variables. $(x_1, x_2, \ldots, x_{j\text{-}1}, x_{j+1}, \ldots, x_{j'\text{-}1}, x_{j'+1}, x_p)$.

The required value of the KMO test should be higher than 0.6. By acquiring it, the adequacy of the statistical sample is proven (Tuffnell et al. 2019). The required value of Bartlett's test of sphericity should be lower than 0.05. By acquiring it, the dependence between variables is proven (Popescu Ljungholm 2018). The required value of Cronbach's Alpha should be higher than 0.8. By acquiring it, the intrinsic consistency of the factors is proven (Svabova et al. 2018). Detection of the optimal values of these tests forms the appropriate basis for the identification of the order of brand value sources. Thus, a set of advice formulated on the basis of factor identification and the comparison of obtained results can be submitted to the brand managers.

4 Results and Discussion

The order of the sources of brand value and their internal dimensions have been identified for each branded product category (representing types of buying behaviour) as well as for branded products in general. It has been found that this order is not identical and that the original research assumption of variability across product categories was confirmed.

4.1 Brand Value Sources: General Approach

The KMO (Kaiser–Meyer–Olkin) test has indicated the adequacy of the statistical sample used (>0.6). When testing the sources of brand value in general, a value of 0.920 was acquired. Bartlett's test of sphericity has proved the existence of dependence between variables by acquiring the resulting value of 0.00 (<0.05). The testimonial value of factor analysis in terms of research on sources of brand value in general has reached a value of 67.689% (Table 2).

In the case of sources of brand value in general, the existence of four relevant factors with significant components has been proved. These factors are: (1) *benefits* with five components where the value of Cronbach's Alpha was 0.854; (2) *attributes* with five components where the value of Cronbach's Alpha was 0.886; (3) *imageries* with five components where the value of Cronbach's Alpha value was 0.823 and (4) *attitudes* with four components where the value of Cronbach's Alpha was 0.813 (Table 3).

It has been also detected that in the case of some components, their incorporation into factors is variant, more specifically in the case of: (1) branded products attract the attention of others (benefits vs. attributes); (2) image making (benefits vs. attributes) and (3) prestige (benefits vs. imageries).

4.2 Brand Value Sources: Complex Buying Behaviour

The KMO (Kaiser–Meyer–Olkin) test has indicated the adequacy of the statistical sample used (>0.6). When testing the sources of brand value in terms of complex buying behaviour represented by car brands as a significant product category, a value of 0.936 was acquired. Bartlett's test of sphericity has proved the existence of dependence between variables by acquiring the resulting value of 0.00 (<0.05). The testimonial value of factor analysis in the case of research on sources of brand value in terms of complex buying behaviour has reached a value of 71.780% (Table 4).

In the case of brand value sources which are significant for complex buying behaviour, the existence of four relevant factors with significant components has

Table 2 Total variance explained—general approach

Code 0	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	8.261	43.481	43.481	8.261	43.481	43.481	3.909	20.575	20.575
2	2.110	11.103	54.584	2.110	11.103	54.584	3.246	17.083	37.658
3	1.317	6.932	61.516	1.317	6.932	61.516	2.952	15.534	53.192
4	1.173	6.173	67.689	1.173	6.173	67.689	2.754	14.496	67.689
5	0.895	4.713	72.402						
6	0.681	3.585	75.987						
7	0.548	2.885	78.872						
8	0.519	2.732	81.604						
9	0.474	2.492	84.096						
10	0.424	2.229	86.326						
11	0.409	2.154	88.480						
12	0.340	1.788	90.268						
13	0.332	1.746	92.014						
14	0.315	1.660	93.674						
15	0.285	1.502	95.175						
16	0.263	1.383	96.559						
17	0.249	1.309	97.868						
18	0.225	1.183	99.051						
19	0.180	0.949	100.000						

Source: Authors' own research in SPSS, 2019

Table 3 Rotated component matrix—general approach

Code 0	Brand value source			
	Benefits	Attributes	Imageries	Attitudes
1	0.832			
2	0.796			
3	0.695	0.456		
4	0.681			
5	0.668			
6		0.823		
7		0.719		
8		0.703		
9		0.622		
10	0.464	0.688		
11			0.767	
12			0.759	
13			0.734	
14			0.675	
15	0.481		0.492	
16				0.754
17				0.706
18				0.705
19				0.444

Source: Authors' own research in SPSS, 2019

been proven. These factors are: (1) *benefits* with five components where the value of Cronbach's Alpha was 0.814; (2) *attributes* with five components where the value of Cronbach's Alpha was 0.857; (3) *imageries* with five components where the value of Cronbach's Alpha value was 0.888 and (4) *attitudes* with four components where the value of Cronbach's Alpha was 0.807 (Table 5).

It has been also detected that, in the case of some components, their incorporation into factors is variant, more specifically in the case of: (1) branded products suit my lifestyle (benefits vs. attitudes); (2) popularity (attributes vs. imageries); (3) memories (benefits vs. imageries); (4) prestige (attributes vs. imageries) and (5) branded products attract my attention because I consider them better (attributes vs. imageries vs. attitudes).

4.3 *Brand Value Sources: Dissonance-Reducing Buying Behaviour*

The KMO (Kaiser–Meyer–Olkin) test has indicated the adequacy of the statistical sample used (>0.6). When testing the sources of brand value in the case of dissonance-reducing buying behaviour represented by sportswear brands as a significant product category, a value of 0.940 was acquired. Bartlett's test of sphericity

Table 4 Total variance explained—complex buying behaviour

Code 1	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	9.511	50.058	50.058	9.511	50.058	50.058	5.496	28.926	28.926
2	2.174	11.444	61.503	2.174	11.444	61.503	3.210	16.897	45.824
3	1.024	5.389	66.892	1.024	5.389	66.892	2.610	13.736	59.560
4	0.929	4.887	71.780	0.929	4.887	71.780	2.322	12.220	71.780
5	0.714	3.758	75.538						
6	0.619	3.256	78.794						
7	0.584	3.073	81.866						
8	0.489	2.573	84.439						
9	0.375	1.971	86.411						
10	0.361	1.899	88.310						
11	0.342	1.798	90.107						
12	0.300	1.578	91.685						
13	0.284	1.496	93.181						
14	0.271	1.426	94.608						
15	0.259	1.363	95.970						
16	0.232	1.219	97.189						
17	0.208	1.096	98.286						
18	0.168	0.884	99.169						
19	0.158	0.831	100.000						

Source: Authors' own research in SPSS, 2019

Table 5 Rotated component matrix—complex buying behaviour

Code 1	Brand value source			
	Benefits	Attributes	Imageries	Attitudes
1	0.869			
2	0.840			
3	0.760			
4	0.654			0.406
5	0.543			
6		0.788		
7		0.786		
8		0.727		
9		0.644		
10		0.641	0.492	
11			0.801	
12			0.786	
13			0.697	
14	0.424		0.593	
15		0.523	0.589	
16				0.833
17				0.793
18				0.575
19		0.457	0.474	0.500

Source: Authors' own research in SPSS, 2019

has proved the existence of dependence between variables by acquiring the resulting value of 0.00 (<0.05). The testimonial value of factor analysis in the case of research on sources of brand value in terms of dissonance-reducing buying behaviour has reached a value of 75.135% (Table 6).

In the case of brand value sources which are significant for dissonance-reducing buying behaviour, the existence of four relevant factors with significant components has been proven. These factors are: (1) *imageries* with five components where the value of Cronbach's Alpha was 0.889; (2) *attributes* with five components where the value of Cronbach's Alpha was 0.874; (3) *benefits* with five components where the value of Cronbach's Alpha value was 0.863 and (4) *attitudes* with four components where the value of Cronbach's Alpha was 0.890 (Table 7).

It has been also detected that, in the case of some components, their incorporation into factors is variant, more specifically in the case of: (1) prestige (imageries vs. benefits); (2) modernity (imageries vs. attributes); (3) creativity of advertising (attributes vs. benefits); (4) quality (imageries vs. attributes); (5) branded products attract the attention of others (attributes vs. benefits); (6) branded products make me happier (imageries vs. benefits); (7) branded products attract my attention because I consider them better (imageries vs. attitudes) and (8) branded products attract my attention because I consider them more prestigious (attributes vs. benefits vs. attitudes).

Table 6 Total variance explained—dissonance-reducing buying behaviour

	Initial eigenvalues			Extraction sums of squared loadings			Rotation sums of squared loadings		
Code 2	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	10.339	54.416	54.416	10.339	54.416	54.416	4.010	21.105	21.105
2	1.892	9.957	64.373	1.892	9.957	64.373	3.470	18.263	39.368
3	1.098	5.778	70.152	1.098	5.778	70.152	3.444	18.126	57.494
4	0.947	4.983	75.135	0.947	4.983	75.135	3.352	17.641	75.135
5	0.607	3.196	78.331						
6	0.517	2.722	81.053						
7	0.471	2.480	83.533						
8	0.389	2.046	85.578						
9	0.360	1.896	87.474						
10	0.334	1.757	89.232						
11	0.315	1.658	90.890						
12	0.296	1.560	92.450						
13	0.280	1.476	93.926						
14	0.256	1.348	95.274						
15	0.215	1.134	96.408						
16	0.195	1.027	97.435						
17	0.175	0.921	98.356						
18	0.170	0.897	99.253						
19	0.142	0.747	100.000						

Source: Authors' own research in SPSS, 2019

Table 7 Rotated component matrix—dissonance-reducing buying behaviour

Code 2	Brand value source			
	Imageries	Attributes	Benefits	Attitudes
1	0.818			
2	0.772			
3	0.743			
4	0.732			
5	0.603		0.514	
6		0.802		
7		0.728		
8	0.417	0.703		
9		0.691	0.43	
10	0.5	0.534		
11			0.851	
12			0.753	
13		0.482	0.677	
14			0.644	
15	0.427		0.486	
16				0.754
17				0.735
18	0.424			0.689
19		0.421	0.430	0.485

Source: Authors' own research in SPSS, 2019

4.4 Brand Value Sources: Variety-Seeking Buying Behaviour

The KMO (Kaiser–Meyer–Olkin) test has indicated the adequacy of the statistical sample used (>0.6). When testing the sources of brand value in the case of variety-seeking buying behaviour represented by bank brands as a significant product category, the value of 0.928 was acquired. Bartlett's test of sphericity has proved the existence of dependence between variables by acquiring a resulting value of 0.00 (<0.05). The testimonial value of factor analysis in the case of research on sources of brand value in terms of variety-seeking buying behaviour has reached a value of 74.073% (Table 8).

In the case of brand value sources which are significant for variety-seeking buying behaviour, the existence of four relevant factors with significant components has been proven. These factors are: (1) *benefits* with five components where the value of Cronbach's Alpha was 0.855; (2) *imageries* with five components where the value of Cronbach's Alpha was 0.895; (3) *attitudes* with four components where the value of Cronbach's Alpha value was 0.892 and (4) *attributes* with five components where the value of Cronbach's Alpha was 0.809 (Table 9).

It has been also detected that, in the case of some components, their incorporation into factors is variant, more specifically in the case of: (1) branded products make me happier (benefits vs. attributes) and (2) branded products attract my attention because I consider them more prestigious (benefits vs. attitudes).

Table 8 Total variance explained—variety-seeking buying behaviour

	Initial eigenvalues			Extraction sums of squared loadings			Rotation sums of squared loadings		
Code 3	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.187	48.354	48.354	9.187	48.354	48.354	5.254	27.655	27.655
2	2.530	13.318	61.672	2.530	13.318	61.672	3.353	17.647	45.302
3	1.198	6.303	67.976	1.198	6.303	67.976	2.849	14.997	60.298
4	1.158	6.097	74.073	1.158	6.097	74.073	2.617	13.774	74.073
5	0.677	3.563	77.636						
6	0.539	2.835	80.471						
7	0.429	2.259	82.730						
8	0.419	2.203	84.933						
9	0.384	2.020	86.953						
10	0.369	1.941	88.894						
11	0.321	1.689	90.583						
12	0.303	1.597	92.180						
13	0.288	1.515	93.695						
14	0.277	1.456	95.151						
15	0.230	1.209	96.360						
16	0.210	1.107	97.468						
17	0.180	0.945	98.413						
18	0.169	0.889	99.302						
19	0.133	0.698	100.000						

Source: Authors' own research in SPSS, 2019

Table 9 Rotated component matrix—variety-seeking buying behaviour

Code 3	Brand value source			
	Benefits	Imageries	Attitudes	Attributes
1	0.872			
2	0.871			
3	0.864			
4	0.713			
5	0.636			0.401
6		0.843		
7		0.824		
8		0.757		
9		0.699		
10		0.563		
11			0.817	
12			0.754	
13	0.457		0.705	
14			0.702	
15				0.840
16				0.812
17				0.797
18				0.735
19				0.625

Source: Authors' own research in SPSS, 2019

4.5 *Brand Value Sources: Habitual Buying Behaviour*

The KMO (Kaiser–Meyer–Olkin) test has indicated the adequacy of the statistical sample used (>0.6). When testing the brand value sources in the case of habitual buying behaviour represented by cola-flavoured beverage brands as a significant product category, a value of 0.931 has been acquired. Bartlett's test of sphericity has proved the existence of dependence between variables by acquiring a resulting value of 0.00 (<0.05). The testimonial value of factor analysis in the case of research on sources of brand value in terms of variety seeking buying behaviour has reached a value of 74.617% (Table 10).

In the case of brand value sources which are significant for habitual buying behaviour, the existence of four relevant factors with significant components has been proven. These factors are: (1) *imageries* with five components where the value of Cronbach's Alpha was 0.854; (2) *benefits* with five components where the value of Cronbach's Alpha was 0.837; (3) *attitudes* with four components where the value of Cronbach's Alpha value was 0.841 and (4) *attributes* with five components where the value of Cronbach's Alpha was 0.869 (Table 11).

It has been also detected that, in the case of some components, their incorporation into factors is variant, more specifically in the case of: (1) branded products make me happier (imageries vs. benefits); (2) branded products attract my attention because I

Table 10 Total variance explained—habitual buying behaviour

Code 4	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	9.500	50.002	50.002	9.500	50.002	50.002	4.177	21.982	21.982
2	2.080	10.949	60.951	2.080	10.949	60.951	3.941	20.741	42.723
3	1.456	7.665	68.616	1.456	7.665	68.616	3.125	16.446	59.170
4	1.140	6.001	74.617	1.140	6.001	74.617	2.935	15.448	74.617
5	0.685	3.606	78.223						
6	0.480	2.527	80.751						
7	0.425	2.235	82.986						
8	0.413	2.171	85.157						
9	0.392	2.061	87.218						
10	0.359	1.889	89.106						
11	0.309	1.625	90.732						
12	0.294	1.547	92.279						
13	0.280	1.473	93.752						
14	0.261	1.372	95.124						
15	0.247	1.301	96.426						
16	0.222	1.169	97.595						
17	0.171	0.899	98.494						
18	0.151	0.797	99.291						
19	0.135	0.709	100.000						

Source: Authors' own research in SPSS, 2019

Table 11 Rotated component matrix—habitual buying behaviour

Code 4	Brand value source			
	Imageries	Benefits	Attitudes	Attributes
1	0.800			
2	0.781			
3	0.776			
4	0.767			
5	0.751			
6		0.880		
7		0.860		
8		0.850		
9		0.604		
10	0.521	0.531		
11			0.812	
12			0.784	
13			0.762	
14		0.437	0.643	
15				0.784
16				0.752
17				0.747
18				0.586
19	0.417		0.411	0.559

Source: Authors' own research in SPSS, 2019

consider them more prestigious (benefits vs. attitudes) and (3) quality (imageries vs. attitudes vs. attributes).

4.6 *Complex Research Results*

Referring to the quadratic typology of buying behaviour and to the national socio-cultural profile of the Slovak Republic, the relevant sources of brand value have been identified as variant in the context of individual types of buying behaviour. For more details, see Fig. 2.

Figure 2 shows that consumer involvement in buying behaviour has a significant impact on the resulting prioritisation of brand value sources. Indeed, it has been shown that, in the case of high involvement (complex buying behaviour and dissonance reducing buying behaviour), benefits are the primary source of brand value; while in the case of low involvement (variety seeking buying behaviour and habitual buying behaviour), imageries are the primary source of brand value. It has also been found that the further ranking of brand value sources and their components as perceived by consumers varies. In general, the following order of brand value sources have been identified:

	High involvement	Low involvement
Significant differences between brands	benefits attributes imageries attitudes	imageries attributes benefits attitudes
Few differences between brands	benefits imageries attitudes attributes	imageries benefits attitudes attributes

Fig. 2 Brand value sources in the context of the traditional typology of buying behaviour. Source: Own processing based on own research

- Benefits,
- Attributes,
- Imageries,
- Attitudes.

Subsequently, the following order of sources of brand value for each product category in the context of the typology of buying behaviour has been identified:

- *Benefits, attributes, imageries, attitudes* for car brands representing complex buying behaviour,
- *Benefits, imageries, attitudes, attributes* for bank brands representing dissonance-reducing buying behaviour,
- *Imageries, attributes, benefits, attitudes* for sportswear brands representing variety-seeking buying behaviour and
- *Imageries, benefits, attitudes, attributes* for cola-flavoured beverage brands representing habitual buying behaviour.

It has been also revealed that there are no identical components within brand value sources. Although quality has been considered an essential component of the brand value source "attribute" in all types of buying behaviour, it has a different level of importance to the consumer across buying behaviour typology. For example, it can be stated that the primary source of brand value in the case of car brands (complex buying behaviour) is the fact that branded products increase consumers' social status (component of brand value source "benefits"), while quality is a component that belongs to the less important sources of brand value ("attributes"). However, this phenomenon can be explained by the fact that the object of the research was customer-brand relations characterised by loyalty. Thus, it can be assumed that, in the process of brand value building, quality is the most important component across all the brand value sources; while in the process of brand value management, its importance across product categories is declining, as consumers consider it an inherent component of a branded product. This finding creates a platform for further research focused on the separate identification of brand value sources in case of brand value building (absence of brand loyalty) and brand value management (presence of brand loyalty).

Thus, we can conclude that by undertaking our own research in the specific conditions of the Slovak Republic, we have identified:

- Regional disparities in behavioural aspects of brand value management,
- Specifics of behavioural aspects of brand value management in the Slovak Republic,
- The variability of brand value sources by:
  - Determining the order of components in the scope of brand value sources,
  - Identifying variability in the order of the brand value sources which are relevant to types of buying behaviour.

Although the research results contain findings that are of great importance from a managerial point of view, it is possible to identify several barriers to their universal applicability in the specific conditions of the Slovak Republic. The most important of these barriers is the territorial validity of the research. These findings are fully applicable only to the Slovak consumer, which means that in the case of Slovak brands intended for the non-Slovak target segment in Slovakia (hotel, tourism, etc.) and the entry of Slovak brands onto foreign markets respectively, they have to be critically revised within the socio-cultural profile of the selected target segment. While respecting this fact, however, the possibilities of using these findings in management practice are broad. First of all, they contain a valuable source of relevant information for brand managers, which can improve the current practice of brand management as well as provide a deeper understanding of past practice and facilitate more qualified identification of so-called "good practice". These findings help to comprehensively understand the internal and external factors that motivate consumers to interact with the brand and then to optimally implement an effective strategy of brand value building and management.

Trends in brand value building and management, which have been identified in the scope of the yearly thematic review in the Journal of Brand Management, further broaden the research possibilities. Thus, brand value sources should also be analysed in the scope of (1) brand corporate social responsibility; (2) brand innovativeness; (3) public sector branding; and (4) luxury brand management (Powell 2019). The limitations inherent in the general applicability of the research outcomes lie in the territorial applicability of the recommendations, which have been done on the basis of research outcomes pertaining only to Slovak consumer preferences. Thus, the possible implementations of the conclusions which result from our research are applicable only in the case of brands addressed to Slovak consumers (whether domestic or foreign).

5 Conclusions

The aim of this chapter was to identify specifics in the perception of brand value sources in the scope of the traditional quadratic typology of purchasing behaviour, based on the case study of the Slovak Republic. To fulfil this aim, the data obtained from our survey was statistically evaluated by means of factor analysis supported by the implementation of the KMO Test, Bartlett's test of sphericity and the calculation of Cronbach's Alpha.

The first part of the article analysed brand value sources in terms of the presence of brand loyalty in general as well as in terms of products representing the traditional typology of buying behaviour. This is followed by the methodological section of the paper where the main postulates of the paper, as well as factor analysis and the relevant statistical tests, are described. The next part synthetises the results formulated on the basis of discrepancies in brand value sources detected across products in the specific conditions of the Slovak Republic. The discussion is also a vital part of the paper, and it is included in the same subchapter as the research results. The last part contains the summary of the main results and barriers of research with implications for the future.

The following order of brand value sources for each product category has been identified in the context of buying behaviour typology: (1) *benefits, attributes, imageries, attitudes* for complex buying behaviour; (2) *benefits, imageries, attitudes, attributes* for dissonance-reducing buying behaviour; (3) *imageries, attributes, benefits, attitudes* for variety-seeking buying behaviour and (4) *imageries, benefits, attitudes, attributes* for habitual buying behaviour. Thus, the specifics in brand value perception across the traditional quadratic typology of purchasing behaviour were identified, and the platform for future research into the relevant disparities in cross-cultural investigation of brand value sources was created.

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Analysis of Consumer Behaviour in the Networked Environment: Case Study of the Slovak Republic

Lubica Gajanova and Margareta Nadanyiova

Abstract Since the second half of last century, there have been a number of significant changes in the consumer world, as the market has turned its focus onto the customer. The position of the customer–consumer has strengthened significantly, because for marketing-oriented companies, succeeding in the competitive environment of the market primarily means understanding their customers. They thus have more power, and in the context of the digital revolution, their purchasing behaviour is transformed. Therefore, the basic tasks of marketing research include the analysis of purchasing behaviour and consumer decision-making in the target market. In order for a company to satisfy its customers well, it must know enough about their requirements, opinions, attitudes and behaviour, i.e. everything that affects the willingness to purchase products.The aims of the paper are to conduct research on factors influencing the purchasing decision-making process in a networked environment, to get to know the online purchasing behaviour of Slovak customers, and subsequently to propose customer segmentation based on the information gathered. The paper examines the factors that affect consumer purchasing behaviour in terms of online shopping in detail using factor analysis. We have analysed 19 criteria (characteristics, components) linked to the four Ps of marketing in the context of the networked environment. Primary data obtained through a questionnaire survey was used for the analysis. The survey was focused on factors affecting online purchasing decisions linked to the relevant components which determine the tendency of consumer behaviour aspects in the networked environment. Using factor analysis, we have identified the most important factors of purchasing behaviour in terms of customer segmentation by generation in the Slovak Republic. In terms of the results achieved, which have defined promotion as the main component in general, and in the breakdown of the research sample by generation as well, we have focused on the segmentation of Slovak consumers according to the influence of marketing communication in the networked environment.

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1 Introduction

Global communication networks are changing our lifestyles and also affecting consumer and purchasing behaviour. The Internet has brought about a significant change in the interaction between consumers and their interaction with businesses (Vysekalová 2004). Nowadays, the digital revolution enables greater customisation of the product, service and promotional messages to the customer. This allows sellers to establish and maintain relationships with customers. Digital technology also allows sellers to collect and analyse a growing volume of consumer purchasing patterns and personality characteristics. There are many influences on human and consumer behaviour as well (Stuchlý et al. 2018). However, the penetration of these influences into a specific purchasing decision process is unique and highly individualised (Kliestikova et al. 2018). If we start to examine these influences in more detail, we find that the outcome of these influences in the form of a particular manifestation of behaviour often resembles that of another individual. This similarity is highly sought after and used by many companies. It enables a rational orientation of the company in a strong competitive environment (Bártová et al. 2007). In order to highlight these similarities in groups (segments), companies use "market segmentation" or otherwise "identification of market segments". In this study we have identified the most important factors of purchasing behaviour in terms of customer segmentation by generation in the Slovak Republic. Based on the specificity of the purchasing behaviour of customers across all markets, we examined only customers of the hotel industry in a networked environment. The hotel and tourism sector has certain specific characteristics resulting from the ways in which services are offered and used (Moravcikova et al. 2019). Most of the specifics of the tourism and hotel industry arise from the fact that the product of these industries is a service, which is intangible and is characterised by a certain level of complexity, temporal and local binding and other characteristics. The role of marketing and marketing research is very important in the hotel sector. One of the goals is to determine the target market, needs and requirements of the selected market segment and the way of meeting demand in the most favourable manner for the hotel. In order to achieve the goal of this research paper, methods of data analysis such as cross tabs, various contingency measures and factor analysis were used to capture relevant criteria.

2 Literature Review

The approach to market segmentation can be very different due to the variety of methods. Basically, the term market segmentation means the meaningful subdivision of a heterogeneous overall market into homogeneous submarkets with the help of segmentation criteria, with the aim of effectively working with the segments identified (Abedi 2019; Meffert et al. 2012; Freter 2008). A company's current and potential customers, who form the overall market, have individual wishes, needs and expectations. In the course of market segmentation, matching criteria are identified for different customers, which means that customer groups that are as homogeneous as possible and that are as heterogeneous as possible are differentiated. The identified target groups, i.e. those customer groups that have been determined on the defined market, can therefore be assessed for their attractiveness and finally addressed through specific marketing measures (Evans et al. 2019; Freter 2008; Berekoven et al. 2006). If companies combine knowledge of their customers with target group-oriented marketing, the chances of succeeding against the competition can be expanded, especially in times of stagnating markets (Kesting and Rennhak 2005). In contrast to mass marketing, the market segmentation strategy follows the focus concept, i.e. the targeted addressing of the needs of specific groups (Becker 2013; Kotler et al. 2007). The target group strategy comprises the STP approach—an acronym for segmenting, targeting and positioning. Various authors (Kim et al. 2019; Prusa and Sadilek 2019; Kotler et al. 2007) clarify this model based on three main steps:

- Market segmentation: includes the determination of segmentation variables and consequently the division of the overall market into customer groups as well as profile development for the individual segments.
- Targeting: includes the selection of at least one attractive segment.
- Positioning: aims to develop a positioning concept in the sense of a sustainable competitive position for the selected segment.

Similar to the three-stage STP approach, other scientists' approach to market segmentation is based on a two-stage concept, which is divided into an information activity and an action activity. The information activity represents market entry, which refers to the explanation of buyer behaviour as well as the extraction and processing of information. Market entry can be equated to the first step of the STP approach. The action activity, or market development as a second sub-aspect of market segmentation, includes the evaluation and selection of suitable segments and consequently the design of segment-specific marketing programmes. Thus, the second and third steps from the STP approach overlap with the market development activity of the two-stage concept (Freter 2008; Kesting and Rennhak 2008).

In principle, there are several requirements for segmentation criteria as a prerequisite for effective segmentation in both market segmentation approaches. If segmentation is to be meaningful, it is necessary to add a second condition of segment heterogeneity to the first condition of internal homogeneity. These two conditions are interdependent; having one without the other makes no sense. Similarity can only be used for marketing if it is linked to (some) different relation to the product, or to other marketing activities. In practice, the aim is to find such a combination of factors whose interaction causes the greatest difference in the behaviour of the monitored segments, while the members of one particular segment react as closely as possible. The first factor is the base comprised of segmentation variables, on the basis of which we create clusters; the second set of variables is then related to a specific product, service, or marketing strategy. In this case, we need it to create the greatest difference between segments (Koudelka 2005).

Kumar (2008) extends the basic characteristics of a marketable segment by two additional conditions that such a segment should meet. In addition to the condition of ‘differentiation’, or different reactions of different segments to the marketing mix, he also adds the condition that a segment must be characterised by ‘identity’ and ‘reasonable size’. The characteristic of identity means that there must be a possibility of simple, reasonable and logical identification of which customers belong to which particular segment. The condition of reasonable size ensures that the preparation and application of a tailor-made marketing programme for a particular segment is economically acceptable to the company.

Doyle and Stern (2006) and McDonald and Dunbar (2004) add that exposed segments are often characterised by instability and variability over time. Therefore, it cannot be assumed that segmentation is a one-time process, the results of which can be used indefinitely. The characteristics of the segments, their manifestations and size may change over time. For this reason, the emphasis is on selecting those segmentation variables that are as stable as possible over time. In addition, it should be borne in mind that this segmentation process should be repeated periodically to ensure that the segmentation results are accurate (Šlapalová-Čempelová 2012).

Koudelka (2005) defines a set of segment requirements as follows: segment homogeneity/heterogeneity, positive attitude (positive responses to marketing incentives), availability, measurability, stability, sufficient size, responsiveness (segments that are beyond the capabilities of the business should not be included), objectivity (an attempt to prevent personal sympathy or antipathy for a particular segment). Kotler and Armstrong (2011) require segments to be accessible, measurable, substantial, distinguishable and punishable. Doyle and Stern (2006) define market segment requirements in a very similar way. Howaldt and Mitchell (2007) also set basic data requirements for segments:

- Segmentation needs to embrace all the dimensions of consumer reality—emotional, functional, economic, etc.—in a way that can be ‘joined up’.
- It needs to be data-based.
- This data must have a firm centre of gravity: the ‘ultimate building blocks’ of markets are individuals, not products or brands or aggregated groups of individuals. Hard, irrefutable data is essential to win credibility among all factions, and for the many practical applications that are needed.
- The data must be modular so that it can be aggregated, sliced and diced at will, and ‘attacked’ from any angle for any purpose.

- The data also needs to be 'taggable' so that e.g. demographic, income, propensity to spend or media viewing data can be appended as another data field to each individual's statement bank answers. One of the benefits of the profiling approach is its ability to turn 'soft' emotional values into hard, taggable data via the scoring of answers to the statement bank.
- Because it is taggable, it should also be 'drill-downable' so that different users can interrogate the same data banks for different purposes; so that the finance director can ask 'What is the relative economic attractiveness of these different segments?' and get a useful answer, while the media buyer can ask 'What are each of these segments' distinctive media habits?' and get an equally useful answer.
- Even though the actual statistical analysis at the heart of the process may involve a good deal of rocket science, it must be 'visualisable' so that anybody can immediately and intuitively 'see' what we are talking about, without their head spinning from jargon, getting drowned in data or wrestling with arcane concepts which they do not understand.
- It provides a common language. When a finance director and a media buyer talk to each other, they can point to the same picture and be confident they are talking about the same thing. Only if the data is visualisable in this way can it act as a common language that brings the various silos together.

Jenkinson (2009) also introduces the so-called segmentation gold standard, by describing eight segment requirements. This list is almost identical to the requirements defined by Koudelka (2005), but he also adds the right timing requirement, as even well-exposed and analysed segments used at the wrong time may not deliver the expected benefit. It can be stated that the authors agree on the basic points and requirements for marketing segments, or the data that compose them. Of course, there is no absolute match, and each author adds other possible segment requests, or calls the same requirements by a different term.

There are many ways to sort and categorise individual segmentation criteria. Evidence may also be the literature in which a number of different variants can be encountered, always according to a particular author (Pelsmacker 2003; Jobber 2004; Kotler and Armstrong 2004; Doyle and Stern 2006; Drummond 2008). However, they do not differ significantly in the description of the individual segmentation criteria. For the purposes of this article we have focused on buying behavioural criteria. Unlike segmentation using demographic and psychographic criteria, behavioural segmentation starts with actual buying behaviour. A common subdivision of these criteria in the literature is based on the marketing areas of product, price, place and promotion (Freter 2008; Becker 2013; Kesting and Rennhak 2008; Meffert et al. 2012).

Previous surveys dealt with behavioural aspects and determined factors affecting consumer purchasing decisions in the online (networked) environment. Pilík (2012) examined on-line buying in the Czech Republic, focusing on factors influencing on-line buying behaviour. The price of the product was the most important criterion in an online decision process; respondents were also ranked highly in this context.

They also ranked word-of-mouth recommendations and reviews among the most important factors influencing purchasing decisions in the online environment. Thus, besides price, marketing communication tools are considered to be significant attributes. Based on a survey by Lab42, Micháleková (2012) confirmed the significance of communication as a dominant factor that influences purchasing decisions, because the respondents stated the positive and negative references with the product description as the most significant indicator for their decision. Agyapong (2017) states the opposite view by listing recommendations, advertising and word-of-mouth as unimportant factors when it comes to influencing online purchasers. However, the importance of price has been confirmed by several studies (Rajyalakshmi 2015; Baubonienė and Gulevičiūtė 2015; Agyapong 2017). According to a survey of Slovak online consumers (Dunárová 2015), price is not the most important criterion for product selection. Most respondents focus on reviews (58.58%). However, price remains important, occupying second place (55.12%). Thirdly, the characteristics and parameters of the products (49.23%) are also important in the purchase selection. Another survey, by Heureka Group, which operates price-comparison and shopping advisory websites across the entire CEE region, shows that up to 62% of online customers read reviews and decide to make purchases on that basis. In doing so, 27% of respondents almost always read reviews, and up to 35% of respondents check customer ratings at a retailer they have no experience with. Thus, reviews play an important role in purchasing decisions. The topic of factors influencing online shopping can be also found in papers by numerous other researchers (Bačík et al. 2014; Novotný and Duspiva 2014; Štefko et al. 2011; Wang and Chou 2014). However, neither survey has been carried out to identify differences between generations.

3 Methodology

The aims of the paper are to conduct research into factors influencing the purchasing decision-making process in a networked environment, to learn more about the online purchasing behaviour of Slovak customers, and subsequently to propose customer segmentation based on the information gathered. Based on the specificity of the purchasing behaviour of customers across all markets, we examined only customers of the hotel industry in a networked environment. Because of the lack of any survey of the factors affecting consumer online purchasing decisions by the Slovak population, broken down by generation, the decision was taken to use generational market segmentation as well (Michman et al. 2003). Understanding generational values and motivations has become essential because each generation is driven by unique ideas about the lifestyle to which it aspires (Smith and Clurman 1997). Each generation represents a different set of unique expectations, experiences, generational history, lifestyles, values, and demographics that influence their buying behaviour. Numerous studies identify and analyse differences in consumer behaviour according to the customer generations (McCrindle and Wolfinger 2010, Schewe and Meredith 2004;

Bourcier-Bequaert and Barnier 2010; Rentz and Reynolds 1991; Reeves and Oh 2008; Noble and Schewe 2003; Sima 2016; DeAlmeida et al. 2016; Chakraborty and Balakrishnan 2017; Diaz-Samiento et al. 2017).

The primary data for these analyses was gathered by means of a questionnaire survey conducted within the APVV project using the CAWI (Computer Assisted Web Interviewing) method by an external agency. The implementation of the questionnaire survey took place between January and March 2019 on a socio-demographic representative sample of 2000 respondents comprised of Slovaks who were over 15 years of age. The reason for such a limitation was the requirement to ensure the autonomy of purchasing decisions and the mirroring of the real factors affecting the consumer purchasing decisions of the Slovak population in the online environment. The structure of the surveyed sample was socio-demographically representative.

The questions in the survey were divided into several groups. In the first part, general information about respondents (age, gender, education, income ...) was obtained. The second part was devoted to obtaining information about the frequency of use of hotel services, reasons for attendance, preference of hotel category (type), hotel class etc. A third group of questions was set up to focus on the buying behavioural criteria (factors) influencing the purchasing decision-making process. We started from the fact that these criteria in the literature are based on the instrumental marketing areas of product, price, place and promotion (Freter 2008; Becker 2013; Kesting and Rennhak 2008; Meffert et al. 2012). Respondents answered these questions using Likert's scale, always looking at to what degree the factor influenced them in the online purchasing decision-making process.

Our research assumption was that Slovak shoppers would favour factors of marketing promotion over other marketing policies such as product, price and place in terms of the importance of these factors in influencing purchasing decisions in the online environment (Micháleková 2012; Dunárová 2015; Reiter 2015). It was also based on the fact that online marketing communications in the hotel industry play an increasingly important role in shaping customer attitudes and evaluating online communication activities (Spilker-Attig and Brettel 2010). The area of online marketing communications is becoming important for hotels due to a significant change in the characteristics of hotel industry clientele. The post-crisis period has given rise to the traveller who is aware of his value as well as the value of the services offered to him by hotels (Jakovic and Galetic 2014). While previously hoteliers had been more focused on the physical product itself, they are now more focused on guaranteeing the stability and clear image of their brand, transparent prices, and attracting clients, particularly with regard to re-interest through various forms of online marketing communications that singularise hotels from the rest of the competition (Järvinen et al. 2012). We asked respondents for the most appropriate communication format, degree of urgency of information and degree of engagement, content of communication message as well as types of communication channels.

In the case of the content of the communication report, Maráková (2016) distinguishes the following strategic aspects of its delivery to customers: rationally (the content of the report proves that the hotel product will bring benefits to customers), emotionally (the content of the report raises positive or negative emotions motivating the purchase of a hotel product) and morally (the content of the report focuses on the recipients' ability to understand what is right).When selecting and creating a communication message, it is necessary to consider not only its content, but also its structure, style and format (Maráková 2016). The best communication messages include those that encourage the identified group to draw its own conclusions about it (Maráková 2016; Ližbetinová et al. 2019). The hotel can apply a formal or informal, simple, complex or professional style. The hotel determines the format of the communication message depending on the type of communication method (Kotler et al. 2007). According to Maráková (2016), online communication channels through which the hotel can communicate its message are divided into primary and secondary ones. Primary online communication channels are made up of websites, including the hotel website, which constitute the primary source of information about the hotel's products and services respectively. Secondary online communication channels consist of social networks, online advertising, online reservation systems, geolocation services etc. When choosing an online communication channel, the hotel should take into account the following decisive factors: which online communication channels the target audience pay increased attention to, and which online communication channels will highlight the hotel itself. Gúčik (2011) differentiates online communication channels into two groups. The first group consists of interactive online communication channels that provide information which is created and also verified by the hotel (online videos, or the hotel website). They are of primary character. These online communication channels are subject to the highest level of control, but with the possibility of a higher risk of distrust among customers. The group of interactive online communication channels is also made up of secondary ones, i.e. channels providing information which is created and verified by the company with the possibility of open discussion of the company with customers (social networks, interactive websites). The second group consists of personal online communication channels, which may also be primary or secondary in nature, based on the provision of information generated and verified by other people. Primary personal communication channels consist mainly of users' own experience or information provided directly by hotel staff. Secondary personal communication channels include communication activities related to e-WOM marketing, e-mailing and blogs.

In particular, this paper mainly examines the factors that affect consumer purchasing behaviour in terms of online shopping using factor analysis, the main objective of which is to assess the structure of the relationships between the variables under consideration. Consequently, it is important to determine whether there is a possibility of grouping variables, with correlations significant within these groups and no correlations between groups. New variables, called factors, are created from existing variables by means of factor analysis. Factors make it possible to understand data in a different sense (Stankovičová and Vojtková 2007). In recent decades, the use of this method has grown in the sphere of social sciences, mainly through the development of information technology and the reduction of subjective

Table 1 Four Ps quadratic model linked to the suitable criteria

Four Ps	Determined criteria	Factor analysis coding
Product	Product features	Component1
	Product brand	Component2
	Product description (photos, videos)	Component3
	Product review	Component4
	Product differentiation	Component5
Price	Product price	Component6
	Discounts	Component7
	Special offers (allowances)	Component8
	Payment methods	Component9
	Price bundling	Component10
Place	Time-limited offer	Component11
	Position in SEO	Component12
	Mobile optimisation	Component13
	Reservation system	Component14
Promotion	Communication channel	Component15
	Communication content	Component16
	Communication engagement	Component17
	Communication urgency	Component18
	Recommendation	Component19

Source: own elaboration

interventions. The starting point for this analysis is the definition of the statistical model and the determination of rational assumptions. To determine the factors, it is first necessary to examine the dependencies between the original variables using the covariance or correlation matrix. The condition for performing the data reduction is the correlation of the original variables resulting from the matrix; also, the assumption that correlation arises due to the existence of a smaller number of undetected hidden variables, the so-called factors. Consequently, on the basis of mutual relationships, it is possible to diversify the original variables into subgroups where variables within one group correlate more than with the variables of the other groups (Kliestikova et al. 2019). Nineteen criteria (characteristics, components) linked to the four Ps of marketing which are suitable for the networked environment were included in factor analysis. The components were determined taking into account the specific characteristics of the hotel industry. They were then organised into the traditional four Ps quadratic model, which defines the concept of a marketing mix based on product, price, place and promotion (Table 1).

4 Results

The assessment of the suitability of the data can be started by analysing the correlation matrix of the input variables in general, for all data. Methods of factor analysis require mutually correlated input variables. The existence of common causes can only be assumed in such a case. To evaluate the interdependence of input variables, the KMO (Kaiser-Meyer-Olkin test) criterion can be used, which is based on a comparison of simple and partial correlation coefficients (Table 2).

The KMO test has generally shown that the condition of the sample adequacy is met, because the result was 0.921; a value above 0.9 is considered excellent. Also, Bartlett's test identifies the dependency between variables. It is used to test the hypothesis that the correlation matrix is unitary and thus its value should be less than 0.05. The percentage of total explained variability was 65.495% (Table 3), which is the predicative value of the factor analyses.

We can also conclude that there are four significant factors that indicate a given percentage of explained variability, based on the rule that the value of eigenvalues >1. The number of significant factors is also confirmed by the factor analysis as shown in Fig. 1. It can be seen that there are at least four dominant factors whose intrinsic value is greater than 1. This also corresponds to the initially defined assumptions; therefore, the graphical and numerical results confirm the four factors (product, price, place, promotion) which we had previously determined.

For the individual components of the factors of purchasing decision-making process, we have verified their grouping within individual factors of the purchasing decision-making process on the basis of factor analysis. This was done by calculating a rotated matrix of factor saturations that express the dependence between the component and the factor. High values of factor saturation indicate that the factor significantly affects the indicator. Based on Table 4, we can see that the individual components are grouped into appropriate factors, as they were initially assigned within the implemented questionnaire.

On the basis of the rotated factor saturation matrix, it is also possible to create the order of the factors which influence the buying decision-making process in general. This order is as follows: (1) Promotion, (2) Product, (3) Price, (4) Place. This ranking was based on the results in general, that is, by examining the entire sample size. This was necessary mainly because of the evaluation of the interdependence of input variables and sample adequacy as well. The data of the entire sample is suitable for use in factor analysis. Subsequently, we performed factor analyses for all the generations under investigation in a similar way. The results of these factor analyses

Table 2 KMO and Bartlett's test

Kaiser-Meyer-Olkin measure of sampling adequacy		0.921
Bartlett's test of sphericity	Approx. Chi-Square	19,585.337
	Df	171
	Sig.	0.000

Source: own elaboration

Table 3 Total variance explained

Comp.	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	7.456	39.241	39.241	7.456	39.241	39.241	3.330	17.525	17.525
2	2.018	10.619	49.860	2.018	10.619	49.860	3.263	17.174	34.700
3	1.767	9.297	59.158	1.767	9.297	59.158	3.095	16.289	50.989
4	1.204	6.337	65.495	1.204	6.337	65.495	2.756	14.506	65.495
5	0.823	4.332	69.827						
6	0.716	3.770	73.597						
7	0.609	3.205	76.802						
8	0.509	2.680	79.483						
9	0.484	2.546	82.029						
10	0.426	2.241	84.270						
11	0.406	2.139	86.409						
12	0.379	1.997	88.406						
13	0.358	1.886	90.292						
14	0.348	1.833	92.125						
15	0.341	1.796	93.921						
16	0.321	1.690	95.611						
17	0.297	1.564	97.175						
18	0.285	1.500	98.674						
19	0.252	1.326	100.00						

Source: own elaboration

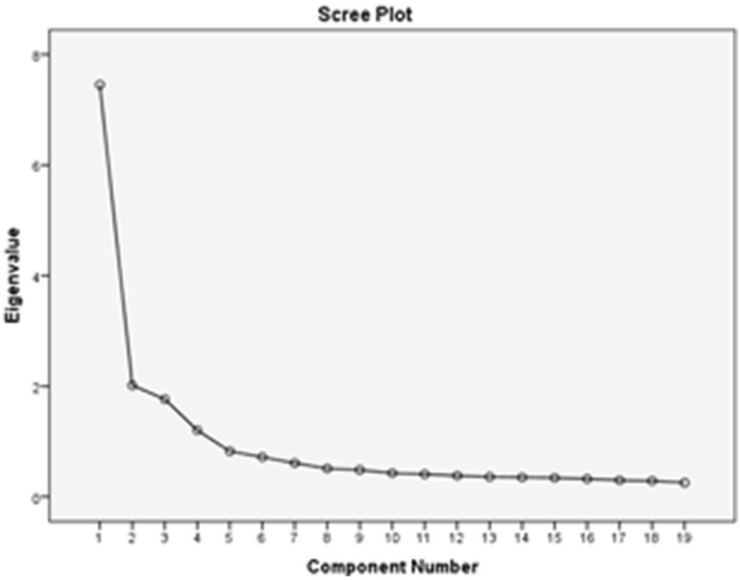

Fig. 1 Scree plot (eigenvalues). Source: own elaboration

Table 4 Rotated component matrix

	1	2	3	4
Component 1		0.626		
Component 2		0.758		
Component 3		0.769		
Component 4		0.730		
Component 5		0.730		
Component 6			0.402	
Component 7			0.779	
Component 8			0.816	
Component 9			0.698	
Component 10			0.558	
Component 11				0.823
Component 12				0.802
Component 13				0.746
Component 14				0.671
Component 15	0.763			
Component 16	0.541			
Component 17	0.707			
Component 18	0.800			
Component 19	0.793			

Source: own elaboration

confirm our assumption that Slovak shoppers will favour factors of marketing promotion over other marketing policies such as product, price and place in terms of the importance of these factors in influencing purchase decisions in the online environment. This can be argued on the basis that the data of individual generations is suitable for the use of factor analysis and the order of the factors influencing the buying decision-making process is the same for all generations. For this reason, we have designed the customer segmentation only on the basis of the promotion factor, as the analyses have shown its significance across all generations. By means of scientific research methods such as excerpting, description, comparative analysis, deduction and induction, determination of absolute and relative numbers, level of mean values, and confirmation of the existence of dependency between variables, we extracted the data obtained from marketing research in order to obtain the required information to fulfil our goal.

5 Discussion

From the above-mentioned analysis of customers (hotel guests) carried out from marketing research focused on them, the content of the communication message according to Maráková (2016), types of online communication channels according to Gúčik (2011), the most appropriate communication format and secondary research into the characteristics of generation cohorts (McCrindle and Wolfinger 2010; Schewe and Meredith 2004; Bourcier-Bequaert and Barnier 2010; Rentz and Reynolds 1991; Reeves and Oh 2008; Noble and Schewe 2003; Sima 2016; DeAlmeida et al. 2016; Chakraborty and Balakrishnan 2017; Diaz-Samiento et al. 2017), we categorised customers (hotel guests) into five groups (Table 5).

The 'Online gourmet' segment is made up of customers from Generation Y and especially Generation Z, who are highly technically and communication-proficient and use modern technologies on a daily basis (Sladek and Grabinger 2019; Ng and McGinnis 2015). This group of customers is characterised by an exceptionally high degree of information urgency, as well as a degree of engagement in communicating with the hotel in an online environment through new communication tools. This type of customer actively seeks information about hotel services. As for the issue at hand, online gourmets have an affective but also rational relationship to it, so the hotel should use a combination of the emotional and rational approaches to informing them. Since they are customers with strong opinions and a high level of interest in information about hotel services, we recommend the use of two-way communication, which allows for dialogue between the hotel and its customers. For this reason, we also recommend the use of interactive secondary online communication channels with the possibility of open discussion. Media and information are an integral part of their lives and therefore they are always online, spending most of the day on social networks, preferably on Facebook and Instagram, where they reflect the activities of hotels, the quality of their services, the way of communication or the brand of the hotel itself (Cowan 2014; Fromm and Read 2018; Pate and Adams 2013) through

Table 5 Model of customer segmentation proposal

	Generation	Communication channel	Communication content	Communication engagement	Communication urgency
Segment 1 *Online gourmet*	Generation Z Generation Y	Interactive secondary	Emotional and rational	Required bi-directional communication	Extremely high
Segment 2 *Supporters of info age*	Generation Y	Interactive primary and secondary	Emotional and rational	Required bi-directional communication	Very high
Segment 3 *Conscious online users*	Generation X	Interactive and personal	Rational	Optional bi-directional communication	Medium to high
Segment 4 *Online incredulous*	Baby Boomers	Personal primary and secondary	Rational, emotional and moral	Unidirectional communication	Low
Segment 5 *Seniors in the online world*	Silent generation	Personal primary	Emotional, moral, rational	Almost none	Almost none

Source: own elaboration

comments, hashtags, likes and shares. They also consider online advertising on these social networks more attractive. Since the segment is not concerned about the misuse of its personal data, it is not hampered by behaviourally targeted online banner advertising, even clicking on it if it is in line with its interests. Various websites offering different reviews or geolocation services or online reservation systems can also be an important source of information. Thanks to their skills and education, the online gourmet segment is highly motivated to make progress in both their professional and private lives. Their enthusiasm for life expands with their outlook on travel, which can bring them some recognition (Seemiller and Grace 2019; Twenge et al. 2010). Such consumers search for four- and five-star luxury hotels, convention, wellness, mountain and boutique hotels, where they enjoy their holidays and share all experiences with others through social media. From the point of view of travelling, they are mainly interested in working and educational activities, entertainment, relaxing, getting to know new places, adventure and tourism (Sima 2016). They are an interesting segment for the hotel as they are people up to the age of 30 with solid future prospects, single, educated, employed and interested in climbing the social ladder.

The second group of customers (hotel guests), which we have called ‘Supporters of info age’, is made up of Generation Y customers who are also technically and communicatively proficient, but have not completely succumbed to the online environment (Mangold and Smith 2012). Generation Y associates the best things in life with certain purchased experiences, such as exotic travels, concerts, and so on. Part of these experiences is the social dimension. People avoid a feeling of loneliness, feel connected to others, or make new friends (Ng and McGinnis 2015; Fromm and Garton 2013; Sima 2016). As with customers in the first group, these customers are characterised by a high degree of information urgency and a degree of engagement in communicating with the hotel in an online environment through new communication tools. This segment of customers also actively searches for information about hotel services through selected new forms of online marketing communication, with the likelihood of a positive response to the emotional and rational approach of the hotel. Also, in this segment, we recommend the use of two-way communication with the possibility of expressing the customer’s specific opinion on the services provided by the hotel. Therefore, we also recommend the use of interactive secondary online communication channels with the possibility of open discussion, i.e. social networks (Facebook, Instagram, YouTube), PPC advertising, behaviourally targeted online banner advertising, geolocation services, websites including online reservation systems, email, content marketing and blogs. Although the analysed segment of customers capitalises on their skills through computing and the Internet is their source of information, they do not spend most of the day on the Internet. For them, social media is a way of communicating with their friends, family and acquaintances, including communicating with hotels and brands. This segment is unique in nature, as it differentiates itself from others through its creativity, ideas, rejection of authority, travel and shopping. Despite this, customers in this segment are not impulsive, as they get to know people, places and things to get exactly what they are looking for. From the point of view of travel, they prefer tourism and adventure activities, work and education activities, entertainment, relaxing, festivals or accommodation activities (Klapilová Krbová 2016; Pinzaru et al. 2013; Pate and Adams 2013; Mangold and Smith 2012). Therefore, they like to stay in cheaper classes of hotels (three-star), but do not despise even luxury hotels (four- and five-star). Within the hotel category they are interested in holiday, mountain, wellness and convention hotels. From the point of view of using new forms of online marketing communication, they are also a very interesting segment for the hotel, as they are people aged 25–39 with solid prospects for the future, single, but also family-oriented, educated, employed and interested in climbing the social ladder.

The third segment of customers consists of the so-called 'Conscious online users' of Generation X. Representatives of this generation have the huge advantage of being some of the first to come across computers and current technology, so it is easy for people in this age category to adapt to the new technology industry (Dabija et al. 2018). Generation X has many ambitions and can adapt quickly. The typical characteristics of the representatives of this generation include independence and self-sufficiency (Hensler 2013). The degree of urgency for information about hotel products and services is moderate compared to previous segments. While the segment's involvement in the hotel communication process through new forms of online marketing communications is bidirectional, it is on a voluntary basis, implying that customers pay more attention to convenience (DeAlmeida et al. 2016). The lack of initiative taken in seeking information about hotel products and services, coupled with low customer effort and convenience, means that members of this segment take only essential information based on facts and figures into account in their hotel selection decisions. For this reason, we recommend that hotels use a rational approach when creating the content of a communication message within this segment. Conscious online users prefer to receive information through both online interactive and personal channels; thus, we recommend hotel websites, blogs, and copywriting (content marketing), as they tend to believe the veracity of customer feedback about hotel services, discussions and reviews. Social networks need to be used to a lesser extent, since the communication of these customers is clumsy and consists only of communication with family, friends and acquaintances (Dabija et al. 2018). These customers also prefer to obtain information from hotel staff or their own experience. The conscious online user segment is stabilised in life with a more or less fixed status. Shopping and travel are an important part of their lifestyle. They like traveling for culture, exploring new places, hiking, entertainment, relaxing, educational and working activities (Sima 2016; McCrindle and Wolfinger 2010; Twenge et al. 2010). Accommodation is simpler, meaning three- and four-star hotels and categories such as mountain recreational, wellness, spa and convention hotels.

The penultimate customer segment 'Online incredulous customers' consists of customers of the Baby Boomer generation. Baby Boomers pay for their children's education and clothing, give them pocket money, and buy them apartments, caravans, and new cars. After the birth of grandchildren, they save money for more gifts and dedicate the next stage of their lives to taking care of their grandchildren. Many, however, have full lives, pursue their hobbies, travel, and continue to educate themselves (Patterson and Pegg 2009; Pavlic et al. 2018). They are less proficient in technical, communication technologies and Internet use, but still have an interest in—and the and desire to—continue their education, at least to the extent that they are able to use these technologies very easily. They are rather mistrustful of new forms of online marketing communications, taking into account the opinions of their closest friends and acquaintances (Tiago et al. 2016; Chakraborty and Balakrishnan 2017). The interest of this segment in information gained through new online forms of marketing communication used by hotels is superficial, constituting a low degree of urgency for this information. Therefore, the desired level of engagement is only one-way communication for even greater convenience than in the previous segment. The need for communication in its new online forms is limited. Therefore, we recommend that hotels focus primarily on personal communication channels primarily consisting of providing information directly at the place of delivery of the hotel's products and services respectively. The communication should be sufficiently imaginative to be able to reach the customer segment. In addition, we also recommend the use of secondary personal communication channels providing information mainly via email or blogs as part of content marketing. This implies that, when providing information, the hotel should apply a combination of rational, emotional and moral styles when creating the content of the communication message. This segment likes to travel for culture, relaxation, exploring new places, undemanding tourism and natural beauty (Diaz-Samiento et al. 2017; Sima 2016; Noble and Schewe 2003). They prefer three-star hotels to five-star ones, mainly spa, recreational and wellness hotels.

The last group of customers, which we have labelled 'Seniors in the online world', is made up of representatives of the silent generation. These people focused on their careers, which they prioritised above active lifestyles. They grew up at a time when it was not safe to express their views and attitudes (Joesalu 2016). In terms of the use of communication technologies in the online environment, they use them mainly to stay in touch with their family and loved ones (Randall et al. 2015). It is very difficult to accept new things, especially new forms of communication in the online environment (Henger and Henger 2012). Therefore, the degree of urgency of information and the degree of involvement, especially in the field of new forms of online marketing communications, are almost nil. The only way the hotel should communicate with this customer segment is through primary personal communication channels presenting numbers, facts and a moral-emotional attitude. An adequate means of communication could be to present information directly at the point of sale of a hotel product or service and to keep communication by email or blogging to a minimum. Seniors in the online world comprise a segment that is more or less retired and has more free time. Such people like to get to know new places and things, they like to relax and participate in culture (Henger and Henger 2012; Sima 2016). They prefer three- and four-star spa and holiday hotels.

6 Conclusions

Most customer markets are heterogeneous, meaning that customers have different preferences, needs, wishes, habits, options, income, etc. In this case, there are different needs on their part. The more different customers are, the more difficult it is to create a marketing mix of a product that suits everyone. As competition grows, businesses want to see all the detail of their customers' wishes so that they can offer an in-demand product on the market, even in a networked environment. To this end, this research serves to classify customers with similar characteristics and wishes into individual groups. Customer segmentation is used in any sector of the economy, including the hospitality industry. It has a number of specific features that affect the segmentation of individual market segments. In general, by knowing the interests of hotel guests during the phase prior to purchase, hotels can prioritise some initiatives of the marketing mix that should be improved. The aims of the paper are to conduct research on factors influencing the purchasing decision-making process in a networked environment, to get to know the online purchasing behaviour of Slovak customers (hotel guests), and subsequently to propose customer segmentation based on the information gathered. We have analysed criteria linked to the four Ps of marketing in order to find out the factors that are most important for Slovak hotel guests when choosing a product in the networked environment. The results of the factor analyses confirm our assumption that Slovak shoppers will favour factors of marketing promotion over other marketing policies such as product, price and place in terms of influencing purchasing decisions in the online environment. For this reason, we have focused only on the aspects of marketing communication in the segmentation proposal for the selected industry. By means of scientific research methods such as excerpting, description, comparative analysis, deduction and induction, determination of absolute and relative number, level of mean values, as well as the confirmation of the existence of dependency between variables, we extracted the data obtained from marketing research into the proposal for the categorisation of customers (hotel guests) into five groups: Online gourmet, Supporters of info age, Conscious online users, Online incredulous, and Seniors in the online world. The determination of customer groups helps the hotel better plan suitable online communication, i.e. the hotel needs to create heterogeneous communication messages for heterogeneous groups and use adequate online communication channels or methods for each identified group.

By examining the internal relationships of the research data, we have assigned the most appropriate (most common) type of communication message content, types of online communication channels, and formats such as degree of communication engagement and urgency to each segment. The groups of hotel guests correlate to the existing generation cohort segmentation except in one case. The first group (Online gourmet) is made up of customers of Generation Y and Generation Z as well. As far as communication channel preferences are concerned, the segments differ significantly from one another. Customers of the Online gourmet segment prefer interactive secondary channels such as social networks. The Supporters of info age segment is influenced by interactive primary and secondary channels. In addition to social networks, they also consider hotel websites important. Several communication channels are important for the Conscious online users segment. In addition to interactive, primary or secondary channels, this segment considers personal communication channels to be important, both primary (own experience or receiving information directly from hotel staff) and secondary (communication activities related to e-WOM marketing, mailing and blogs). The Online incredulous segment focuses only on personal communication channels, both primary and secondary. Finally, the Seniors in the online world segment is limited to personal primary communication channels only. All segments prefer the rational nature of communication messages. The "Conscious online users" segment is limited to this form of communication content. In addition to rationality, other segments expect emotions and moral aspects of communication messages. However, their importance varies across segments. Based on communication channel preferences, it is possible to determine the required level of communication engagement for individual segments. The Online gourmet and Supporters of info age segments require bi-directional communication. This form of engagement is optional for the Conscious online users segment. Online incredulous segment is characterised by unidirectional communication. The Seniors in the online world segment requires almost no communication engagement whatsoever. The degree of urgency to obtain information in hotel customers is proportional to age: the younger the segment, the higher the urgency in communication.

Due to the impossibility of determination of segmentation and its subsequent application across the entire market, it is important to stress that the segmentation proposal is suitable only for the hotel industry. Time and geographical constraints can be considered as other limits of this paper. This restriction was especially reflected in the selection of respondents, when only Slovak hotel customers were selected. This limitation could be removed if the research is considered to be relevant to the solution and the results achieved are subject to subsequent verification in an international environment. If these barriers are removed, more accurate results could be achieved. Another limit is that the segments change over time. As consumers evolve and change as a result of time and milestones in their lives, segments also change (in terms of their characteristics and size). It is therefore necessary to continuously check whether the segments maintain their profile and whether the marketing orientation still reaches the target group.

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Sustainable Consumption Behaviour in Poland Through a PLS-SEM Model

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Abstract This research seeks to identify the social factors that act as determinants of sustainable behaviour in the Polish community. It was based on a theoretical model that was tested through a questionnaire with 26 indicators adapted to this context. The research arrived at the conclusion that only four latent constructs explain 62.4% of the variance of the endogenous latent variable: environmental influences; education and information; market conditions; and government actions. These results help us better understand the motivational forces that drive consumer choice so that more effective direct and indirect action can be taken in favour of sustainable consumption. Consequently, governmental institutions and companies that operate in this sector, as well as pro-environmental and pro-social groups, will be able to work on the design of strategies, which are correctly aimed at obtaining a more desirable and positive response concerning the environment, the economy and society in general.

Keywords Sustainable consumer behaviour · Sustainability · Ecology · Social factors · PLS-SEM · Poland

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1 Introduction

Sustainability can be defined in terms of the maximisation of welfare over time. Most economists simplify it further by identifying the maximisation of welfare with the maximisation of the utility derived from consumption. While this may be criticised as an oversimplification, it certainly includes many important elements of human welfare (food, clothing, housing, transportation, health and education services, etc.), and has the analytical advantage of reducing the problem to a measurable single-dimensional indicator. A formal economic analysis then raises the question of whether sustainability has any validity as an economic concept. According to standard economic theory, efficient resource allocation should have the effect of maximising utility from consumption. If we accept the use of time discounting as a method of comparing the economic values of consumption in different time periods, then sustainability appears to mean nothing more than efficient resource allocation—a concept already well established in economics (Harris 2000).

The concept of sustainable consumption has been actively promoted among modern societies. As Korpysa (2013) points out, it is beyond any doubt that a twenty-first-century consumer should take account of a number of issues while buying and subsequently using goods and services. These issues include wastage reduction, a lower emission of pollution and limited production of waste, as well as a selection of products whose development conforms to the code of ethics and socio-environmental norms. While this awareness is observed in most countries all over the world, nevertheless certain differences can be noticed between developed and developing states. Although the concept of sustainable consumption is being actively promoted among consumers in developing countries, they are still less aware of the necessity to conform to socio-ecological norms in the process of consumption. In this context, the aim of this study is to identify the social factors that determine sustainable consumption behaviour in Poland and to define the way in which these factors contribute to and promote sustainable consumption through an integrated model using Partial Least Squares Structural Equation Modelling (PLS-SEM) methodology.

This study is divided into five main sections, the first of which is this introduction section. Secondly, a review of prior studies on development and sustainable consumption focused on Poland is presented in Sect. 2. Section 3 describes the data set and the research methodology, where we explain how we performed our PLS-SEM model analysis. We present our results in Sect. 4. Finally, Sect. 5 summarises the general conclusions and discussion associated with the research presented.

2 Development and Sustainable Consumption in Poland

Sustainable development is often analysed in the context of sustainable consumption. It involves conforming to norms and the adoption of ethical attitudes by consumers. The norms are to help consumers recognise the limited character of natural resources and respect other people's needs. In this sense, sustainable consumption is a model of life that enables people to minimise the socio-economic costs of consumption through their behaviour and actions (Korpysa 2013).

Advocates of sustainable development recognise the social component of development as an essential part of the new paradigm. In doing so, they are validating the importance of a much older perspective. A "human development" approach emphasising the issues of basic needs and equity is well-grounded in the history of economic theory (Sudhir and Sen 1994). The focus on basic needs and equity in development has been represented by the United Nations Development Programme's series of Human Development Reports (UN 1990–1998). As well as calculating the Human Development Index, it offers a different measure of development success from per capita GNP or GDP. In addition, the World Bank has produced research on indicators of sustainable development, in particular measures of *genuine savings*: "the true rate of savings in a nation after due account is taken of the depletion of natural resources and the damages caused by pollution" (World Bank 1997). This new attention to a combination of social and environmental factors indicates that lines of thought formerly regarded as being on the fringes of development policy are making their way into the mainstream. As a matter of fact, this phenomenon is no stranger to the field of sustainable entrepreneurship, which involves variables related to the development of social and environmental value, which is explicitly stated in the creation of these new companies, as well as the development of economic value, implicitly reflected through the convenience and business viability that is perceived (Vuorio et al. 2017).

Given the global nature of many of the challenges facing sustainability, nations have to cooperate at the highest levels to design and apply solutions. National governments have the authority and power to do so, as well as the means to ensure that decisions are applied. The three most important means by which governments can influence sustainable development, for better or worse, are regulation, taxation and spending. Each can play a role, but taxes tend to be more cost-effective and flexible than regulations, while subsidies are expensive for taxpayers and consumers (OECD 2008). Good regulation is an essential tool for making sustainable development a reality. Social and economic conditions evolve; new materials and technologies are developed and our understanding of health and environmental effects improves. Regulation can lead to desirable outcomes for sustainability and an increase in the well-being of individuals, and that of society as a whole. Governments are big spenders and the way they allocate funds influences practically every aspect of the economy and society. Additionally, Sagiv and Schwartz (2007) suggest that social culture among the inhabitants of Eastern Europe impacts the values of the members and the nature of the organisational tasks of a group. This can have a direct impact on sustainability. In the end, it is necessary to underline the reasons to use economic tools for sustainable development:

– they can provide incentives for behaviour that suit sustainable development goals and deter actions that act against those goals,

– they can drive markets towards a more sustainable economy by building overall environmental, social and economic costs into pricing and other such measures,
– they can encourage innovation by providing market pressure. The revenue generated can be used to reduce other taxes or finance social measures.

The main legal document that is the basis for a sustainable strategy in Poland is the Polish Constitution (1997), namely Article 5, in which Poland underlines the sustainable direction of development in social, economic and environmental terms. This means that all processes and social economic policies and all connected programmes, plans and strategies should be logically integrated and tied to goals and tools leading to sustainable development. The Law on Environmental Protection of 27 April 2001 completes the constitutional principle of sustainable development in Poland. Furthermore, the concept of sustainable development is also found in other legal acts.

As mentioned by Urbaniec (2015), due to the numerous strategic documents in this field, the Council of Ministers accepted the document "Plan of putting in order development strategies" on 24 November 2009 (Ministerstwo Rozwoju Regionalnego 2012). This Plan was intended to unify obligatory strategic documents and limit the number of obligatory strategies to nine newly integrated development strategies (out of 42 existing strategies), based on the diagnosis and recommendations resulting from the report entitled "Poland 2030 Development Challenges". Nevertheless, there is a lack of a separate strategy for sustainable development in Poland. Although a document called the "Polish Sustainable Development Strategy 2025" (Zuzek 2007), was developed by the Ministry of Environment as early as 1999, it contained only guidelines for ministries developing sector strategies and recommendations for actions for sustainable development (Ministerstwo Środowiska 1999). In this context, a recent study conducted by Bednarska-Olejniczak et al. (2019) identifies the directions and scope of inclusion of residents' participation in the concept of a city's sustainable development and the smart city concept, taking into account national and international conditions, on the basis of Wroclaw's practices in 1998–2018.

Korpysa (2013) analysed buyer behaviour in the context of sustainable development policy pursued in Poland. The first part of his work was devoted to theoretical issues relating to the implementation of sustainable consumption policy in Poland; the second part presented the results of a survey examining the aforementioned behaviour. He concludes that, apart from identifying a number of positive aspects to sustainable consumption policy pursued in Poland, attention should be paid to the fact that data for Poland is not satisfactory compared to that of developed countries. In this sense, for the effective implementation of a sustainable consumption strategy, consumers ought to be provided with detailed information concerning environmental and social aspects of goods and services. Furthermore, all market players (and in particular consumers and producers of goods) should be provided with formal and non-formal education about sustainable consumption.

Koszewska (2015) conducted a study on Sustainable Consumption Patterns in the Visegrad Region, which was prepared in the framework of the project "Prospects of the Visegrad cooperation in promoting a sustainable consumption and production model". The project was supported by the International Visegrad Fund. The objective of this project was to support and strengthen the cohesion of the V4 countries in their efforts to achieve a more sustainable consumption culture and thus more sustainable production models in selected consumer goods markets. In the scope of the project, this was done by means of the analysis of intermediate connections and influences of the demand side of the market (consumers); values, attitudes and cultural impact; the supply side of the market (producers); and the legal framework.

Kułyk et al. (2017) studied consumer attitudes in light of the concept of sustainable consumption in Lubuskie voivodeship against the background of trends in consumption in Poland. They found that respondents were not guided in their purchasing choices by the effect of their consumption on the natural environment. However, they were able to discern some environmental measures in their behaviour, which stemmed from different reasons, depending on the socio-economic conditions.

Kiełczewski et al. (2017) analysed the issue of sustainable consumption, the stimulator for which might be consumer competences. The study involved a research sample of 1000 Poles who met specific criteria established by the authors. The empirical material obtained allowed for the construction of a consumer competence index which took into account the following variables: knowledge of the consumer's rights and ways of use thereof (Knowledge); planning as measured with the following variables (Planning); making rational consumption choices measured with the following variables (Rationality); and having autonomy of choice as measured with the following variables (Sovereignty). Three groups of consumers were singled out and characterised in the study, namely highly competent consumers, consumers with a medium level of competences, and consumers with low competences. As the findings of the authors' own surveys show, among the socio-demographic factors, in particular, age, the level of respondents' education, residence, number of children in a household and professional activity all affected the level of consumer competences. It was revealed that people with high competences display the skills required to both plan expenses and acquire information on consumption and to use that information, as well as to know how to exercise their rights. Finally, Zalega (2018) conducted research which attempted to explain the concept and essence of collaborative consumption, a dynamically developing consumer trend. The principal goal was to demonstrate that young people in Poland are distrustful of sharing goods with strangers, and thus are much more willing to engage in collaborative consumption when they know the people who they make transactions with. Following the analysis of the research material, it was also possible to confirm that a key reason for young people to participate in collaborative consumption lies in the financial benefits and access to a wider range of goods and services. The tool used was an original questionnaire comprising 50 closed-ended questions regarding alternative consumer trends, including collaborative consumption.

In this work, we follow the steps of Figueroa-García et al. (2018), who analysed the social factors that determine Sustainable Consumption Behaviour (SCB) in the Community of Madrid (Spain) and identified the elements that promote such behaviour. They used a theoretical model, based on existing research, which is tested through a questionnaire with 26 indicators adapted to the Spanish context. In their study, they conclude that 43.4% of the variance of the endogenous latent variable SCB can be explained only by three exogenous latent constructs: environmental influences (in particular the influence of family and friends, as well as that generated by cultural factors such as traditions); education and information (specifically related to information on sustainability and the effects of personal consumption on the environment); and market conditions (referring to the positive perception of sustainable products by consumers, including their willingness to pay higher prices than those for conventional products). Government actions did not have a direct effect on SCB, but rather had an indirect effect through education and information. The rest of the exogenous variables (social pressure and demographic variables) did not have a significant relationship with the endogenous variable SCB.

3 Data and Methodology

3.1 Sample

This study is based on a sample of 103 residents of Silesia and Lesser Poland Voivodeships. The distribution of the sample was 64.1% women and 35.9% men. They were aged between 20 and 72, with a mean age of 40. 36.9% of those interviewed had completed secondary school education, 34% held a master's degree, 21.4% had a PhD, 3.9% had a bachelor's degree and 3.8% reported another academic qualification.

3.2 Data Collection

Data collection was carried out from April to June 2018, using an electronically self-administered questionnaire. The data set initially included 29 indicators or items amounting to 2987 data fields. These indicators were designed to operationalise the exogenous variables: demographic factors; environmental influences; social pressure; market conditions; government actions; education and information; and the endogenous variable—namely sustainable consumer behaviour. After debugging the database, the sample finally included 103 observations, with 26 indicators and 2678 data fields. It includes less than 5% of missing values (see Table 1, which contains the indicator definitions and further detailed information).

All indicators and data were calculated in an Excel work file and then translated into the CSV format to run Smart PLS software (Ringle et al. 2015) to apply PLS-SEM path modelling.

Table 1 Indicators for measurement model constructs

Indicator variables	Definition
Demographic values (DEM_VAL)	
DEMVAL_1	Age
DEMVAL_2	Gender
DEMVAL_3	Level of education
Sustainable consumption behaviour (SCB)	
SCB_1	I perform daily activities to care for and preserve the environment.
SCB_2	I perform concrete activities to promote human rights and social justice.
SCB_3	I consume local products to support the economy of my community.
SCB_4	How motivated do you feel to make changes in your lifestyle towards more responsible consumption?
SCB_5	How would you rate your responsible consumption behaviour?
Environmental influence (ENV_INF)	
ENVI_1	Someone from my family or friends motivates me to follow in their footsteps in caring for the environment.
ENVI_2	I have participated as a volunteer in social work or environmental organisations.
ENVI_3	I take advantage of the fact that there are now organic or ecological products in the supermarket to buy them.
ENVI_4	Caring for the environment is a tradition in my family.
ENVI_5	Where I live, it is normal to separate waste for recycling.
ENVI_6	My home has enough space for a garden.
Education and information (E&I)	
E&I_1	I have participated in a course, workshop or talk about an environmental issue or responsible consumption.
E&I_2	A family member, friend or acquaintance has taught me an activity to help me be more responsible in the use of resources (water, electricity, energy).
E&I_3	I am informed about sustainability issues (environment).
E&I_4	I have information about the negative effects that the products I consume have on the environment.
Social pressure (SO_PRE)	
SOPRE_1	I have felt pressured by my friends to perform an activity for the benefit of the environment.
SOPRE_2	I feel obligated to belong to the group of people who are pro-environmental.
Market conditions (MKT_C)	
MKTC_1	Organic products give me more confidence than conventional products.
MKTC_2	I am aware of the advertising campaigns about organic products.
MKTC_3	I think there are many places where you can find products that do not harm the environment.
MKTC_4	I choose an organic product over a traditional one, even if it is more expensive.
Government actions (GOV_A)	
GOVA_1	In my city, the government does enough to motivate more responsible behaviour through equality and social justice.
GOVA_2	The government is responsible for doing what is necessary so I can do things for the sake of the environment.

Source: Own elaboration

3.3 Theoretical Model Estimation

A theoretical path model was developed based on what was found in the literature in relation to the possible determinants of a person's sustainable consumption behaviour. The exogenous variables and the endogenous variable are represented in the initial model proposed (Fig. 1) and summarised in Table 1. The goal of this analysis is to explain the endogenous construct SCB in the PLS path model through six exogenous constructs: MKT_C, ENV_INF, E&I, GOV_A, DEM_VAL and SO_PRES. The constructs 'education and information' (E&I) and 'sustainable consumption behaviour' (SCB) are formative (Mode B) since the indicators cause the variable, while the rest of the constructs are presented as reflective (Mode A).

As mentioned above, these variables were included in the model based on the knowledge of authors who have developed the topic of sustainable consumption behaviour and who have found certain relationships between them. With respect to education and information on sustainability, people have expressed that formal and informal education and the existence of information on the subject have an important influence on the purchasing decisions of consumers (Salgado Beltrán and Bravo Díaz 2015). In addition, there are authors who affirm that these variables are influential in generating patterns of sustainable consumption (Caeiro et al. 2012). Also, it has been explained that a higher educational level is associated with a high

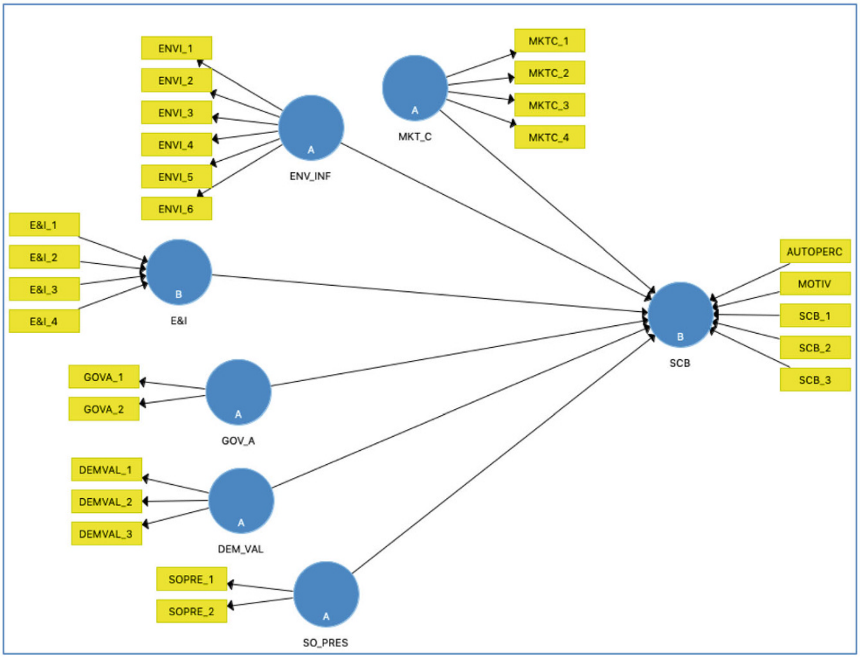

Fig. 1 Initial theoretical path model. Source: Own elaboration

degree of environmental concern (Vicente-Molina et al. 2013) and it has been concluded that education is a definitive tool for raising people's awareness. From this, they can change their values, behaviour and lifestyles, and as they increase their knowledge, they will focus more on developing actions to prevent and mitigate current and future problems (Severiche-Sierra et al. 2016), insisting that, to the extent of educating people, mental flexibility will allow for a transition towards generating sustainability (Badii et al. 2018). Thus, it can be affirmed that:

H1: Education and information concerning sustainability are decisive in sustainable consumption behaviour.

The consumption behaviour of friends, family members and other groups of nearby people influence the decisions made by consumers, constituting the influences of the environment (Gleim et al. 2013; Tabernero et al. 2015). They affirm that the groups in power have a fundamental role in motivating this type of behaviour as they develop a set of collective beliefs in those who approach them. Likewise, people build their relationship with the environment through the influence of the culture in which they live (Hedlund-de Witt 2012). Searching for the development of an identity within a group and for the possibility of cooperating in a community is a very powerful way of generating sustainable behaviour (Gupta and Ogden 2009). For instance, consumers with an ethnocentric culture are more critical of the quality of foreign products and usually are more reluctant to buy them, preferring local consumption instead (Fernández-Ferrín et al. 2015). In this sense, it can be affirmed that:

H2: The influence of the social environment is decisive in the development of sustainable consumption behaviour.

The role of the government in relation to sustainable consumption has been recognised from two perspectives in the literature. First, it can stimulate more sustainable behaviour when it generates the necessary conditions to accomplish pro-environmental or pro-social actions. Secondly, it limits these behaviours if such conditions are not generated (Chen and Tung 2010, cited in Tabernero et al. 2015; Corral-Verdugo 2012; Kollmuss and Agyeman 2002; Steg and Gifford 2005; Vicente-Molina et al. 2013). Even though there are regulations in this area, if these are wrongly applied, they can provoke a greater negative effect than not having them (Salgado Beltrán and Bravo Díaz 2015). Bearing in mind that, in order to encourage sustainable development, governments have influence on regulation, taxes and spending (OECD 2008); for this to be possible, an efficient regulatory framework is required to contemplate all aspects of this concept coherently, which is only possible with political will (Alva Fuentes 2018). In this sense it can be assumed that:

H3: Government actions are decisive in the development of sustainable consumption behaviour.

In the literature, there is still a great contradiction in terms of market conditions for sustainable products and services, as they can motivate or limit sustainable behaviour. Price, availability and promotion, for example, can all discourage consumption due to the particular conditions of this market: high prices, low availability and lack of promotion (Gleim et al. 2013; Salgado Beltrán and Bravo Díaz 2015; Shao et al. 2017; Van Doorn and Verhoef 2015; Vicente-Molina et al. 2013). It has also been argued that the neoliberal development model that stimulates a market economy, and therefore consumption, is not compatible with sustainable development (Carabias 2019). However, they can also stimulate consumption when the consumer perceives the advantages of the products of this market and justifies the price and the cost of replacing a conventionally used product (Gupta and Ogden 2009). Additionally, when considering local consumption as a sustainability strategy, Penz and Stöttinger (2015) affirm that European consumers support their positive feelings towards the EU through local-scale consumption, which is fuelled by companies that emphasise or belong to this niche in certain product categories. Therefore, the following hypothesis is proposed:

H4: Market conditions have a direct relationship with sustainable consumption behaviour.

The fulfilment of social norms in community life derives from interest in satisfying the expectations of third parties and is generated by the attitude of the group and personal values to which someone wants to belong (Gleim et al. 2013; Tabernero et al. 2015). On the other hand, the media and informal education exercise a normative pressure on consumers (Bamberg and Moser 2007, cited in Vicente-Molina et al. 2013). In contrast, it is said that there is still not sufficient social approbation of sustainability issues to pressure governments into taking the required action or into promoting responsible behaviour in society (Hernández-Huerta et al. 2018). It is hypothesised that:

H5: Social pressure helps generate sustainable consumption behaviour.

Sociodemographic variables such as gender, age and educational level could have some influence on sustainable consumption behaviour. In the literature, one can find ambiguous statements on the subject, since some do not prove any relationship between variables, whilst others confirm that these factors do determine behaviour (Bamberg and Möser 2007; Guerin et al. 2001, cited in Tabernero et al. 2015; Vicente-Molina et al. 2013). Some even affirm that a person's perception of sustainability, such as climate change, can vary according to gender, age or the socioeconomic circumstances of the people concerned (Badii et al. 2018). In this context, the following hypothesis is established:

H6: Demographic variables affect sustainable consumption behaviour.

Considering these hypotheses, the proposed model, as shown in Fig. 1, shows that sustainable behaviour is a function of the social environment factors as discussed above.

3.4 PLS Analyses

The proposed theoretical model was evaluated using partial least squares (PLS). This is a structural equation modelling (SEM) technique that can deal with highly complex models with a large number of constructs, indicators and relationships. Additionally, it can simultaneously test measurement models (relationships between indicators and their corresponding constructs) and the structural model (relationships between constructs) (Barclay et al. 1995; Garthwaite 1994). In the SEM context, this study addresses two types of measurement models: common factor models (reflective measurement—Mode A), which are a reflection of the variable, and causal indicators models (formative measurement—Mode B) that are the cause of the variable (Sarstedt et al. 2016).

To conduct the PLS-SEM empirical analysis, a database with 103 observations was used. To verify if this sample size meets the criteria required in PLS-SEM, four relevant references will be analysed. First, the simple minimum size for the estimation of the PLS path model must at least comply with the "ten times" rule (Barclay et al. 1995). That is, the number of arrows that point to a specific construct, multiplied by 10, will be the number of observations needed to estimate a path model. In this case, the SCB model presents six arrows pointing towards the endogenous construct (Fig. 1), therefore, according to the "ten times" rule, $6 \times 10 = 60$ represents the minimum number of observations necessary to estimate the PLS path model in Fig. 1. On the other hand, Cohen (1992) recommends 106 or 130 observations for multiple OLS regression analysis to detect R^2 values around 0.10, assuming significance levels of 10 or 5% respectively, with a statistical power of 80%. According to Nitzl (2016), in order to detect a medium effect size of 0.15 with the same levels of significance and statistical power, 98 or 135 observations are necessary. In addition, Green (1991) recommends 97 observations for the same level of analysis, with a 5% level of significance. Therefore, this research satisfies the conditions for defining the minimum sample size for any of the four recommendations.

4 Results

After determining the PLS path model, the evaluation of results is carried out, starting with measurement models, followed by the evaluation of the structural model. SmartPLS software was run and the first estimates were obtained. Figure 2 shows the indicators' outer loadings and outer weights for both reflective or formative measurement models, path or regression coefficients for structural model relationships and R^2 values for the latent endogenous variables.

As can be seen in Fig. 2, the variables that have the most relevance in the effects on SCB are ENV_INF, which seem to have the strongest effect with the endogenous variable (0.390), followed by E&I (0.281). On the other hand, 65% of the variance of

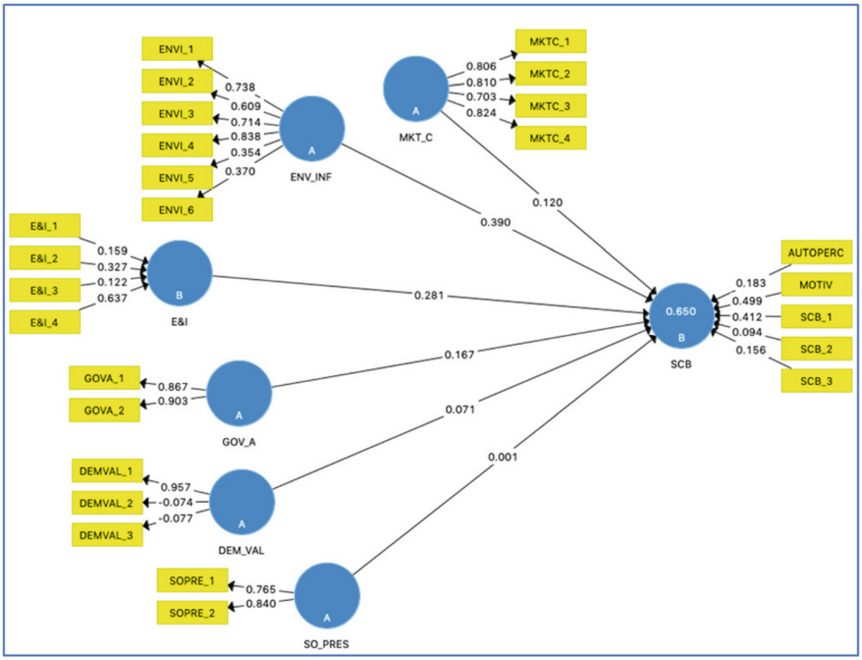

Fig. 2 PLS-SEM first results. Source: Own elaboration

the dependent variable is explained by the six exogenous constructs. Taking into account the size of the path coefficient, it must be determined whether the connection between the constructs is statistically significant. However, in order to make definitive statements about the meanings of the coefficients and the goodness of the global model fit, it is necessary to assess both the measurement models and the structural model.

Before proceeding with the reliability and validity test of each measurement model, it is necessary to verify whether the stopping criteria of the PLS algorithm is reached before the maximum number of iterations, which in this case was defined in the settings of the parameter of the PLS-SEM algorithm in 300 iterations. In our model, the algorithm converged after iteration 18, which is considered a fast and stable solution.

4.1 Assessment of Mode A Measurement Models

In order to support their inclusion in the path model, reflective measurement models were evaluated by testing the reliability and validity of each construct (Hair et al. 2014). To make this assessment, it is necessary to observe the reliability of the indicator, the composite reliability, convergent validity (Average Variance Extracted, AVE) and the discriminant validity.

In order to evaluate reflective measurement models, outer loadings of the indicator greater than 0.708 are sought. Loads less than this figure are subjected to consideration if, when eliminating them, the composite reliability increases and AVE is maintained above the suggested threshold value (Hair et al. 2014). The PLS algorithm was executed and, in improving the path model of Fig. 1, 11 out of the 26 indicators initially proposed had to be eliminated, since they did not reach the level of acceptance for their reliability, which led to the elimination of the hypotheses H_4 (MKT_C → SCB), H_5 (SOC_PRES→SCB) and H_6 (DEM_VAL → SCB). On the other hand, new links were created among the constructs that lead to new hypotheses: H_7: E&I → ENV_INF, H_8: MKT_C → ENV_INF and H_9: GOV_A → ENV_INF (Fig. 3).

The reliability and validity results for the measurements obtained through the assessment of the reflective measurement models are shown in Tables 2 and 3. Table 2 shows that almost all the external loads of the reflective constructs are above the threshold value of 0.708. The indicator with the greatest external loading and the greatest reliability of the indicators is GOVA_2 (0.902 and 0.813 respectively), followed by GOVA_1 (0.869 and 0.755), MKTC_4 (0.855 and 0.731), and ENVI_4 (0.838 and 0.702) (shown in bold). The reliability indicator represents what part of the variation of an indicator is explained by the construct; as a general rule, a latent variable must explain at least 50% of the variance of each indicator (Hair et al. 2017). Therefore, except for the indicator ENVI_2, which shows a reliability value below this threshold, all the results of the analysis (Table 2) meet this criterion.

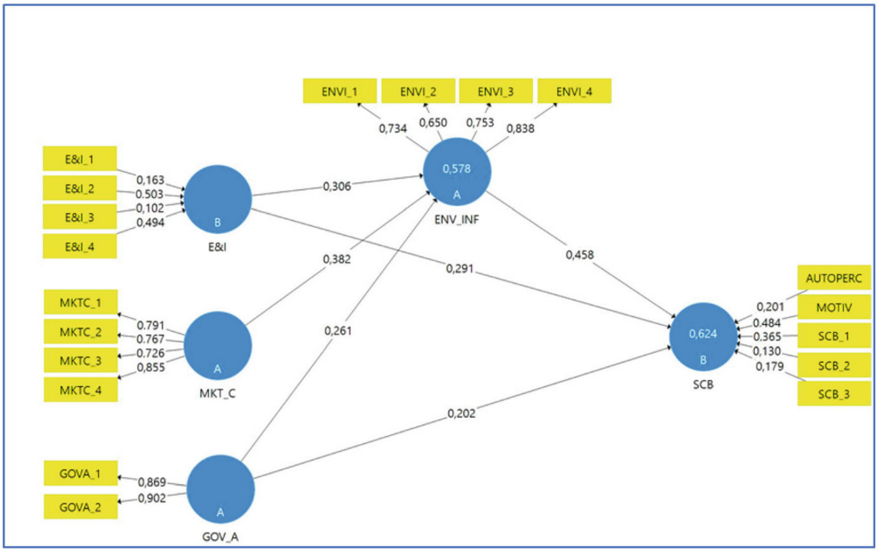

Fig. 3 PLS-SEM Path model improved. Source: Own elaboration

Table 2 Results summary for reflective measurement models

		Convergent validity			Internal consistency	
	Indicators	Loadings	Indicator reliability	AVE	Composite reliability	Cronbach's alpha
ENV_INF	ENVI_1	0.734	0.538	0.558	0.833	0.734
	ENVI_2	0.650	0.423			
	ENVI_3	0.753	0.567			
	ENVI_4	**0.838**	**0.702**			
GOV_A	GOVA_1	**0.869**	**0.755**	0.784	0.879	0.726
	GOVA_2	**0.902**	**0.813**			
MKT_C	MKTC_1	0.791	0.625	0.617	0.865	0.796
	MKTC_2	0.767	0.588			
	MKTC_3	0.726	0.527			
	MKTC_4	**0.855**	**0.731**			

Source: Own elaboration

Furthermore, the average variance extracted (AVE) was used as the measure to establish the convergent validity at the construct level. This measure is equivalent to the communality of a construct (Hair et al. 2017). AVE values obtained in this model are greater than the threshold value of 0.50 in all constructs, explaining more than half of the variance of their indicators: ENV_INFL (0.558), GOV_A (0.784) and MKT_C (0.617), which means the measurements for the three constructs have high convergent validity levels.

Regarding the assessment of internal consistency, according to Chin (1998), it is considered a limitation that Cronbach's alpha coefficient assumes that all indicators receive the same weighting; therefore, they also use composite reliability to measure the reliability of internal consistency. This model, however, presented a coefficient of Cronbach's alpha greater than 0.7 in all constructs, so this value can be considered as being in the lower bound and the composite reliability as being in the upper bound of the true reliability of internal consistency. Reliability values between 0.70 and 0.90 can be qualified as satisfactory (Nunally and Bernstein 1994, cited in Hair et al. 2014). As can be seen in Table 2, reliability values of all the constructs of reflective measurement models show values above the suggested lower bound. This means that all indicators for the three latent variables are well above the minimum level required for both external loadings and composite reliability.

Discriminant validity is the criterion that evaluates the extent to which a construct captures phenomena not represented in other constructs of the model (Duarte and Raposo 2010). Recently, the Heterotrait-Monotrait ratio of correlations (HTMT) has become the primary criterion for assessing discriminant validity since it offers superior performance compared with the Fornell-Larcker criterion and the assessment of cross-loadings, and its threshold value is 0.90 (Henseler et al. 2015). As can be seen in Table 3, the values of all constructs are below the threshold value, which makes them comply with the criterion of discriminant validity.

Table 3 Discriminant validity assessment (HTMT criterion)

	ENV_INF	GOV_A	MKT_C
ENV_INF			
GOV_A	0.721		
MKT_C	0.847	0.589	

Source: Own elaboration

4.2 *Assessment of Mode B Measurement Models*

The analysis of convergent validity of a formative measurement model, which assesses the correlation between the formative and reflective measure (or of a single element) of the same construct, must be observed and must be greater than 0.7. However, in this case, it is not counted with data available for a reflective (or single-element) measurement of the two formative constructs. At least the formative constructs have the expected signs in the structural model, which is desirable under the weakest form of convergent validity assessment analysis (Avkiran 2018).

In order to prove how viable it is to conceive of these constructs as being formative, it is necessary to verify that there are no problems of collinearity among indicators, for which in turn it is necessary to calculate the variance inflation factor (VIF), which provides an index that measures the point at which the variance of an estimated regression coefficient increases because of collinearity. A collinearity value means critical problems when it has a VIF value greater than or equal to 3.3. If the VIF of certain indicators in the formative measurement model exceeds these critical VIF values, then one might consider removing the corresponding indicator or combining the collinear indicators into a new composite indicator (Avkiran 2018). Table 4 shows the VIF values obtained for both formative and reflective constructs; as can be seen, all the values are below the threshold value, with a range between 1.25 and 2.35, which means that this criterion is met.

To determine the importance of the estimated path coefficients, Tables 5 and 6 show the results of the bootstrap analysis of the measurement model for the formative constructs, where the relevance of the magnitude of the outer weights can be assessed, which indicates the relative contribution from an indicator to the construct (regression weight), and from outer loads that represent the absolute contribution of an indicator (correlation weight). We sought outer weights which were significantly different from zero.

As can be seen in Table 5, except for indicators E&I_1 → E&I, E&I_3 → E&I, and SCB_2 → SCB, all the outer weights of the formative constructs of the model are significant depending on the confidence interval of the bootstrap analysis to 95% (5000 subsamples, two-tail test, and BCa method). The indicators that were not significant remained in the model since their outer loadings are greater than 0.5 and statistically significant (Table 6).

Table 4 Collinearity diagnostic assessment

	Predictors	VIF
E&I	E&I_1	1.174
	E&I_2	1.537
	E&I_3	2.348
	E&I_4	2.028
ENV_INF	ENVI_1	1.398
	ENVI_2	1.251
	ENVI_3	1.460
	ENVI_4	1.674
GOV_A	GOVA_1	1.481
	GOVA_2	1.481
MKT_C	MKTC_1	1.843
	MKTC_2	1.671
	MKTC_3	1.448
	MKTC_4	1.725
SCB	AUTOPERC	1.622
	MOTIV	1.594
	SCB_1	1.318
	SCB_2	1.314
	SCB_3	1.381

VIF tolerance values for measurement model
Source: Own elaboration

Table 5 Significance and relevance of path coefficients (outer weights)

	Original sample (O)	Sample mean (M)	Bias	Lower bound	Upper bound
E&I_1 → E&I	0.163	0.160	−0.003	−0.063	0.396
E&I_2 → E&I	0.503	0.490	−0.013	0.196	0.797
E&I_3 → E&I	0.102	0.106	0.004	−0.222	0.411
E&I_4 → E&I	0.494	0.470	−0.024	0.211	0.84
AUTOPERC → SCB	0.201	0.182	−0.019	0.034	0.366
MOTIV → SCB	0.484	0.485	0.001	0.309	0.661
SCB_1 → SCB	0.365	0.350	−0.015	0.194	0.557
SCB_2 → SCB	0.130	0.141	0.011	−0.055	0.317
SCB_3 → SCB	0.179	0.176	−0.003	0.002	0.377

Note: Bootstrapping results have been obtained by using the following option: bias-corrected and accelerated (BCa) bootstrap approach, 5000 subsamples, no sign changes, two-sided test, 95% (bias-corrected) confidence interval
Source: Own elaboration

Table 6 Significance and relevance of path coefficients (outer loadings)

	Original sample (O)	Sample mean (M)	Bias	Lower bound	Upper bound
E&I_1 → E&I	0.513	0.496	−0.017	0.276	0.727
E&I_2 → E&I	0.839	0.823	−0.015	0.668	0.950
E&I_3 → E&I	0.783	0.760	−0.023	0.638	0.908
E&I_4 → E&I	0.839	0.805	−0.034	0.697	0.954
AUTOPERC → SCB	0.734	0.719	−0.015	0.642	0.823
MOTIV → SCB	0.843	0.831	−0.012	0.735	0.930
SCB_1 → SCB	0.707	0.686	−0.020	0.561	0.844
SCB_2 → SCB	0.578	0.573	−0.005	0.375	0.737
SCB_3 → SCB	0.624	0.614	−0.011	0.442	0.782

Note: Bootstrapping results have been obtained by using the following option: bias-corrected and accelerated (BCa) bootstrap approach, 5000 subsamples, no sign changes, two-sided test, 95% (bias-corrected) confidence interval
Source: Own elaboration

Table 7 Collinearity diagnostic assessment

Endogenous latent variable					
Predictors	E&I	ENV_INF	GOV_A	MKT_C	SCB
E&I		1.470			1.550
ENV_INF					1.974
GOV_A		1.281			1.384
MKT_C		1.736			1.550
SCB					

VIF tolerance values for structural model
Source: Own elaboration

4.3 Assessment of the Structural Model

Continuing with the analysis of the structural model, VIF tolerance values derived from the diagnosis of collinearity, obtained by running the algorithm in PLS-SEM, were defined. The evaluation was made on two constructs with their predictors. First came the construct environmental influences (ENV_INF), whose predictors are education and information (E&I), government actions (GOV_ACC) and market conditions (MKT_C). This was followed by the construct sustainable consumption behaviour (SCB), with its predictors of education and information (E&I), environmental influences (ENV_INF), government actions (GOV_ACC) and market conditions (MKT_C). As seen in Table 7, all the VIF values are below 5.0, which implies that the tolerance values are higher than 0.20, so the structural model does not present collinearity problems (Hair et al. 2017).

Once the reliability and validity of the variables have been proven, it is necessary to evaluate the relationships that arise between the latent variables as defined in the hypothesis of the research model. The R^2 values of the endogenous latent variables

Table 8 Variance explained

Dependent constructs	R^2
ENV_INF	0.578
SCB	0.624

Source: Own elaboration

were reviewed to evaluate the predictive accuracy of the model, verifying how much of the variance of the endogenous constructs is explained by all the exogenous constructs, obtaining the coefficient through the calculation of the square of the correlation of the real and predicted values (Hair et al. 2014). According to Falk and Miller (1992), this value must be greater than 0.1, but since the PLS-SEM maximises the R^2 values of the endogenous latent variables in the path model, high R^2 values are sought.

According to Table 8, the PLS-SEM algorithm showed moderate values for both endogenous latent variables (Hair et al. 2017), explaining 57.8% of the variance of the environmental influences variable (ENV_INF), and 62.4% of the sustainable consumption behaviour variable (SCB). These values also meet the criteria of Falk and Miller as described above.

On the other hand, the evaluation of the statistical significance of the path coefficients of the structural model was performed to test if they are statistically significant. This was also done by means of the bootstrap analysis explained above. 5000 bootstrap samples were considered, where the estimates of the coefficients form a start-up distribution that can be considered an approximation to the sampling distribution (Hair et al. 2017). The bootstrap procedure was run for a two-tail test at a 95% confidence interval.

Considering the p-values obtained in the analysis, Table 9 shows that all the path coefficients proposed in the structural model of Fig. 3 were significant. Causal relationships that were significant are as follows: *education and information* (E&I) → *environmental influences* (ENV_INF); *education and information* (E&I) → *sustainable consumption behaviour* (SCB); *environmental influences* (ENV_INF) → *sustainable consumption behaviour* (SCB); *government actions* (GOV_A) → *environmental influences* (ENV_INF); *government actions* (GOV_A) → *sustainable consumption behaviour* (SCB) and *market conditions* (MKT_C) → *environmental influences* (ENV_INF), with a confidence level of 99%.

4.4 Hypotheses Testing

To confirm the hypotheses of the study, a comparison was made between those hypotheses that were already established and those that were generated in the construction of new links between variables in the adjusted model, so the original numbering was unchanged. For this exercise, the empirical t-value (Student's t) was compared with the critical value. When the first is greater than the second, it can be concluded that the coefficient is statistically significant at a certain probability of error or level of significance (Hair et al. 2017). Given the way in which the

Table 9 Significance testing results of the structural model path coefficients

Paths	Path coefficients	*t value*	Significance levels	*p value*	Standard error	Confidence intervals bias corrected	
						Lower bound	Upper bound
E&I → ENV_INF	0.306	3.791	***	0.000	0.081	0.15	0.417
E&I → SCB	0.291	2.894	***	0.002	0.101	0.125	0.454
ENV_INF → SCB	0.458	4.651	***	0.000	0.099	0.28	0.606
GOV_A → ENV_INF	0.261	3.542	***	0.000	0.074	0.143	0.38
GOV_A → SCB	0.202	2.466	***	0.007	0.082	0.069	0.336
MKT_C → ENV_INF	0.382	5.143	***	0.000	0.074	0.264	0.504

Note: *NS* not significant. $*p < 0.10$, $**p < 0.05$, $***p < 0.01$; (based on $t_{(55)}$, two tail test). Bootstrap confidence intervals for 5% probability of error ($\alpha = 0.05$)
Source: Own elaboration

hypotheses are raised, when the zero does not fall in the confidence interval, the null hypothesis is rejected, leading to the acceptance of the alternative hypothesis. The results are presented in Table 10.

By contrast, all the alternative hypotheses proposed were accepted. Of these, five whose t-values were higher than the critical value 2.57 were accepted with a confidence level of 99%, and one more than 95% with values higher than 1.96 (Fisher and Yales 1963, cited in Ritchey 2008).

Having identified significant relationships in the model, we proceed to evaluate the relevance of this significance for which PLS-SEM identifies significant and important effects on the coefficients (Hair et al. 2014). In order to do so, the indirect effects generated by the mediating constructs are evaluated, which is done by adding the direct and indirect effects to measure the total effect. Table 11 shows the results of the evaluation of the total effects, where it can be seen that all the total effects of the model are significant to 99%.

4.5 Assessment of the Overall Goodness Model Fit

In order to quantify the discrepancy between the empirical correlation and the model-implied correlation matrices, seeking to normalise the difference between observed and predicted correlations, the goodness of fit analysis for the model was performed using the absolute adjustment measure SRMR (Standardised Root Mean Square Residual), obtained by running PLS bootstrapping. The smaller the SRMR, the better the adjustment of the theoretical model (Henseler et al. 2009). A value of zero means perfect adjustment and a value less than 0.08 is considered a good adjustment (Hu and Bentler 1999). Other authors accept values lower than 0.10 for this criterion (Hair et al. 2017).

Table 12 shows the results of this analysis, where, despite the criteria of the SRMR and d_{ULS} analyses, the values of the original sample of the saturated and estimated models are greater than those of the confidence intervals of both 95 and 99%. Therefore, the model has an adequate goodness of fit for SRMR since the original value is below the threshold of 0.10 (Hair et al. 2017). The model is also adjusted for d_G, but is not suitable for d_{ULS}.

5 Discussion and Conclusions

The goal of this research was to determine the factors which are external to an individual that positively and significantly define sustainable consumption behaviour. We start from a theoretical model, based on existing research, which poses determining factors: government action, social pressure, environmental influences, demographic variables (age, gender, and educational level), education and information, and market conditions. This model was tested through a questionnaire with 26 indicators adapted to the Polish context.

Table 10 Hypotheses testing

Hypothesis	Suggested effect	Path coefficients	t value (bootstrap)	Confidence intervals		H_a accepted?
				Lower bound	Upper bound	
H_1: E&I → ENV_INF	(+)	0.306	3.791	0.150	0.417	Yes***
H_2: E&I → SCB	(+)	0.291	2.894	0.125	0.454	Yes***
H_3: ENV_INF → SCB	(+)	0.458	4.651	0.280	0.606	Yes***
H_4:GOV_A → ENV_INF	(+)	0.261	3.542	0.143	0.380	Yes***
H_5: GOV_A → SCB	(+)	0.202	2.466	0.069	0.336	Yes**
H_6: MKT_C → ENV_INF	(+)	0.382	5.143	0.264	0.504	Yes***

$***t_{(0.01)} = 2.57$; $**t_{(0.05)} = 1.96$; $*t_{(0.10)} = 1.65$; (+) = positive relationship
Source: Own elaboration

Table 11 Significance testing results of the total effects

Path	Total effect	*t* value	Sig. level	*p* value	Standard error	Confidence intervals Lower bound	Upper bound
H_1: E&I → ENV_INF	0.306	3.791	***	0.000	0.081	0.150	0.417
H_2: E&I → SCB	0.431	4.723	***	0.000	0.091	0.259	0.566
H_3: EVA_INF → SCB	0.458	4.651	***	0.000	0.099	0.280	0.606
H_4: GOV_A → ENV_INF	0.261	3.542	***	0.000	0.074	0.143	0.38
H_5: GOV_A → SCB	0.321	3.854	***	0.000	0.083	0.183	0.458
H_6: MKT_C → ENV_INF	0.382	5.143	***	0.000	0.074	0.264	0.504

Note: *NS* not significant. $*p < 0.10$, $**p < 0.05$, $***p < 0.01$; (based on $t_{(55)}$, two tail test). Bootstrap confidence intervals for 5% probability of error ($\alpha = 0.05$)
Source: Own elaboration

Table 12 Goodness of overall model fit measures

	Original sample (O)	95%	99%
SRMR			
Saturated model	0.077	0.061	0.072
Estimated model	0.077	0.062	0.073
d_{ULS}			
Saturated model	1.123	0.722	0.983
Estimated model	1.128	0.745	1.015
d_G			
Saturated model	0.493	0.397	0.524
Estimated model	0.495	0.399	0.524

Source: Own elaboration

It was concluded that 62.4% of the variance of the endogenous latent variable (SCB) can be explained by three exogenous latent constructs: education and information, market conditions, and government actions, and by the endogenous latent variable environmental influences. The rest of the exogenous variables originally proposed in the initial model did not show a significant relationship with the endogenous variable. On the other hand, new relationships between the variables were identified, showing that 57.8% of the variance of the environmental influences construct (ENV_INF) is also explained by the predicted latent variables education and information, market conditions and government action.

These results help us to better understand the motivational forces that drive consumer choice so that more effective direct and indirect action can be taken in favour of sustainable consumption. Consequently, governmental institutions and companies that operate in this sector, and pro-environmental and pro-social groups, will be able to work on the design of strategies which are correctly aimed at obtaining a more desirable and positive response concerning the environment, the economy and society in general.

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Part III
Factors Influencing Consumer Behaviour Across Products and Services

Coffee Consumer Segmentation: Implications for Producers and Sellers

Grzegorz Maciejewski, Sylwia Mokrysz, and Łukasz Wróblewski

Abstract The coffee market is an example of a global market which is undergoing constant and dynamic transformation. Enterprises wishing to maintain or increase their share in such a market are forced to constantly monitor not only their competitors, but also—if not primarily—buyers of their products. One of the ways to precisely recognise the needs and preferences of consumers is to conduct market research and undertake market segmentation based on the results of such research. The purpose of the article is to show the use of segmentation analysis to identify relatively homogeneous groups of consumers on the coffee market and to determine the size of these segments. Coffee market consumer segmentation was carried out using cluster analysis. Ward's hierarchical method and the non-hierarchical k-means method were used. The material used for the analysis consisted of the results of direct research carried out on a sample of 800 Polish coffee consumers. The research was conducted nationwide using the online survey method in July 2018. The statistical analyses carried out and the segmentation procedure which was applied allowed six segments of consumers on the Polish coffee market to be distinguished, along with their structure and size. The segments which were defined are: responsible, aspiring to be connoisseurs (13.25%), loyal coffee enthusiasts (17.00%), pragmatic users (23.25%), laymen (16.75%), sophisticated connoisseurs (16.75%), and connoisseurs, but not at any price (13.00%). The research shows that consumers on the Polish coffee market constitute a heterogeneous group. Demographic, economic and behavioural variables proved to be the characteristics which distinguish coffee consumers.

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Keywords Consumer behaviour · Market segmentation · Coffee market · Implications for business

1 Introduction

The twenty-first century has become the age of the consumer—an educated, conscious consumer, but also one that is impatient, disloyal and capricious (Maciejewski 2016). Enterprises wishing to maintain or increase their competitiveness are forced to continuously and actively track changes in consumer behaviour, not only to keep up with buyers of their products, but to overtake them, creating a world in which consumers wish to live.

The situation on the coffee market is no different. Coffee has become the second-most important product in international trade after oil; according to H.R. Neumann of Neumann Kaffee Group, global demand for coffee will increase from 152 million bags in 2015 to 200 million bags by 2030 (Haraburda 2015). Currently, coffee is prepared in dozens of ways and sold in a variety of forms, meeting the needs, preferences and purchasing power of consumers. Coffee producers and sellers wishing to achieve their goals in such a global and highly competitive market must get to know coffee consumers, their needs, preferences, motivations and choices very well. A thorough market analysis, of which segmentation analysis is an important element, is a step in this direction.

The purpose of the article is to present the results of the segmentation analysis carried out by the authors on the Polish coffee market. Segmentation was based on direct research carried out in July 2018 on a sample of 800 coffee consumers. In Poland, coffee is fourth in the ranking of food categories in terms of annual turnover, and the value of the coffee market is still growing (AC Nielsen 2017). This is mainly related to changes in consumer behaviour and preferences on the coffee products market in Poland. Poles are increasingly replacing cheaper coffee with more expensive ground coffee or grain coffee (Mokrysz 2016). Total coffee sales in Poland in 2017 amounted to nearly USD 1 billion, an increase of approx. 3.7% in comparison to 2016. The average annual consumption of coffee per capita in Poland is about 2.85 kg. For comparison, in Finland it amounts to as much as 12 kg, in Sweden 11 kg, and in Denmark, the Netherlands, and Norway 9 kg (Bartkowicz 2015). The coffee market in Poland is therefore a market with huge growth potential. Consumer groups whose needs and expectations are being met in an unsatisfactory or insufficient manner should become an area of increased focus for coffee producers and sellers.

Prior to the segmentation analysis, the authors put forward the following research hypotheses:

H1: Coffee consumers in Poland constitute a heterogeneous group of consumers.
H2: Many factors, mainly demographic, economic and behavioural, affect the diversity of coffee consumers' characteristics and behaviour.

H3: The diversity of characteristics and behaviour of coffee consumers allows them to be divided into relatively homogeneous market segments. Conducting an appropriate segmentation procedure makes it possible to determine the structure and size of these segments.

In the study, efforts were made to follow the direction of research defined by Wedel and Kamakura (2000), do Paço and Raposo (2009), and Obilo and Alford (2018), using demographic, economic, psychographic and behavioural characteristics of coffee consumers surveyed as segmental variables.

2 Theoretical Background

Smith (1956) is considered to be the creator of the concept of market segmentation. He put forth the concept of market segmentation as opposed to the concept of product differentiation, pointing out that "(. . .) as a starting point, segmentation adopts the development of the demand side of the market and means a rational and more precise adaptation of the product and marketing activities to the requirements of the consumer or user. In the economist's language, segmentation results in disaggregation and aims for the recognition of many demand lists where previously only one was recognised". After the publication of Smith's article, many publications addressed the problems of market segmentation, its nature, types of applications, criteria, and—over time—experience from research and applications as well, and finally critical analyses (Table 1).

The definitions presented in Table 1 show that the concept of segmentation can be interpreted as a research process or as one of the company's basic strategies on the market. For the purpose of the article, in accordance with the definition by J. Altkorn and L. Garbarski, it has been assumed that segmentation on the coffee market is a research process, the purpose of which is to divide the market into homogeneous sets of consumers (so-called market segments) that define the area of the company's activity and constitute one of the stages in the process of formulating a marketing strategy. Formulating a marketing strategy on the coffee market requires the definition of the target market, i.e. selecting a group of potential buyers whose needs the coffee producing enterprise intends to satisfy.

Consumer groups whose needs and expectations are unsatisfied or not sufficiently satisfied may become the target area of activity of coffee producers and sellers. Determining whether these groups can become a viable market and the decision to focus activity on a specific market segment is referred to as the selection of target market segments (Dibb et al. 2002).

This choice requires the use of an appropriate procedure that allows for the division of the entire market into smaller areas, called market segments, which include buyers with similar needs, similar behavioural or motivational features, as well as the assessment of which of the identified segments has the highest level of market opportunities or potential threats (Mazurek-Łopacińska 2005).

Table 1 Review of the definition of the concept of market segmentation

No.	Authors	Understanding segmentation
1	Liguel and Cadet (1967)	Market segmentation means dividing the population into homogeneous groups of consumers, both in terms of their visible features and the mentality of consumption.
2	Kramer (1971)	Market segmentation is a market strategy that consists of dividing the entire market into segments and conducting consistent marketing in these segments. Any arbitrarily limited part of the entire market, which is characterised by a uniform structure of the motivation to purchase (consume) goods and services of a certain type, is defined as a segment.
3	Kotler (1972)	Market segmentation is a secondary division of the market into homogeneous buyer subgroups, where each subgroup can of course be selected as a market facility to be achieved through a separate composition of marketing elements (the so-called marketing mix).
4	Assael (1973)	The principle of segmentation is reasonable: a diversified allocation of marketing resources to meet diverse needs.
5	Goluskin (1975)	Market segmentation is identifying a group of consumers who have a homogeneous set of needs and then offering them a product that will satisfy those particular needs.
6	Samli (2013)	Market components or segments can be identified on the basis of different sets of criteria. A component or segment is each subgroup of the entire market that is worth cultivating.
7	McDonald and Dunbar (2003)	The process of market segmentation involves the division of clients or potential clients within a given market into groups, i.e. segments in which all clients have the same or similar requirements, satisfied with a specific marketing composition.
8	Altkorn (2001)	Market segmentation is the division of the market, on the basis of specific criteria, into relatively homogeneous partial markets (relatively homogeneous consumer groups) called segments, which determine the area of enterprise expansion and constitute a reference point for determining the target market and marketing strategy.
9	Garbarski (2011)	Market segmentation is the division of the market according to a given criterion into homogeneous consumer groups (market segments), which define the area of activity for the enterprise and constitute a reference point when formulating the plan of this activity.

Source: Liguel and Cadet (1967), Kramer (1971), Kotler (1972), Assael (1973), Goluskin (1975), Altkorn (2001), McDonald and Dunbar (2003), Garbarski (2011), and Samli (2013)

Due to the varied objectives of segmentation research, both in source literature and in practice, various market segmentation procedures have been proposed; the most common are procedures such as:

- the traditional a priori segmentation procedure (Garbarski et al. 2001),
- E.J. McCarthy’s simplified segmentation procedure (Garbarski et al. 2001),
- J. Kramer’s simple, practical six-step procedure (Kramer 1994),

– a segmentation procedure with an analytical and decision-making character (Duliniec 1994),
– the five-stage procedure for determining segments in a given market developed by McDonald and Dunbar (2003).

An overview and brief description of the segmentation procedures for ultimately selecting the target market are presented in Table 2.

In the segmentation of the coffee market, which is a market characterised by a very large, heterogeneous group of recipients, it seems most appropriate to use the analytical and decision-making procedure. The procedure is derived from E.J. McCarthy's simplified segmentation and is based on the four main steps presented in Fig. 1.

As presented in Fig. 1, the selection of segmentation criteria is made after defining the product and the market to be segmented and determining the needs and expectations of potential buyers. The next step of the procedure is to examine and evaluate potential market segments, which requires the preparation of the so-called segment profiles. This step concerns the development of qualitative and quantitative characteristics in order to assess the attractiveness (profitability) of future target (operational) segments to the enterprise. The choice of target segments and the planning of marketing activities depending on the adopted variant of the market segmentation strategy is the last step of the procedure.

Due to the fact that the coffee market is internally very diverse in order to distinguish its most important segments, it is necessary to apply many segmentation criteria (Wróblewski and Mokrysz 2017; Maciejewski et al. 2018; Wróblewski and Dacko-Pikiewicz 2018). In the source literature, market classification according to general and specific criteria, as well as according to objective and subjective criteria (Table 3), is the most common.

General criteria include those that apply to every consumer—a coffee consumer in this case—regardless of the market situation, and specific criteria refer to a specific market situation which affects consumer behaviour as a subject of demand. Objective criteria include those criteria that can be measured in an indisputable way (e.g. age, gender), while subjective criteria have to be arrived at on the basis of research results (e.g. lifestyle, coffee brand preferences, attitude towards sustainable consumption) (Cahill 1997; Nowotarska-Romaniak 2003). A list of the most commonly used criteria for the segmentation of coffee consumers is presented in Table 4.

3 Methods

For the purpose of this article, direct research was carried out (Table 5). The research was completed in July 2018. The research conducted was quantitative, and focused on Polish coffee consumers. The aim of the research was to identify the attitudes and behaviours of respondents on the coffee market in Poland. The research tool was a standardised survey posted on the website of the Ariadna Nationwide Research

Table 2 Review of market segmentation procedures

No.	Type of procedure	Research stages
1	A priori procedure	– A priori selection of segmentation criteria – Selection of a set of characteristics describing segments and the formulation of hypotheses about the relationship between these characteristics and segmentation criteria – Design and selection of a test sample – Gathering information in the course of empirical research – The creation of segments by grouping consumers using selected segmentation criteria – Sketching the profile of individual segments by analysing the information collected about consumers – Estimating the size of each of the profiled segments, choosing the target market, designing or modifying a marketing strategy
2	E.J. McCarthy's procedure	– Broad definition of the segmented market – Formulating a list of the needs of potential buyers – Defining segments by creating a combination of needs met in a given market – Identification and removal of common features – Naming the separable segments of the market – In-depth description of individual segments – Determination of the relative size of segments
3	J. Kramer's procedure	– Defining the company's area of activity on the market – Defining the needs that the company can satisfy in a separate area of the market – Initial identification of various market segments – Identification of those needs that are repeated in each segment – Naming the isolated market segments
4	Analytical/decision-making procedure	– Defining the product and market to be segmented – Defining the needs and expectations of potential buyers of the product – Review and initial selection of criteria for the division of buyers into segments – Selection of market segmentation criteria – Research and evaluation of potential market segments – Choosing the target market, planning marketing activities depending on the adopted variant of the market segmentation strategy
5	Procedure of M. McDonald and I. Dunbar	– Creating a market map (structure and decision makers) – Analysis of customer behaviour and the transactions conducted (who is buying, what is being bought, who is buying what) – Market segmentation (why things are bought, formulating segments, segment control) – Assessment of the attractiveness of the segments (attractiveness criteria, weighting of criteria, criteria parameters, segment assessment) – Assessment of the company's competitiveness in individual segments

Source: Berni et al. (2005) and Jadczaková (2013)

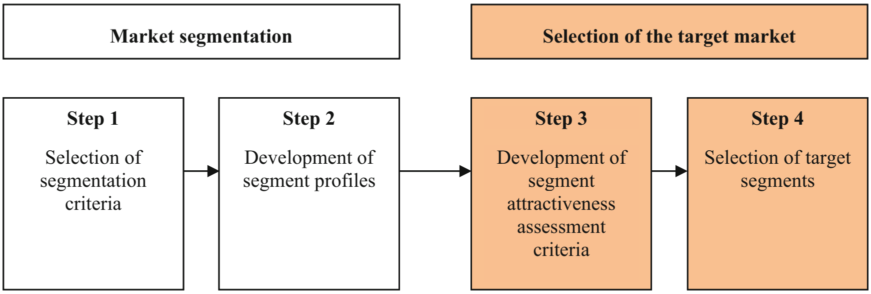

Fig. 1 Selection of the target market in coffee manufacturing and selling companies. Source: Own study based on: Kotler et al. (2002), Ahmad (2003), and Mazurek-Łopacińska (2016)

Table 3 Classification of market segmentation criteria

Criteria for market segmentation/consumer characteristics			
Objective		Subjective	
General	Specific	General	Specific
1. Geographical factors (place of residence—city size class, rural area, region) 2. Demographic factors (gender, age, stage of family life cycle, family status) 3. Socio-economic factors (education, affiliation to social class, social mobility, character of professional activity) 4. Adaptation to the computerisation of everyday life	1. The method (model) of consumption (e.g. one's diet) 2. Attachment to specific trademarks, products, stores, forms of sale and purchase, brand loyalty 3. Consumption levels (high, medium, small) and purchasing frequency 4. Purchase related situations and subjective product categories 5. The role in the process of the assimilation and infiltration of information	1. Characteristic personality traits 2. Lifestyle (specific areas of activity, interests, opinions) 3. Hierarchy of one's instrumental superior values 4. Susceptibility to the impact of marketing instruments	1. Behaviour on the market 2. Manner of reacting to marketing strategies used by coffee producers 3. Attitudes towards products (expected benefits), values related to the product 4. Perception of product features 5. Preferences

Source: Own study based on: Frank et al. (1972), Bock and Uncles (2002), Bruwer et al. (2002), and Kusińska (2009)

Panel, in which over 100,000 people from all over Poland are registered (Ariadna 2019). The questions in the survey were formulated in the form of open, closed and semi-closed questions and Likert scales. The reliability of the scales used in the study was confirmed by Cronbach's alpha test. The test values obtained for all applied scales were in the range from 0.7 to 0.9. The quality of this research is guaranteed by the Interviewers' Quality Control Programme Certificate (PKJPA) of the Polish Association of Public Opinion and Marketing Research Firms (OFBOR). OFBOR adopts recommendations included in the International Code on Market, Opinion and Social Research and Data Analytics by the International Chamber of Commerce (ICC) and the European Society for Opinion and Marketing Research (ESOMAR) as

Table 4 Types and criteria for the segmentation of coffee consumers

Type of segmentation	Methods and criteria for dividing the market
Psychographic	Division of the market into distinct groups of buyers because of their membership of a social group, lifestyle or personality traits.
Behavioural	Division of the market into groups of buyers due to their knowledge, attitude, preferences, market choices, etc.
Geographical	Division of the market into distinct geographical units such as nations, countries, regions, provinces, cities, districts, etc.
Demographic	Division of the market into groups of consumers according to demographic variables such as gender, age, family size, family life cycle, occupation, education, race or nationality.
Geodemographic	Research on relationships between geographical location and buyer demographics.
According to age and life cycle	Offering products or the use of methods of marketing influence in a way that takes into account the changing needs of consumers in different phases of their life cycle.
Economic	Division of the market into groups of buyers with different incomes, relatively high, medium or low, also indicating material conditions.
According to purchasing opportunities	Division of the market due to the situations in which the intention to buy a product appears, its purchase takes place or the purchased product is used.
According to benefits	Division of the market into groups of buyers due to the different benefits that they expect from the former product. This means identifying the major benefits that people expect from a given category of products, buyers looking for all of these benefits and leading brands that provide them.
According to the user's status: the intensity of use	Division of the market into groups of buyers: those who do not use the product, ex-users, potential users, new users and those who regularly use the product. In some markets, segments of customers can be distinguished based on high, medium and low intensity of product use. Those who use the product intensively are usually a small percentage of the market, but they have a large share in the total value of purchases.
According to the degree of loyalty	Division of the market into groups of buyers who are respectively fully loyal (always buy the same brand), loyal to a certain extent (faithful to two, or three product brands, or preferring a certain brand, but buy another from time to time) and disloyal (when buying products they choose a different brand every time or choose one which is offered in promotion) to their products, then focusing on profitable, loyal consumers.
According to purchasing readiness	Division of the market into groups of buyers at different stages of readiness to purchase a particular product into those unaware of the existence of the given product, those conscious and interested in the product, those wanting to have it and those who intend to buy it. The relative abundance of each of these groups has a significant impact on building loyalty programmes. The stages through which the usual consumer

(continued)

Table 4 (continued)

Type of segmentation	Methods and criteria for dividing the market
	moves when making the purchase are: awareness, knowledge, liking, preference, conviction and purchase.
According to the attitude towards the product	Division of the market into groups of buyers who are enthusiastic, positive, indifferent, negative or hostile towards a given product. Attitude to the product can be an effective variable of market segmentation when marketing programmes can confirm the belief of people with a positive attitude towards a product and try to convince those who are indifferent. Little time to devote to attempts to change the customer's negative or hostile attitude to the product.

Source: Own study based on: Lin (2002), Cahill (2006), Födermayr and Diamantopoulos (2008), Onwezen et al. (2012), Geraghty and Torres (2009), and Mazurek-Łopacińska (2016)

Table 5 Characteristics of the research sample (N = 800)

Specification		Absolute number	Percentage of the tested sample
Sex	Female	413	51.6
	Male	387	48.4
Age	16–24	160	20.0
	25–34	161	20.1
	35–44	159	19.9
	45–54	161	20.1
	55–64	159	19.9
Place of residence	Rural areas	186	23.3
	Town with up to 50,000 residents	208	26.0
	Town with 50,000–199,000 residents	200	25.0
	Town with over 200,000 residents	206	25.8
Education	Primary	25	3.1
	Vocational	92	11.5
	Secondary	366	45.8
	Higher	317	39.6
Monthly net income per person	200 euro or less	99	12.4
	From 201 euro to 300 euro	157	19.6
	From 301 euro to 500 euro	245	30.6
	From 501 euro to 700 euro	138	17.3
	From 701 euro to 950 euro	94	11.8
	Above 950 euro	67	8.4

Source: Own elaboration

binding for its members, and at the same time prepares its own sets of rules of professional conduct intended for the Polish market and controls their observance on that basis. Ariadna operates in accordance with the Personal Data Protection Act and the guidelines of the Inspector General for Personal Data Protection (Ariadna 2019).

The research focused on Polish coffee consumers. In Poland, coffee is the most frequently consumed drink after mineral water. Coffee consumption is declared by 80% of adult Poles. This represents a population of over 25 million consumers. In the conducted research, targeted sampling was used. Respondents were people registered on Ariadna, who met the conditions for selection to the sample and responded to the researchers' invitation: adults who consume coffee at least once a week. These consumers were sent a link to the survey via email with a request to complete it.

The size of the test sample was set at 800. This size sample provided results with a measurement error of no more than 3%, with a confidence level of 0.95. This assumption was met—a total of 800 correctly and fully filled out questionnaires were received (Table 5).

Gender breakdown consistent with the ratio in the general population of Poland's inhabitants was assumed in the research. As a result, it involved 413 women and 387 men, who accounted for 51.6 and 48.4% of the sample, respectively. These were most often people living in towns of various sizes (76.7%) with secondary (45.8%) or higher education (39.6%). The monthly net income per person in the respondents' households usually ranged from 301 to 500 euro (30.6% of the respondents provided such answers)—Table 5. The research was conducted with the participation of people living in all 16 provinces of Poland.

Cluster analysis (CA) was carried out in order to identify the main consumer segments on the coffee market in Poland. CA methods, also known as classification methods or grouping methods, are among the basic methods of statistical multidimensional analysis used in segmentation (Kaczmarek 2003; Dolnicar and Leisch 2004; Brunner and Siegrist 2011). They make it possible to find and assess isolated clusters, create classifications and mine data (Migdał-Najman and Najman 2013). A description of numerous applications of CA methods in marketing research has been presented by Walesiak (2004).

Various systematics of cluster analysis methods can be found in the source literature; one of the most commonly adopted systematics is the division into four groups (Walesiak 2004, 2009; Czuba and Skurczyński 2008; Migdał-Najman 2012):

– hierarchical methods (agglomeration and deglomeration),
– partitioning methods (area and density methods when the number of isolated clusters is unknown, and methods optimising the initial division of a set of objects when the number of separated clusters is known),
– graphic presentation methods,
– hybrid methods (combining the aforementioned classic methods with neural networks).

Among the cluster analysis methods used in the process of market segmentation, hierarchical methods are most often used. In the course of the grouping procedure, several stages widely described in the literature (Kaczmarek 2003) can be distinguished. The starting point is the situation in which each object represents one, independent group, class—in other words, a single element cluster. There are as many clusters as there are objects. After each classification step, the number of classes decreases by one, whereby the number of classes is reduced by combining two existing ones. There are n − 1 classification steps. The procedure ends when all objects are in a single group (Walesiak 2009).

Due to the differences in the method of determining the similarity between objects combined into classes (clusters) and determining the distance between classes of objects in a multi-dimensional space, several grouping variants (algorithms) of agglomeration methods are distinguished in cluster analysis, which is reflected in their names: the nearest neighbour method, the farthest neighbour method, the centre of gravity method, the median method, the group mean method and Ward's method (Kaczmarek 2003; Czuba and Skurczyński 2008). For the purpose of segmentation in marketing research, Ward's method (Maciejewski 2018) is quite often used. This is determined by the method of combining objects into clusters. In Ward's method, such objects which cause the smallest increase of the variance in the cluster are combined, thus ensuring the highest homogeneity of the cluster (Litz 2000). In this method, the Euclidean squared distance is most often used as a measure of similarity between objects. This solution has a highly valuable trait—when calculating the distance between objects, large differences in the values of the variables describing these objects are taken into account more strongly than with a relatively small variation of variables (Kaczmarek 2003). Unfortunately, as with any method, Ward's method has its methodological drawbacks and limitations. In order to obtain more accurate results, the use of other classification methods in the same study, e.g. division methods or non-hierarchical methods, is therefore recommended (Migdał-Najman and Najman 2013). This was also undertaken in the research, first using one of the hierarchical agglomeration methods—Ward's method applied with the Euclidean squared distance, and then the non-hierarchical k-means method.

The description of segments was based on cross tables, which were created as a result of using the IBM SPSS Statistics 24 programme.

4 Results and Discussion

In the conducted research, consumer segmentation was based on behavioural criteria describing the respondents' attitudes and behaviours related to purchasing opportunities, benefits sought, brand attachment or usage intensity, etc. The cluster analysis itself took place in two stages. The first stage was to perform a hierarchical clustering analysis using Ward's method, and the second stage using the non-hierarchical method. The use of both methods results from methodological limitations. Non-hierarchical analysis is less sensitive to observations deviating from the norm and incorrect variables, which enables better results to be obtained. However, the target number of segments needs to be specified (which is not pre-determined). To

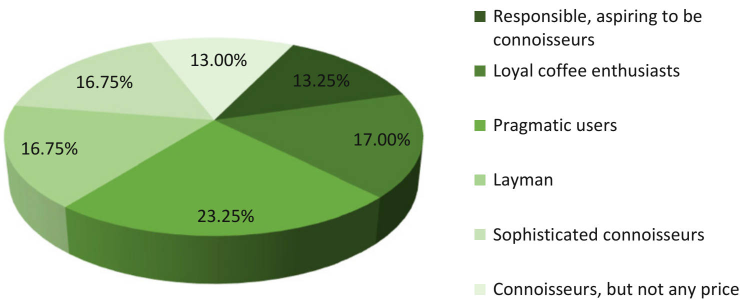

Fig. 2 Size and name of the segments obtained. Source: Own elaboration

obtain this information, it is first necessary to use a hierarchical clustering analysis. Analysis of the agglomeration coefficient and the dendrogram, obtained using a layered analysis via Ward's method, led to the selection of six segments, which is also confirmed by hierarchical analysis. Next, names were given to the isolated segments which, in the opinion of the authors, best reflect the behavioural features and the attitude towards the sustainable values of the consumers assigned to the segments. The size of segments and their names are shown in Fig. 2.

The first group of respondents (segment I) included consumers whose opinions and attitudes were most in line with the guidelines for sustainable development and sustainable consumption from among all respondents. For more than 80% of respondents in this segment, it was important ("I strongly agree" and "I mostly agree") to know how the coffee was produced and that the packaging in which the coffee is sold was environmentally friendly. Importantly, over 80% of respondents in this group agreed to pay more for coffee sold in packaging that was large and economical or that could be re-used in the household. Over 75% of respondents in this segment always checked who the producer was when buying coffee and were willing to pay more for coffee that had a Fairtrade certificate. For these consumers, it is difficult to imagine life without coffee, and they were of the opinion that the best coffee is served in cafés. Although they were attached to their favourite brand of coffee, if it was not available on the store shelf, they would decide to buy another one so as not to have to give up their favourite drink. They were willing to pay more for freshly roasted coffee that was produced in Poland. They drank ground coffee (38.7%) almost as often as instant coffee (35.8%), which were their most preferred types of coffee. This segment was characterised by an equal share of women and men. Almost half of the people who made up this segment were young people under 35, most often living in towns with fewer than 100,000 inhabitants who came from households where the net monthly income per person was below 500 euro. Therefore, these consumers could be described as "responsible, aspiring to be connoisseurs", constituting 13.3% of the sample.

The second isolated segment of consumers declared an attachment to their favourite coffee and were most often reluctant to change it amongst all 800 respondents. As with consumers in the first indicated segment, it was difficult for them to imagine life without coffee. The consumers in the second segment considered themselves to be coffee experts—they only liked a few coffee brands—and more expensive coffee did not necessarily mean better quality to them. Most popular among all segments of consumers were coffee beans (25.0%). Positive attitudes to sustainable values such as sustainable production ("I definitely agree" and "I mostly agree") were identified in less than half of the respondents in this segment. This group was dominated by women (56.6%), people aged 45 and over (56.6%), whose monthly net income per person in their households was in the range of 201–500 euro. The respondents forming segment II could therefore be described as "loyal coffee enthusiasts". In the sample, they constituted 17.0% of respondents.

Consumers classified in the third group were characterised by attachment to their favourite brand of coffee and a reluctance to change. These respondents liked to drink coffee and it was difficult for them to imagine life without coffee. Among all respondents, people in this segment were characterised by the highest level of indifference toward sustainable values. The responses "I neither agree nor disagree" accounted for as many as 63–70% of the responses to statements regarding aspects of sustainable development and sustainable production. When buying coffee, they usually chose ground coffee (39.8%) or instant coffee (35.5%). This segment was dominated by men (55.4%). Almost half of the respondents in this group were people aged under 35, mainly aged between 16 and 24 (28.5%). This segment, among all of those isolated, was characterised by the highest share of rural residents (30.1%). Almost half of the respondents in this group earned a monthly net income in the range of 201–500 euro per person. People in this segment can be described as "pragmatic users" of coffee. They formed the most numerous segment: 23.3% of all respondents.

The fourth group of respondents was characterised by an attachment to their favourite coffee and an unwillingness to replace it with another brand. This group (Segment IV) consisted of consumers who can be described as "laymen" and constituted 16.8% of all surveyed coffee consumers. Lack of knowledge about coffee brands and types translated to the purchase of coffee brands that had been on the market for many years. Consumers in this segment usually bought instant coffee (41.0%). In the opinion of respondents from this segment, producers should provide consumers with practical knowledge about proper coffee preparation, and coffee products should be convenient and easy to prepare. They also agreed with the opinion that more expensive coffee did not necessarily mean better quality. More than half of the respondents in this segment "strongly agree" or "agree" only with the statements "It is important to me that the packaging in which coffee is sold is the most environmentally friendly" (63.4%) and "Large packaging is better because it is more economical" (56.7%). In the "coffee layperson" segment, there were slightly more women than men (51.5%), and more people in the 45 and over category than those of a younger age. Nearly two-thirds of the respondents in this segment were residents of smaller towns (fewer than 100,000 inhabitants) and villages. Nearly 40% of the respondents in this group of consumers lived in households where the monthly net income per person was in the range of 301–500 euro.

Respondents classified as the fifth segment were consumers who replied that what counted for them was not only the taste of coffee, but also how it was served and how it looked, more often than others. For such people, it is not just drinking coffee which makes them happy, but also the ritual of preparing it. Their attitudes and opinions were most in line with sustainable values, immediately after the consumers classified in the first segment. This group of consumers can be classified as a group of pioneers as they like to try new products whenever they appear on the market. They were willing to pay more for good, freshly roasted coffee. This segment was dominated by women (56.7%), people under 55, inhabitants of larger cities (over 100,000 inhabitants) and relatively well-to-do people. Nearly a third of the respondents in this segment declared a monthly net income of 701 euro or more per person in their households. "Sophisticated connoisseurs", which is how this segment can be described, are characterised by high consumption of coffee beans (23.1%).

The sixth and last segment of coffee consumers were people who mainly bought coffee currently on sale (offered at a reduced price) and chose large packages that they thought were more economical. In their opinion, more expensive coffee did not necessarily mean that the coffee was of good quality, and if the store did not have their favourite brand, they would simply buy another one. Regarding the type of coffee purchased, it was usually ground coffee (40.4%) or instant coffee (37.5%). Over 70% of the respondents in this segment admitted that they did not see any justification in paying more for coffee that had a Fairtrade certificate or was a BIO product. About 60% also did not agree to pay more for coffee sold in practical packaging that could be used later. Only to every sixth respondent in this segment was it important that the packaging in which the coffee is sold is environmentally friendly. Consumers classified as being part of this segment were not interested in either who produced the coffee they buy or how it was produced. This group of respondents contained slightly more men than women (52.9%); nearly a third of this group were aged 35–44; 79.0% were urban residents; and the largest number of group members had a monthly net income of 201–500 euro per person in a household. Across the entire sample which was the subject of research, this constituted the smallest group at 13%, and can be described as "connoisseurs, but not at any price".

5 Conclusions

The basic research carried out for the purposes of the article and the statistical analysis of its results allow us to accept the hypotheses set in the introduction. Coffee consumers in Poland constitute a heterogeneous group of consumers. The use of Ward's method and the k-means method in the conducted analyses allowed for the isolation of six clusters—coffee consumer segments. These segments constitute clusters of individuals similar to each other in the area of a given segment, and different from individuals forming other segments.

The characteristics that differentiate coffee consumers have proved to be variables such as age, place of residence, income and gender. Interestingly, behavioural variables play a major role in differentiating consumers in the coffee market. The first thing to mention at this point is the frequency of drinking coffee, the type of coffee purchased and knowledge about the product. The differentiating variables also included attachment to one's favourite coffee brand as well as attitude to environmental protection and sustainable consumption.

The isolated segments form groups of various sizes. 'Pragmatic users' (23.25%) constitute the largest group. Above all, they expect good quality ground or instant coffee–coffee which is simple and easy to prepare—from coffee producers and sellers. However, the smallest segment is 'Connoisseurs, but not at any price' (13.00%). They are the least loyal of all the consumer groups; they need good coffee but do not want to overpay for it.

The authors are aware that, although the conducted research was of a national nature, it cannot be considered as fully representative. According to the authors, however, the presented results may provide interesting conclusions about the demographic, economic, psychographic or behavioural characteristics of Polish coffee consumers, while providing input into the discussion on the changes in the purchasing behaviour of consumers on the global coffee market.

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Identification of the Reasons Why Individual Consumers Purchase Dietary Supplements

Katarzyna Hys

Abstract The dietary supplements market is an example of a global market which is characterised by continuous growth in sales. The results and analysis of market research confirm the belief that dietary supplements constitute an important dietary component for nearly everyone in the world. In order to expand their sales offer, entrepreneurs are constantly conducting analyses of daily behaviour and decisions made by consumers on the dietary supplements market. On the other hand, researchers are conducting studies on the dietary supplements market which are focused mainly on analysing the medical effects of the use of such products by the citizens of a given community. The author of this elaboration conducted a systematic review of the available subject literature using writing analysis and criticism methods. The scope of literature studies mainly covered licensed electronic sources (Scopus, Web of Science), Open Access (Directory of Open Access Journals), electronic science library catalogues (Springer Link) and commercial Internet resources (reports, assessments, forecasts). The objective of the study was to distinguish the reasons why consumers use dietary supplements. As result of the conducted analysis, it was ascertained that the estimated value of the global dietary supplement market amounted to approx. USD 101.38 billion in 2018 and will amount to approx. USD 220.3 billion in 2020, and is expected to grow further. A broad study of the subject literature and analysis of the research material enabled the researchers to indicate 39 of the key determinants affecting consumer behaviour in the market. The factors were grouped according to two main topical categories: supporting body function and illness prevention. Thereby, the author points to an important problem concerning insufficient consumer knowledge of dietary supplements. Dietary supplements, according to the definition, are foodstuffs and not medicinal products; therefore, the reasons for the purchase of dietary supplements by consumers, identified as factors constituting the "illness prevention" category, should not only be of concern, but should mainly be the trigger for action aimed at improving the related consumer knowledge. It is necessary to provide consumers

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with regular education on rational decision-making in the dietary supplement market. Consumer education should contribute to an increase in consumer awareness and counteract unfounded dietary supplement consumerism. Consumers should familiarise themselves with the potential benefits and risks resulting from the usage of dietary supplements.

Keywords Dietary supplement · Determinants · Consumer behaviour

1 Introduction

It is possible to observe the dynamic growth of the supplements market practically on a global scale. Regions such as the USA, Europe and Japan constitute a group of countries in which the value of the dietary supplements market is highest. Asia, Asia Minor, Australia and Oceania constitute regions where the value of the dietary supplements market can be called average. On the other hand, African and South American countries are areas in which the dietary supplements market has the lowest value.

From the point of view of entrepreneurs who supply the market with dietary supplements, a diagnosis of the situation in a given region also allows them to determine the potential sales market and the level of receptivity. From consumers' point of view, diversity and availability of the products is very important, because it enables freedom of choice and the satisfaction of various needs. Similarly, the growth of the dietary supplements market may be viewed in terms of the benefits for governments in particular states, because it provides tax revenue for the state budget.

This study is to identify the list of determinants affecting consumer behaviour in the dietary supplement market. The dietary supplements market (henceforth referred to as the studied market) was valued at USD 101.38 billion in 2018, registering a CAGR of 6.9%, during the forecast period (2019–2024) (Report 2019a). Witnessing a tremendous rise in the period from 2015 to 2021, the revenue in this dietary supplements market is set to reach US$220.3 billion by the end of the forecast period (Report 2019b) (Fig. 1).

Due to the above, researchers may ask what the cause of such a dynamic growth of the global dietary supplements market is. As specified, the key reason for this is a change in the method of viewing medical practice. The so-called medical practice is abandoned in favour of preventive health care management (Hys 2019). This is especially justified in relation to "ageing" regions or countries, such the USA, Europe and Japan. Consumers seek products that will allow them to maintain good physical and mental condition. Therefore, the market has created many products that respond to the need articulated by the consumers (whether consciously or unconsciously). Due to the size of the dietary supplements market in a given region of the world and the type thereof, it is possible to distinguish saturated, developing and small markets (Fig. 2).

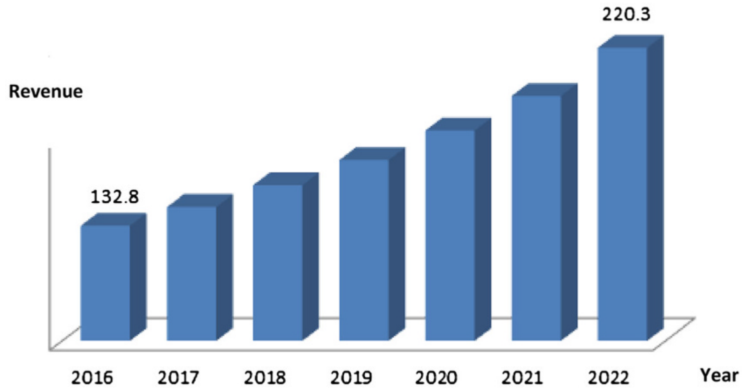


Fig. 1 Global dietary supplement market, 2016–2022 (billion USD). Source: Zion Research Analysis (2019)

Fig. 2 Dietary supplements market—(Market Size, by Region, Global, 2018). Source: Mordor Intelligence (2019)

The value of the dietary supplements market in relation to particular European markets is presented in Table 1. The values for the studied market in particular countries in 2015 were compared to the estimated data for 2020. The countries specified can be divided into three groups:

I—countries for which the value of the dietary supplements market exceeds 100 million Euro,

II—countries for which the value of the dietary supplements market is higher than 10 million Euro, but lower than 100 million Euro,

III—countries for which the value of the dietary supplements market is lower than 10 million Euro.

Table 1 Value of the dietary supplements market in Europe (in million Euro)

Value of the dietary supplements market in Europe (in million Euro)							
Country	2015	2020[a]	Change	Country	2015	2020[a]	Change
Italy	1424.2	1601.5	177.30	Switzerland	93.0	92.7	−0.30
Russia	887.7	1079.9	192.20	Austria	81.7	91.9	10.20
Germany	966.6	967.2	0.60	Ukraine	75.7	87.1	11.40
United Kingdom	737.0	755.2	18.20	Lithuania	45.4	50.6	5.20
France	683.8	724.8	41.00	Greece	30.1	43.4	13.30
Poland	353.4	407.5	54.10	Ireland	35.9	38.2	2.30
Norway	231.5	220.4	−11.10	Slovenia	33.8	36.6	2.80
Finland	201.2	207.4	6.20	Bulgaria	22.5	25.5	3.00
Sweden	181.5	199.3	17.80	Portugal	24.3	24.5	0.20
Belgium	193.6	194.0	0.40	Serbia	19.0	21.1	2.10
Spain	182.6	193.5	10.90	Belarus	15.5	17.2	1.70
Netherlands	142.1	169.2	27.10	Latvia	11.4	13.6	2.20
Hungary	116.6	136.3	19.70	Croatia	11.3	11.7	0.40
Turkey	96.0	121.7	25.70	Bosnia and Herzegovina	9.2	11.3	2.10
Romania	72.2	101.8	29.60	Estonia	6.7	7.1	0.40
Denmark	96.5	98.7	2.20	Georgia	6.1	6.8	0.70
Czech Republic	84.7	96.1	11.40	Macedonia	3.7	4.4	0.70

[a]Prognosis
Source: Own elaboration based on Statista Ltd. Retrieved September 27, 2019, from https://www.statista.com/statistics/828514/total-dietary-supplements-market-size-globally

Preliminary data interpretation leads to the observation that the dietary supplements market belongs to the category of dynamically growing markets. It is estimated that in 2020 the market value will exceed 1600 million Euro in Italy and 1000 million Euro in Russia. In countries such as Germany, the United Kingdom, France, Poland, Norway, Finland, Sweden, Belgium, Spain, the Netherlands, Hungary, Turkey and Romania, the value of the dietary supplements market exceeds 100 million Euro. In other countries, the market value fluctuated between 4.4 and 98.7 million Euro. This means that there is a large discrepancy between the estimated value of the market in particular European countries. On the other hand, the slowest changes are visible in countries such as Estonia, Georgia and Macedonia.

An in-depth data analysis points to another phenomenon. For now, it is possible to see certain symptoms which may be the beginning of future changes in the market. More specifically, in countries in which the value of the dietary supplements market is very high and fluctuates around or exceeds 100 million Euro, such as Norway and Switzerland, there is a visible slowdown in the market's growth (−11.10 and −0.3 million Euro, respectively). Similarly, in Belgium, Germany and Denmark, the growth in market value is becoming increasingly static: the change amounts to 0.4, 0.6 and 2.2 million Euro, respectively.

The situation in the global and European dietary supplements market is very dynamic, and the phenomena taking place therein are the basis for scientific studies. This paper constitutes an attempt to discuss the determinants that affect the purchase of dietary supplements by individual customers on the Polish market.

Due to the above, it is possible to notice that the dietary supplements market is one of the most intensely growing markets in the world. There is therefore a real need for in-depth studies aimed at getting to know the mechanisms of consumer behaviour on the market. The reasons for consumer purchasing decisions have been the subject of scientific study for years. Many definitions, models and concepts used for analysing consumer behaviour on the market have been developed. The world of science has developed many general theories concerning consumer behaviour; however, the current studies are focused on the issue of consumer decision-making conditions and the relationships between the given market's stakeholders. This paper will focus on the dietary supplements market, and especially on the reasons behind consumer decisions on the market.

2 Theoretical Background

The term "consumer behaviour" constitutes a complex category. It reflects a set of cause-and-effect actions taken by customers at each stage of market purchasing. Purchasing is done on many levels, including that of conscious and unconscious decisions. Due to the above, the traditional consumer behaviour models proposed by many researchers must be viewed as a starting point for analysing consumer behaviour, rather than as a full-scale model with a complete structure, i.e. without other layers affecting consumer decisions than those described in the given model. The subject literature proposes many models reflecting consumer behaviour in the market. Table 2 presents those behavioural models which treat purchasing as a cycle of actions taken by customers, executed in specific stages.

However, as noted by Rassuli and Harrell (1990), consumer behaviour can be a continuous process resulting from the need to satisfy various-level consumer needs. Therefore, they proposed perceiving consumer behaviour through feedback. On the other hand, Sheth et al. (1991) pointed to the values perceived by consumers and their impact on purchase decisions. The researchers specified the following values: functional, social, conditional, emotional, and epistemic values. Instead, Smith and Rupp (2003) considered consumer behaviour to be a process of choice affected by social, cultural and psychological factors. Therefore, consumer behaviour can be viewed as actions for which pre-purchase, purchase and post-purchase behaviours can be identified. Viewing consumer behaviour in such a manner, i.e. in a framework which allows for the observation of customer behaviour in a continuous cycle, was deemed the so-called marketing spiral (Armano 2007).

In general, it is possible to notice that the presented models feature consumer behaviours which comprise actions organised according to a specific scheme. This concept can be presented as a peculiar individual consumer action continuum

Table 2 Models of decision making by individual consumers

Author(s)/year of publication	Stages of activities in the consumer purchasing process
Simon (1959)	Intelligence activity
	Design activity
	Choice activity
Engel et al. (1968)	Need recognition
	Search
	Alternative evaluation
	Purchase
	Outcomes
Keeney (1982)	Structure the decision problem (generation of alternatives and specification of objectives)
	Assess the possible impacts of each alternative
	Determine the preferences (values) of decision makers
	Evaluate and compare alternatives
Court et al. (2009)	Initial consideration
	Active evaluation, or the process of researching potential purchases
	Closure, when consumers buy brands
	Post-purchase, when consumers experience them
Belch and Belch (2009)	Motivation
	Perception
	Attitude formation
	Integration
	Learning
Stankevich (2017)	Need recognition
	Search for information
	Evaluation of alternatives
	Purchase
	Post-purchase

Source: Own elaboration

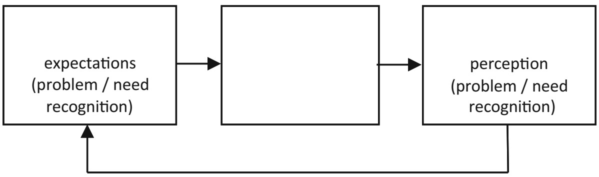


Fig. 3 Consumer action continuum. Source: Own elaboration

(Fig. 3), which features continuous purchasing processes transformed into subsequent stages (Solomon et al. 2006; Kotler and Keller 2012).

This is confirmed by the structures of models proposed by many researchers (Table 2). Despite the fact that these models include various identified stages of consumer behaviour on the market, it is possible to note that they have a common feature, i.e. in principle they include three stages: inspiration-purchase-inspiration.

As such, consumer behaviour at each stage is determined by economic, cultural and social, demographic and psychological factors (Hys 2019).

At the first stage, inspiration reflects the stage of need identification with consideration of all factors affecting purchasing decisions. The purchase stage reflects the exchange. The inspirations at the third stage are all actions taken by the consumer as result of the experience constituting the effect of decisions and actions taken at the previous stages. In summary, consumer behaviour at each stage is affected by various stimuli affecting the consumer with various degrees of intensity. The more intensely a consumer reacts to outside stimuli, the less independent (autonomous) his or her decisions become (Velčovská and Krbová 2016; Kozel et al. 2016).

Studying consumer behaviour in the market must be correlated with the type of customer. As a result of their research, Sproles and Kendall distinguished eight types of customers, *namely the perfectionistic consumer, the brand-conscious consumer, the novelty fashion-conscious consumer, the recreational shopping-conscious consumer, the price value-conscious consumer, the impulsive consumer, the consumer confused by overchoice and the habitual brand-loyal consumer* (Sproles and Kendall 1986). Despite the fact that the purchase process was established in terms of detailed stages, starting with purchase initiation, through the purchase itself as well as post-purchase actions, then in terms of a given customer type and the factors stimulating the given purchase behaviour, the process will be executed differently. This concept is also postulated by Solomon et al. (2006), who state that the consumer behaviour models are varied and cannot be viewed only in terms of rational features, because irrational features also affect consumer purchasing decisions.

Consumer purchasing decisions in the dietary supplements market are subject to the same rules. In this paper, the focus will be on identifying the reasons why consumers purchase dietary supplements (Hys 2017).

3 Research Methodology

The scientific objectives specified in the title of the paper were realised using a systematic literature review consisting of the following stages:

1. specification of the study's purpose,
2. seeking topic-related subject literature coherent with the defined purpose of the study,
3. the application of content analysis techniques affecting consumer purchasing decisions,
4. development of the results of the study.

The aim of the study was formulated as the identification of the reasons why consumers purchase dietary supplements in terms of purchasing decisions on the global dietary supplements market, based on subject literature analysis. The subject literature was mainly generated based on licensed international science databases, such as Scopus and Web of Science. The analysis encompassed solely

English-language papers published until 30 September 2019. It included a filtering criterion for such phrases and combinations as *dietary supplements* in healthy policy services, social science, economics, business, management and accounting fields, featured in the publication's title, abstract or key words. The next stage featured the review, analysis and verification of abstracts, thereby allowing for a narrowing of the publication base to those with contents corresponding to the defined purpose of the study.

4 Results

The subject literature study results were presented in a table featuring stages, criteria and results of article selection (Table 3). Ultimately, the analysis encompassed 160 papers which met the abovementioned selection criteria.

The topic of the selected publications is focused mainly on theoretical aspects concerning consumer behaviour in the dietary supplements market. Nevertheless, the analysis identified 11 publications featuring empirical study results with references to the scope studied in this paper. Details of the results of the empirical study are presented in Table 4.

As a result of the comparative analyses conducted, the reasons for the use of dietary supplements by individual customers were identified (Table 5).

Table 3 Stages, criteria and results of article selection

Stages and selection criteria	Number of articles identified	
	Web of science	Scopus
Stage 1. Phrase: dietary supplement (title, abstract, keywords)	6589	63,213
Stage 2. Refined by: Language (English) and document types (Article or proceedings paper or book chapter or early access)	5247	48,018
Stage 3. Refined by categories: healthy policy services or social science or economics or business or management and accounting	58	115
Stage 4. Identification of total number of duplicates	13	
Stage 5. Total number of articles—elimination of duplicates	160	
Stage 6. Verification of abstracts due to the scope of research—in line with the defined objective	160	

Source: Own elaboration

Table 4 Research of individual consumers regarding purchasing decisions on the dietary supplements market

Author(s)/year of publication	Sample size	
	A total number of participants	Detailed classification
Kelly et al. (2005)	N = 1734	Male, N = 736 Female, N = 998
Bailey et al. (2011)	N = 20,470	2003–2004 (N = 10,122) 2005–2006 (N = 10,348) NHANES (National Health and Nutrition Examination Survey)
Bailey et al. (2011)	N = 5514	
Dickinson et al. (2012)	N = 300 (Reason for recommending) N = 287 (Reason for using)	CRN survey, dieticians
Dickinson and MacKay (2014)	N = 465	CRN Consumer survey
Kang et al. (2016)	N = 2876	DS users, N = 766 nonusers, N = 1648
Barnes et al. (2016)	N = 1633	Male, N = 415 Female, N = 1218
Kotnik et al. (2017)	N = 1463	
Wawryk-Gawda et al. (2018)	N = 853	
Chen et al. (2019)	N = 30,899	NHANES (National Health and Nutrition Examination Survey)
Hansen (2019)	N = 484	Male (N = 53) Female (N = 409) other/prefer not to disclose gender (N = 3) missing gender cases (N = 19)

Source: Own elaboration

5 Discussion

The published studies pertaining to the consumption of dietary supplements are conducted in a narrow scope (except for complex NHANES and CRN studies) and in an uneven manner on a global scale. The presented study results concern various aspects related to dietary supplement consumption; nevertheless, each study features a direct reference to the use of dietary supplements by individual customers. The methodology of the study was also executed in a varied manner (e.g. through online surveys, individual interviews) and scope. This means that the dietary supplements market is recognised to an insufficient degree. The available study results are therefore of a pioneering nature. At the same time, they allow the researchers to identify the research gap and indicate many elements that are not yet recognised and require in-depth studies on the global dietary supplements market.

Table 5 Reasons for use of dietary supplements on the global market

No.	Reasons	%
1	To prevent health problems (overall health & wellness)	9.8
2	To fill nutrient gaps in diet	9.3
3	Immune health	6.6
4	"It is good for you" (recommended by a friend or family member, news, report, magazine, television internet)	6.6
5	Heart health (maintain health cholesterol)	6.0
6	Energy	5.5
7	Gastrointestinal health	4.4
8	Weight management (weight loss)	4.4
9	To build/maintain muscles (bodybuilding)	4.4
10	Mental focus (concentration, mental alertness)	3.8
11	Hair, skin & nails	3.3
12	Bone health	2.7
13	Eye health	2.7
14	To support intense training regimens/to enhance physical performance	2.7
15	Menopausal symptoms/women's health (menopause)	2.2
16	Joint health	2.2
17	Blood pressure/hypertension	1.6
18	Stress management	1.6
19	Insomnia	1.6
20	For pregnancy/improving foetal development/women's health (prenatal, pregnancy)	1.6
21	Do not know	1.6
22	Recommended by a physician	1.1
23	To assist recovery from an illness or injury	1.1
24	"Just in case" insurance policy	1.1
25	Organ health	1.1
26	Healthy ageing	1.1
27	Prostate	1.1
28	Antioxidant	1.1
29	Mood alteration	1.1
30	Anti-ageing	1.1
31	To serve as a meal replacement	1.1
32	Osteoporosis prophylaxis	0.5
33	Hormone therapy	0.5
34	To detoxify	0.5
35	To help reduce risk of serious illness	0.5
36	Alleviation of musculoskeletal pain	0.5
37	Sinus	0.5
38	For anaemia, low iron	0.5
39	"I need it"	0.5
Total		100

Source: Own elaboration

For the purpose of this elaboration, i.e. identifying the reasons for dietary supplement consumption by individual consumers, attention was focused on this specific field of research. In the papers published, such reasons are specified as one of the aspects of the studies conducted or are added by the authors in the discussion or conclusions sections. The studies allowed for the identification of 39 reasons for dietary supplement consumption. The reasons given by consumers are highly varied. However, the most substantial are the following factors: *to prevent health problems* and *to fill nutrient gaps in diet* (1, 2). The situation seems natural, because the main premise for consuming dietary supplements is prevention—protection against diseases. It is interesting that the list (Table 5) features 26 other preventive reasons why consumers use dietary supplements (Table 6).

Other reasons for consuming dietary supplements concern the field of support—they are treated as a means of supporting the functioning of the human organism. Thereby, it is possible to notice that the identified reasons for which consumers use dietary supplements belong, in principle, to two categories: prevention and support (Fig. 4).

Based on this list, an interesting image of the dietary supplements market can be seen. Nearly 74% of consumers use supplements for (mainly potential) disease prevention, whereas 26% use supplements to support their organism. This situation is alarming, because consumers make the decision to use supplements autonomously. Only 1.1% use supplements on the instructions of their physician. In this context, if we consider the growth trends on the global supplements market, we encounter the question of whether there is a real need to use supplements on such a vast scale? How do consumers know which supplements and what dosages to use? There is a plethora of scientific evidence demonstrating that the excessive and improper use of supplements causes undesirable changes in a human organism. Therefore, the author casts doubt on the validity of the reasons for which consumers make purchasing decisions on this market. According to the consumer behaviour model, consumption should be initiated due to a need correlated with economic, social and cultural, demographical and mental factors. The key term here is the *need* as well as knowledge of the stimuli affecting the sensation and/or creation of consumer need in terms of supplement consumption.

Another important issue is consumers' distinction of definitions such as dietary supplements and medicinal products. The legal regulations of the European Parliament and Council referring to such issues in terms of the Community Code are included, among others, in Directive 2001/83/EC and Directive 2002/46/EC. According to Article 1, a medicinal product is a substance or combination of substances that is intended to treat, prevent or diagnose a disease, or to restore, correct or modify physiological functions by exerting a pharmacological, immunological or metabolic action (2001/83/EC). On the other hand, according to Article 2, dietary supplements are *foodstuffs the purpose of which is to supplement the normal diet and which are concentrated sources of nutrients or other substances with a nutritional or physiological function, alone or in combination, marketed in dose form, namely forms such as capsules, pastilles, tablets, pills and other similar forms, sachets of powder, ampoules of liquids, drop dispensing bottles, and other similar forms of*

Table 6 Type of reasons for the use of dietary supplements on the global market

No.	Reasons	%
6	Energy	Supporting the body
9	To maintain muscles/bodybuilding	Supporting the body
10	Mental focus/concentration/mental alertness	Supporting the body
14	To support intense training regimens/to enhance physical performance	Supporting the body
15	Menopausal symptoms/women's health (menopause)	Supporting the body
18	Stress management	Supporting the body
19	Insomnia	Supporting the body
23	To assist recovery from an illness or injury	Supporting the body
29	Mood alteration	Supporting the body
31	To serve as a meal replacement	Supporting the body
34	To detoxify	Supporting the body
36	Alleviation of musculoskeletal pain	Supporting the body
1	To maintain health/prevent health problems/overall health & wellness	Disease prevention
2	To fill nutrient gaps in diet/nutrition	Disease prevention
3	Immune health/to prevent colds	Disease prevention
4	"It is good for you"/recommended by a friend or family member, news, report, Magazine or television, internet	Disease prevention
5	Heart health/to maintain healthy cholesterol	Disease prevention
7	Digestive/gastrointestinal health	Disease prevention
8	Weight management/weight loss	Disease prevention
11	Hair, skin & nails	Disease prevention
12	Bone health	Disease prevention
13	Eye health	Disease prevention
16	Joint health	Disease prevention

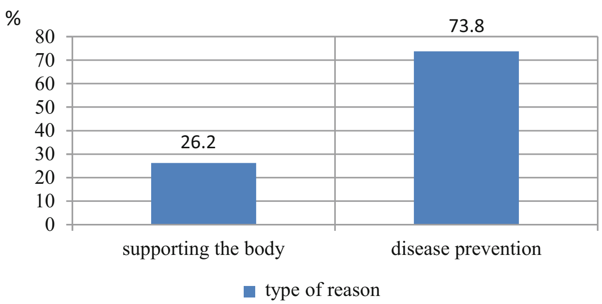
(continued)

Table 6 (continued)

No.	Reasons	%
17	Blood pressures/hypertension	Disease prevention
20	For pregnancy/improving foetal development/women's health (prenatal, pregnancy)	Disease prevention
21	Do not know	Disease prevention
22	Recommended by a physician	Disease prevention
24	"Just in case" insurance policy	Disease prevention
25	Organ health	Disease prevention
26	Healthy ageing	Disease prevention
27	Prostate	Disease prevention
28	Antioxidant	Disease prevention
30	Anti-ageing	Disease prevention
32	Osteoporosis prophylaxis	Disease prevention
33	Hormone therapy	Disease prevention
35	Help reduce risk of serious illness	Disease prevention
37	Sinus	Disease prevention
38	For anaemia, low iron	Disease prevention
39	"I need it"	Disease prevention

Source: Own elaboration

Fig. 4 Type of reasons. Source: Own elaboration



liquids and powders designed to be taken in measured small unit quantities (2002/46/EC).

An important difference between a medicinal product and a dietary supplement is the subject of these definitions. When analysing the similarities and differences, it is necessary to note that a dietary supplement is a foodstuff which is the source of vitamins and mineral components and should be used to supplement a normal diet. Meanwhile, an adequate and varied diet provides all of the nutritional components required for the correct body function. Excessive and unwarranted consumption of supplements can lead to the overdose of substances which, contrary to consumer expectations, wreak havoc in the body instead of supporting its function. In contrast to medicinal products, supplements provide no pharmacological, immunological or metabolic benefit, but only nutritional or other physiological benefits. Meanwhile, information on supplement properties provided in the media can be extremely misleading for consumers due to suggestions and marketing tricks which blur the boundary between medicinal products and supplements. Of concern is also the method of monitoring supplement safety, which is neglected or not analysed at all in many countries, which results in various related pathologies.

The purpose of using dietary supplements, which in essence are foodstuffs, is to maintain the balance in the body at a level which ensures health by supplementing a normal diet. On the other hand, medicinal products are used to restore the body's balance in cases in which it has become disrupted by illness. The analysis of the reasons why individual consumers buy and use dietary supplements raises reasonable concerns in terms of their correct consumption. An alarming increase in the sale of these products was noticed, which admittedly increased the sector's global market value, but it is necessary to ask the question of whether it is a positive trend in this specific case.

6 Conclusions

Despite the seemingly favourable impact of the growth of the dietary supplements market on the quality of life of many stakeholders, the author has also noted certain alarming circumstances that are associated with this growth. In light of the available scientific studies and the cognitive gap identified, the author signals the problem of excessive consumption of dietary supplements. Due to the above, the author made an attempt to identify the factors that determine consumer purchasing decisions on the dietary supplements market.

The conducted studies allowed the researchers to obtain an answer to the question of what the reasons for consuming dietary supplements by individual customers are. Despite the fact that the reasons are varied, the studies made it possible to categorise the reasons identified into two groups: prevention and support. Due to the large growth of the global dietary supplements market, when analysing the reasons identified for their consumption, the author cast doubt on the necessity of doing so at such an increasing pace. Due to the direct effects on a human organism resulting from using (and abusing) dietary supplements, the author postulates that there is a need for universal consumer education in terms of the justified use of these products. Consumers should familiarise themselves with the potential benefits and risks resulting from the use of dietary supplements. This issue is especially important in terms of the lack of consumer knowledge of the terms used on the market, where dietary supplements are associated with medicinal products (which is unwarranted), as confirmed by studies.

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The Behavioural Profiles of Energy Consumers: Comparison of the Decision Tree Method and the Logit Model

Edyta Ropuszyńska-Surma and Magdalena Węglarz

Abstract The purpose of this study is to explore the behavioural profiles of energy consumers, i.e. households (1) which have considered installing renewable energy sources (RES) and (2) which want to become prosumers. The identification of the user profile is vital so as to gain knowledge about users of small-scale generators in order to provide them with a personalised offer. The findings from this study could be valuable for local authorities, energy utilities and producers of RES installations. The main determinants of the willingness to install RES among households were explored by means of the empirical analysis of data collected by a survey of 960 households in Lower Silesia, a south-western region of Poland, in November and December 2015. The research identified the correlation between the households' willingness to install RES (to become prosumers) and (1) socio-economic variables, (2) pro-ecological and pro-efficient behaviour variables, and (3) attitudinal variables. The importance of the variables was verified by a logit model and by the decision tree method. The authors used both methods to determine the key features of energy consumers and to make predictions about whether they are inclined to invest in RES and to become energy prosumers. The results obtained from these two methods were compared.

Keywords Prosumer · Micro-installation · Renewable energy sources · Logit model · Decision tree method

1 Introduction

Innovative technologies in the energy sector related to generating and distributing electricity as well as energy management (including the usage of IT devices, e.g. smart metering) create a new form of cooperation between different kinds of participants in the logistics energy chain. Two forms of energy structure system exist

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simultaneously. The first of these is a centralised system whereby huge power plants produce energy which is distributed by electricity grids to consumers; the second is decentralised and based on dispatched renewable energy sources (RES). This second model is currently being developed more dynamically than the first, albeit depending on the implementation of new RES technologies by individual electricity consumers. The most important changes conditioning the development of the second structure of the energy sector contribute to the transformation of electricity consumers into prosumers. This is not only a technical process, but also a social one, which requires social acceptance of RES as well as changes in consumer behaviour and attitude to electricity usage.

The futurist author A. Toffler introduced the term *prosumer* in the book *The Third Wave*, published in 1980 (Toffler 1980). He took into consideration the new relations in the economy which he called *the third wave*, which is now called *the knowledge-based economy*. Toffler wrote that the role of consumers and producers would change due to new technologies and the willingness of consumers to possess more personalised products and services. According to him, prosumers are people who produce a significant number of goods and services for themselves. The core of his concept is the idea that production and consumption are not separated as in the industrial economy. Next, this term was independently adopted in different areas, e.g. marketing (Kotler 1986), electricity (Oberst et al. 2019; Gautier et al. 2019), the chemical industry, food production, and IT services. In Elsevier publications, the number of papers (including books, chapters in books, and journal articles) containing the word *prosumer* ranged between two and nine per year in the period 1980–2005. Since 2006 this number has grown (e.g. in 2018 it totalled 446). The highest number of publications was linked to the energy sector, including RES. The other publications were connected to clean production.

In the energy sector, a prosumer is an entity who is simultaneously a producer and consumer of electricity and who sells the surplus on the energy market (e.g. to distribution companies). In Polish energy law ('Act of 20 February 2015 on renewable energy sources', 2015), a prosumer is defined in a narrower sense, being only a natural person who does not conduct any business and who has installed a micro- or small generator to produce electricity only for his or her own needs, rather than for profit. According to Polish law, a prosumer could be on-grid or off-grid. The on-grid prosumer has an agreement with the local electricity distribution company and the technical requirements are more restrictive then for off-grid prosumers. Sometimes, especially in the context of research, the definition is extended: a prosumer is a natural person (household) who has installed RES which could produce electricity or heat (Federacja Konsumentów 2016).

An interesting question concerns the kind of people who could buy RES micro-installations and become prosumers. Therefore, the research should focus on the identification of potential prosumers' features and behaviour. Research was conducted in this scope which focused on different kinds of characteristics, many of which were related to socio-demographical features (Diamantopoulos et al. 2003). Later on, the study range was extended to include behavioural features (Sütterlin et al. 2011) and attitudinal features (Diaz-Rainey and Ashton 2011). Segmentation means the division of the market (consumers) into homogenous groups of consumers according to important criteria such as products, demographical features of the consumer, psychological characteristics, and lifestyle. Consumers who belong to the same segments have similar needs and react similarly to the same marketing tools (Penc 1997). Consumers belonging to one segment could be described by the same features (Hutt and Spesh 1997). Homogeneous groups of consumers differ from each other, e.g. in terms of price demand elasticity, income elasticity, and advertising influence. Segmentation is the basis for identifying market niches and creating individual and bespoke market offers for each segment. It is the first step in planning efficient marketing actions. The next step is detailed profiling. This term has a similar meaning to segmentation, but the two terms are not completely identical. Profiling means the characteristics of consumer behaviour in separated segments. Complex marketing and strategical analysis should include the segmentation and profiling of consumers.

Households which have not yet installed RES are the subject of research in this article. Prosumers are excluded from the statistical analysis. Albert and Maasoumy (2016) stated that segmentation is usually carried out by applying the fixed rule-set (e.g. consumers who focus on “green actions” and read environmentalist magazines are called “green advocates”), but in this article the segmentation and profiling is done by using only statistically significant features of consumer behaviour. Profiling according to the willingness to install RES is presented in the paper.

The purpose of this study is to explore the behavioural profiles of households which have not yet installed RES and: (1) are considering installing RES, or (2) do not wish to install RES. The identification of user profiles is vital in order to gain knowledge about the users of small-scale generators so as to provide them with a personalised offer. The main determinants of the willingness to install RES among households were explored using empirical analysis, with the data collected by means of a survey conducted among 960 households in Lower Silesia (a south-western region of Poland) in November and December 2015. The deeper and wider characteristics of research were presented in such publications as Ropuszyńska-Surma and Węglarz (2018a, b) and Ropuszyńska-Surma et al. (2018). Here, it is important to highlight the fact that the data was collected by conducting telephone interviews with 2000 respondents from Lower Silesian households according to the following categories: (1) place of residence, (2) sex, and (3) age. Due to incomprehensible or missing answers to some questions, 1040 questionnaires were not taken into consideration during the statistical analysis.

The survey includes 34 questions divided into three categories: (1) demographic and socio-economic characteristics (e.g. the place of residence, the type of building where the respondent lives and its surface area [m^2], age, education, income and occupational status, expenditure on electricity, sources of heating and hot water); (2) behavioural characteristics (e.g. waste segregation and utilisation, unplugging chargers, leaving devices in standby mode, and using energy-saving home appliances); (3) attitudinal characteristics including the respondents’ opinions of the advantages and disadvantages of being a prosumer, the barriers to installing RES, understanding of the term “prosumer”, and so on. During the statistical analysis, these characteristics are called "tested variables". The questionnaire consists of different types of questions, e.g. open and closed, using 5- to 7-point Likert scales, single-choice questions and multiple-choice ones. Each type of question requires separate coding to conduct the statistical analysis by using the logit model as well as the decision tree method.

The research identified the correlation between the willingness of households to install RES (to become prosumers) and (1) the demographic and socio-economic variables, (2) the pro-ecological and pro-efficient behaviour variables, and (3) the attitudinal variables. The importance of the variables was verified by means of the logit model and the decision tree method. Based on this analysis, the significant variables which will allow for the division of the researched group of households into segments are identified. The authors used both methods to determine the key features of energy consumers, as well as to draw conclusions about the inclination to invest in RES, and thus to become energy prosumers. The research has been conducted independently by means of these two methods. Their range was slightly different and their results were presented respectively in papers by Ropuszyńska-Surma and Węglarz (2018b) and Ropuszyńska-Surma et al. (2018).

Thus, applying the decision tree method and logit model should help (a) to determine which characteristics are typical of people who want to become prosumers, (b) to find the relative importance of those characteristics, and (c) to predict whether a new customer is inclined to invest in renewable energy sources. The aim of this article is: (1) to compare the results obtained using these two methods, as presented in the abovementioned publications; (2) and to express the conclusions as well as to explain why some of the results obtained are slightly different. The main reasons for these differences can be found in the core of these types of methods.

2 Literature Review

Segmentation is usually based on intuitive (naive) methods, or methods such as cluster analysis and statistical tests, to point out significant variables in order to divide the population into homogenous groups. The former are often used in practice, because they are easy to use. Decision trees and the logit model are seldom used.

The decision tree method and logit model could be used for (Song and Lu 2015; Górecki 2013): (1) classification purposes, (2) the selection of the most appropriate attributes that should be used to form a model, (3) the relative importance of variables, and (4) prediction.

The classification tree is used for the analysis in this paper and has a wider scope than the decision tree. The latter term is related to real situations and the outcome of this method is the decision, e.g. whether or not to install RES. In this example, the decision is bilateral and analogous to the presented research. The classification tree is the base technique for *data mining* using an appropriate algorithm. In the presented analysis, the C4.5 algorithm is used, as described by J.R. Quinlan in 1993. This algorithm uses two concepts from information theory: information entropy and information gain.

The classification tree has a wide range of applications in marketing to support e.g. (Łapczyński 2010) a segmentation process, the analysis of customer profitability, research focused on acquiring new buyers, customer churn analysis, cross- and up-selling analysis, fraud detection analysis, and survey data analysis. The advantages of this method are: (1) the acceptance of several types of variables (nominal, ordinal and interval ones); (2) the fact that data could have a complex structure; (3) insensitivity to untypical observations, (4) the efficiency even if data is incomplete; (5) the ease of interpretation of the results.

Graphically, the classification tree has a hierarchical structure and includes several levels. It is built from nodes on each level. Every node is divided into child nodes by means of a defined logical formula (condition). In the classification tree the data is divided into N-classes by defined rules (e.g. logical conditions)—this process is called *classification*. The division process is repeated until the data in each subset forms a final group (Ropuszyńska-Surma et al. 2018). The next step is discrimination, which depends on attributing each observation to one of the N-homogenous classes (Łapczyński 2002). The division process is binary; thus, each node is divided into two child nodes. In the decision tree used in this article, entropy is applied to the dichotomous division in each node. Entropy (the measure of uncertainty) comes from thermodynamics and was applied in information theory. Entropy is calculated after each division (split), meaning that if the event is less likely, then the uncertainty of this event is larger. A more certain event gives a lower value of entropy, e.g. for a certain event, entropy equals zero. If entropy is used for the division, then the creation process of a decision tree is finished when the entropy achieves minimum value (close to zero). This method could be helpful not only for segmentation, but also for profiling the consumers. Each branch is a potential profile.

The logit model could be used for the analysis, where the endogenous variable is dichotomous and presents the result of a rational economic decision. The aim of modelling the binomial variable is to forecast the change in the probability of making a decision caused by a change in the value of one of the exogenous variables. The sign of estimating the parameter (βi) standing next to the exogenous variable in the logit model determines the direction of changes in the endogenous variable (Gruszczyński 2010). The major problem is caused by missing data in records and the insignificant number of observations of particular variables. If data is missing, then all records with this data are removed; thus, the sample size is smaller and the model is less accurate.

Both methods are used in segmentation and profiling consumers or prosumers on the energy market as well as their behaviour, including their willingness to take part in "green energy programmes". Table 1 presents selected publications which focus on the usage of the logit model or classification (decision) tree for research on the energy market, mainly linked to segmentation or profiling. Table 1 presents information such as researchers' names, methods used, and the main research outcomes.

Table 1 Selected publications focusing on the energy market and the logit model or classification tree used

Authors (the data of publication)	Methods (M) used and investigated sample (S)	The aim and range of the investigation (the research topic) and main outcomes
Scarpa and Willis (2010)	M: Mixed logit model, conditional logit model, and adaptation of the choice experiment approach. S: English, Welsh and Scottish households	Aim: The identification of RES micro-installations (e.g. solar photovoltaic, micro-wind, solar thermal, heat pumps, biomass boilers, and pellet stoves), the adoption of RES by households and their willingness to pay for renewable energy. Outcomes: The main barrier to the implementation of micro-installation of RES by households is the higher capital costs related to the value of RES for households and in relation to annual energy savings. To increase households' willingness to pay for RES installation, substantially larger grants than those which are currently available should be given.
Sütterlin et al. (2011)	M: Cluster analysis S: Randomly chosen Swiss households	Aim: The identification and the description of different types of energy consumers according to selected segmentation variables. Segmentation was carried out based on consumers' energy-related behavioural features (e.g. energy conservation, energy-saving purchase of daily products (food, detergents, appliances)), and other consumer characteristics (e.g. the acceptance of policy measures and energy-related psychosocial factors, behavioural characteristics). Outcomes: The identification of six energy consumer segments: the idealistic, the selfless inconsequent, the thrifty, the materialistic, the convenience-oriented indifferent, and the problem-aware well-being-oriented energy consumer. Less and more homogeneous segments were chosen. The segments differ from each other with regard to segmentation variables representing energy-saving behaviour (e.g. energy efficiency in housing, curtailment: housing, mobility,

(continued)

Table 1 (continued)

Authors (the data of publication)	Methods (M) used and investigated sample (S)	The aim and range of the investigation (the research topic) and main outcomes
		food) and motives (e.g. financial, energy consciousness), the acceptance of policy measures (e.g. nuclear power plants, sales regulations, use of regulations in mobility), beliefs, general attitudes, possessing a car (car owners), the behaviour of car drivers, attitudes related to contextual forces (e.g. perceived social pressure, enjoyment of life, the interference of freedom of choice), energy-related knowledge, and socio-demographics. Pointing out the most promising energy consumer segments and possible marketing strategies and policy addressed to some segments. The six segments distinguished could be the target groups for energy conservation campaigns.
Albert and Maasoumy (2016)	M: Classification tree S: Households of energy utility companies from the USA.	Aim: The proposal of a predictive segmentation technique for identifying sub-groups in a large population to improve consumer satisfaction and engagement, e.g. in environmentally-friendly programmes. The segmentation of energy utility consumers from individual household-level consumption, building characteristics, demographics, and programme participation data. Outcomes: The proposed methodology supports the identification of consumer segments in which the rate of the engagement in efficiency programmes is higher compared to the overall population. The outcomes of the proposed method allow the researchers to identify the number and type of patterns in each segments as well as pointing out the optimal segments taking effectiveness into consideration, which means a higher rate of consumer engagement in “environmental programmes”. The results also

(continued)

Table 1 (continued)

Authors (the data of publication)	Methods (M) used and investigated sample (S)	The aim and range of the investigation (the research topic) and main outcomes
		allow the researchers to identify overlapping segments, which means consumers who belong to different segments simultaneously.
Kubli et al. (2018)	M: Hierarchical Bayes estimation, logit model, choice experiment, S: The prosumers and potential prosumers of German-speaking Switzerland.	Aim: Are prosumers ready to co-create flexibility on the energy market? The sample was divided into three groups according to technological domains: PV plus batteries, electric vehicles and heat pumps. Outcomes: Current and potential electric car and solar PV users exhibit a higher willingness to co-create flexibility than heat pump users.
Oberst et al. (2019)	M: Matching analysis, Logit model to estimate the propensity score of variables (e.g. building age, respondents; age, e-tariff) for prosumer, regression analysis. S: Homeowners in Germany.	Aim: The presentation and discussion of how being an energy prosumer affects energy-using behaviour in ways that are unrelated to technical differences between prosumers and other households. Outcomes: "Prosumers and comparable consumers are significantly more likely to have a green electricity tariff and more often live in newly constructed buildings" (Gruszczyński 2010). The results of being prosumers in four models which differ according to the number of key variables are presented. Prosumers and non-prosumers differ regarding socio-economic, building and other household features, but they do not differ in terms of energy consumption behaviour.

Source: Own elaboration

The usage of the logit model and the classification tree is widespread, but not as popular when it comes to prosumer analysis and segmentation.

3 The Characteristics of Variables

To analyse which factors influence households' decisions about RES installation, the authors focused on respondents who considered RES but decided against installation. In order to build models, the authors first removed both RES owners as well as actual and potential prosumers from the data set. The research sample decreased to 820 records (observations). Additionally, in the case of the logit model, 20 records were excluded because of missing data. The endogenous variable has a zero-one form: $y_i = 1$ when the household has considered RES but chose not to proceed with installation and $y_i = 0$ when the household is not at all interested in RES installation.

The following explanatory variables were adopted: demographic, socio-economic, attitudinal and behavioural variables. These variables are binomial or are multi-variant quality variables. The variables and the coding method are shown in Tables 2 and 3. All multi-variant variables have been converted into 0–1 regressors. The original nominal variable, with k variants, was converted into k artificial variables. In the case of the logit model, one of the artificial variables is not included in the model, but is a reference group for other artificial variables (Górecki 2013; Markowicz 2010). The particular reference groups are indicated in the tables as (RG).

In terms of the reference subgroups, the authors assumed groups comprising: females; aged 19–29 years old; one person in the family; no children; level of education—undefined or below primary; occupation—shop assistant; income—the respondents refused to answer; building type—detached house; building age—historic; building class—without insulation; living area—lower than 40 m^2; expenditures on electricity—lower than 12.5 EUR. In terms of knowing the tariff, smart meter installation and changing the provider, the reference groups of respondents are those who answered 'yes'; but when it comes to understanding the term 'prosumer', the reference group consists of respondents who answered 'no'. In terms of heating and hot water, the reference group consists of respondents who have other sources of heating and hot water. When it comes to the reasons for not installing RES, the reference group of respondents consists of those who answered 'low efficiency'; in terms of the reasons behind the reluctance to be a prosumer, the reference group of respondents is comprised of those who answered that such a solution was 'financially inefficient'; and in terms of advantages and disadvantages, the reference group consists of respondents who answered 'no idea'.

Correspondingly, when it comes to the issue of different behaviour, the authors indicated as the reference subgroups those groups of households which answered that the given behaviour does not concern them. However, in the case of installing devices, the authors designated groups of households which responded that they do not know if they have a given type of equipment as reference subgroups.

Table 2 The exogenous variables used in models—demographic, socio-economic and attitudinal variables

Variable	Description	Values
gender	Sex of the decision-maker	1 = female (RG), 2 = male
age	Age of the decision-maker	1–4 scale, 1 = 19–29 (RG), 2 = 30–49, 3 = 50–65, 4 = 65+
number_people	Number of people in a household	1–10 scale, 1 person (RG)
number_children	Number of children in a household	0–4 scale, 0 children (RG)
edu	Level of education	1–10 scale, 1 = undefined or below primary (RG), 2 = primary or lower secondary, 3 = basic vocational, 4 = post-secondary, 5 = general bachelor studies, 6 = technical bachelor studies, 7 = general secondary, 8 = technical secondary, 9 = general tertiary 10 = technical tertiary
occ	Occupation	1–13 scale, 1 = office-administration worker, 2 = middle management, 3 = owner of a private firm, 4 = independent professional, specialist, 5 = artist, 6 = manager, 7 = military, 8 = blue-collar worker, 9 = service sector, shop-assistant (RG), 10 = farmer, 11 = housewife, 12 = pensioner, 13 = unemployed
income	Monthly average net income in Euro	1–8 scale, 1 = up to 750, 2 = 750–1000, 3 = 1000–1250, 4 = 1250–1500, 5 = 1500–2000, 6 = 2000–2500, 7 = more than 2500, 8 = N/A (RG)
building_type	Type of building	1 = detached house, 2 = multi-family house (RG)
building_class	Energy class and the age of building	1–10 scale, 1 = historic building without insulation (RG), 2 = insulated historic building, 3 = built after WWII without insulation, 4 = building insulated after WWII, 5 = built in the 1970s–1980s without insulation, 6 = insulated, built in the 1970s–1980s, 7 = modern (after 1990) building without insulation, 8 = insulated modern (after 1990) building, 9 = energy-saving building, 10 = passive building
living_area	Floor area in m^2	1–8 scale, 1 = up to 40 (RG), 2 = 40–49, 3 = 50–59, 4 = 60–79, 5 = 80–99, 6 = 100–149, 7 = 150–200, 8 = more than 200
tariff	Energy tariff awareness	1 = yes (RG), 2 = no
smartmeter	Smart meter installed	1 = yes (RG), 2 = no
provider	Changing the provider	1 = yes (RG), 2 no
prosum	Understanding of the term 'prosumer'	1 = no (RG), 2 = not sure, 3 = yes
energy_cost	Monthly expenditure on electricity in Euro	1–5 scale, 1 = up to 12.5, 2 = 12.5–25, 3 = 25–50, 4 = 50–75, 5 = more than 75

(continued)

Table 2 (continued)

Variable	Description	Values
heating	Source of heating in the building	1–10 scale, 1 = district heating, 2 = local estate boilers, 3 = central heating, 4 = tiled stove, 5 = fireplace, 6 = fireplace which heats several rooms, 7 = floor heating connected with central heating, 8 = electric floor heating, 9 = electric heating, 10 = other source of heating (heat pump, solar panels, heat exchanger, fireplace with a water jacket, carbon stove, storage heater) (RG)
hot_water	Sources of hot water	1–8 scale, 1 = district, 2 = local estate boilers, 3 = central heating, 4 = boiler or electric heater, 5 = heating on the stove, 6 = coil pipe with heat exchanger, 7 = gas stove, 8 = other source of hot water (solar panels, heating pump, fireplace, tiled stove) (RG)
wnres	Reasons for not installing RES (open question)	1–12 scale, 1 = lack of knowledge, 2 = lack of financial resources, 3 = too expensive compared to the source used now, 4 = financially inefficient, 5 = lack of time, 6 = no possibility, 7 = lack of agreement, 8 = technical reasons, 9 = bureaucracy, 10 = lack of need, 11 = under construction, 12 = low efficiency (RG)
wnp	Reasons for reluctance to be a prosumer (open question)	1–13 scale, 1 = unprofitable, 2 = high installation costs, 3 = unclear legal regulations, 4 = complicated installation process, 5 = neighbours' opinion, 6 = lack of interest, 7 = lack of possibility, 8 = lack of knowledge, 9 = lack of time, 10 = lack of need, 11 = lack of financial assets, 12 = age or health, 13 = financially inefficient (RG)
p_adv	Advantages of being a prosumer (open question)	1–8 scale, 1 = own needs, 2 = environmental benefits, 3 = financial benefits, 4 = lower charges, savings, 5 = financial and environmental benefits, 6 = reselling the energy surplus, 7 = independence, 8 = no idea (RG)
p_dis	Disadvantages of being a prosumer (open question)	1–8 scale, 1 = financial costs, 2 = unclear legal regulations, 3 = time-consuming, 4 = exploitation problems, 5 = small subsidies, 6 = noise, 7 = neighbours' jealousy, 8 = no idea (RG)

Source: Own elaboration
RG reference group

Table 3 The exogenous variables used in models—behavioural variables

Variable	Description	Values
beh_waste	Sorting rubbish	1–7 scale, 1 = never, 2 = very rarely, 3 = rarely, 4 = often, 5 = very often, 6 = always, 7 = does not apply (RG)
beh_electro_rubbish	The utilisation of electro-rubbish	
beh_battery	Battery utilisation	
beh_lights	Switching off the lights	
beh_ironing	Washing or ironing at particular times	
beh_ecomodes	Using eco-options in the washing machine	
beh_covering	Boiling water under the lid	
beh_computers	Switching off electrical equipment (e.g. Computer) if nobody is using it	
beh_charges	Switching off chargers after charging the device	
beh_standby	Unplugging devices that are on standby	
beh_bulbs	Using energy-saving bulbs	0–4 scale, 0 = I have no such devices, 1 = I have, but only a few, 2 = I have a lot of these devices, 3 = I only have such devices 4 = no idea (RG)
beh_led	Using LEDs	
beh_appliances	installing energy-saving home appliances (A+++)	

Source: Own elaboration
RG reference group

4 Research Results

The data will be analysed by means of the decision tree method and logit model. The above-mentioned methods are descriptive, i.e. they should be treated as an explanatory tool which helps to distinguish between respondents belonging to different classes.

The focus is on respondents who have no RES installation, are not prosumers and are not planning to be, but who considered RES before deciding not to proceed with installation or are not interested in RES. The models will help to find what factors could influence respondents and contribute to changing their mindset from not being interested in RES to considering it. The goal of the analysis is fourfold: (1) to find the most relevant attributes that characterise targets, (2) to determine the relative importance of the attributes, (3) to check the performance of the models, and (4) to compare the results of both models.

4.1 Decision Trees

Python (van Rossum and Drake 2001), together with Pandas (McKinney 2010) and Scikit-learn (Pedregosa et al. 2011), was used to perform the analysis presented below. For each target variable, the data was randomly divided into two parts: a training set used to build the tree and a test set to check how well the tree performs as a classifier. The data set was split randomly into a training set of 574 (70%) samples and a test set consisting of 246 samples. The decision tree was built from the training set. The splits that the algorithm determined from the data were tracked after obtaining a tree. In the training set, 411 correspond to the 'No interest in RES' class, while the remaining 163 are those who considered RES and abandoned the idea of purchasing it. The initial entropy of the sample was 0.8608.

The variable *living_area* was used for the first split. The respondents from households smaller than 80 m^2 fulfil the first splitting condition. For the respondents with a living area smaller than 80 m^2, the second split was the variable *water_boiler*. Households which do not use boilers for heating water fulfil the second splitting condition. The third splitting condition was fulfilled by the variable *building_type*. Respondents living in multifamily houses fulfil this splitting condition. For the respondents with a living area bigger than 80 m,^{2} the second split was a living area smaller than 150 m^2. For the respondents living in houses bigger than 150 m^2, the third splitting condition was the variable *income*. Households which earn a net income lower than 2000 EUR fulfil this splitting condition (Appendix, Fig. 1).

Many further splits are required to separate the samples belonging to separate classes from each other, and finally all leaves in the tree have entropy equal to 0 or close to that value. Thus, the model perfectly separates those who are not considering RES from those who considered RES before deciding not to proceed with the investment. Tracing back all paths leading from the root to all leaves representing people who considered RES would provide a set of profiles which are characteristic only of that group. In a previous article (Ropuszyńska-Surma et al. 2018) the authors presented the complete tree, which was highly complicated and used many splits just to filter out single cases. Such a model is very likely overfitted, meaning that it captures all patterns in the training set but often fails to generalise well to unseen data (Raschka 2015). The best way to avoid overfitting is to limit the depth of the decision tree. In this case, the decision tree was limited to four levels, but there was no perfect separation between the classes, because most of the leaves have a non-zero entropy (Appendix, Fig. 1). Hence, the model no longer perfectly describes the training data set. However, since it is much simpler than the original tree, the authors expect it to perform better on unseen data.

Adding up entropy decreases for each individual variable used for the splits gives a fast and reliable measure of variable importance. The importance of the truncated tree is presented in Table 4. The living area is the most important factor. Several other demographic and behavioural variables were used for the next splits; however, they are of significantly smaller importance than the *living_area*.

Table 4 Importance of features for the tree limited to four levels

Feature	Importance
living_area	0.588816
hot_water_boiler	0.061307
beh_ecomodes	0.058979
tariff	0.053950
building_type	0.041963
beh_battery	0.039555
beh_ironing	0.035324
occ_farmer	0.029954
age_50_65	0.027748
income	0.026715
beh_appliances	0.022221
build_in_80_XX_insulated	0.013469

Source: Ropuszyńska-Surma et al. (2018)

4.2 Logit Model

While constructing the regression of the logit model, all explanatory variables were included therein, which from the point of view of the formulated hypothesis may explain the behaviour of the explained variable (y_i). The sign of the estimating parameter (β_i) next to the exogenous variable in the logit model determines the direction of changes in the endogenous variable. If the value is greater than zero, than the chance of installing RES by a given subgroup is higher than in the reference group. Next, using the logit models, odds ratios were determined $OR = \exp \beta_i$, which is interpreted as the relative chance of occurrence of an event in a given subgroup in comparison with the reference group (Gruszczyński 2010). The calculations were made using the *Gretl* programme. The level of significance was 95%.

Primarily the model encompasses 178 variables, but eight exogenous variables had to be eliminated from the model because of the small sample size of these variables (less than five counts). When it comes to further analysis, 170 variables are encompassed in the model. The authors adopted the method of variable elimination. If exogenous variables are not statistically significant ($p > 0.05$), they were removed from the model, yet this was done gradually. At each stage, the authors checked whether removing a variable did not excessively decrease the likelihood ratio for the new model. Firstly, variables with p-values greater than 0.55 were removed—there were 52 such variables in all. Secondly, variables with p-values greater than 0.27 were removed—there were 14 such variables. In the next stage, less significant variables, for which the p-value was greater than 0.22, were removed. Finally, the model given in Table 8 in the Appendix was obtained. In the model, some exogenous variables are not statistically significant ($p > 0.05$), but they were not removed from the model because of an appreciable decrease in the likelihood ratio of the new model.

The evaluation of multicollinearity was carried out using the VIF (variance inflation factor) coefficient. The multicollinearity coefficients for almost all the independent variables are lower than 3.1, except the variable *beh_led* for which VIF is between 5.07 and 7.3 and the variable *occ_pensioner* for which VIF is 5.46 (see Appendix, Table 9). The results of estimation of the logit model for all variables is presented in the Appendix, and Table 5 presents statistically significant variables (p-value <0.05).

The coefficient of determination of McFadden's pseudo R-squared of the model is 0.445, and the likelihood ratio for the model is -254.782. Variable significance was investigated by means of a log-likelihood ratio test (Osińska 2007), for which the statistic is Chi-square(75) $=$ 407.919 [Chi-square(75) $=$ 96.2167 for p-value <0.05].

4.3 Comparison of Results

In this section, the authors focused on the predictive capabilities of the models and used them as classifiers. Classification involves assigning objects to one of several predefined categories. In this case, classification would mean predicting if a new person without the target label is a potential RES installer or not. Both analysed models may be treated as a black box that automatically assigns a missing class label when presented with the attribute set of an unknown person. However, the following formula will be used for comparison of the accuracy of two models (1):

$$\text{Accuracy} = \frac{\text{Number of correct predictions}}{\text{Total number of predictions}} = \frac{\text{TN} + \text{TP}}{\text{TN} + \text{FN} + \text{FP} + \text{TP}} \tag{1}$$

The accuracy scores for the trees and logit model built in previous sections are summarised in Table 6. The number of cases of correct prediction for the logit model equals 651 (84.9%).

To gain a deeper understanding of the performance of a classifier, the authors presented confusion matrices for both models (Table 7). The confusion matrix is simply a square matrix that reports the counts of the true positive, true negative, false positive, and false negative predictions of a classifier. A perfect classifier would produce a diagonal confusion matrix (only true positives and negatives) (Górecki 2013).

The next measure is the probability of a correct prediction in the case of households not considering RES and the probability of a correct prediction in the case of households considering RES. The obtained logit model predicts the decisions of households which are not considering RES quite well (TN or $y_i = 0$) with the percentage of correct answers being 87.8%; in the case of decisions of households which are considering RES (TP or $y_i = 1$), the percentage of correct answers is 76.4%. The decision tree, limited to four levels, correctly predicts respondents which are not considering RES in 79.5% of cases, and respondents considering RES in only 41.2% of cases. This result is due to the fact the sample is unbalanced (Gruszczyński 2010) because the percentage of observations for which $y_i = 1$ is 28.6%.

Table 5 The results of estimation of the logit model

Variable	Coefficient	p-Value	Significan-ce level	Marginal effect	Odds ratio
age_30_49	1.010	0.007	***	0.113	2.744
living_area_more_than_200_m2	3.140	<0.00001	***	0.353	23.104
living_area_100-149_m2	1.406	0.005	***	0.158	4.080
living_area_150-200_m2	2.192	0.000	***	0.246	8.952
living_area_80-99_m2	1.954	0.000	***	0.220	7.059
building_type	1.449	0.000	***	0.163	4.261
edu_basic_vocational	1.165	0.008	***	0.131	3.205
edu_general_bachelor_studies	1.315	0.001	***	0.148	3.723
edu_post-secondary	1.488	0.001	***	0.167	4.429
heating_fire_place	−2.912	0.009	***	−0.327	0.054
income_1000-1250E	1.341	0.008	***	0.151	3.822
income_up_to_750	0.731	0.007	***	0.082	2.078
occ_admin	1.719	0.009	***	0.193	5.581
occ_farmer	1.962	0.008	***	0.220	7.113
occ_firm_owner	1.884	0.006	***	0.212	6.582
occ_manager	3.613	0.004	***	0.406	37.079
occ_middle_mana	2.290	0.009	***	0.257	9.876
occ_specialist	3.090	0.000	***	0.347	21.975
occ_unemployed	2.147	0.001	***	0.241	8.563
p_adv_financial_benefits	−2.503	0.007	***	−0.281	0.082
p_adv_financial_environmental_benefits	−4.351	0.007	***	−0.489	0.013
wnp_lack_of_interest	−1.174	0.004	***	−0.132	0.309
wnp_lack_of_possibility	−1.212	0.004	***	−0.136	0.297
beh_computer_always	1.863	0.000	***	0.209	6.444
beh_computer_rarely	2.323	0.002	***	0.261	10.207
beh_computer_very_often	2.257	0.006	***	0.254	9.554

age_50_65	0.900	0.031	**	0.101	2.461
age_65	1.228	0.015	**	0.138	3.414
beh_battery_always	0.682	0.027	**	0.077	1.978
beh_computer_never	1.396	0.021	**	0.157	4.039
beh_computer_often	1.462	0.031	**	0.164	4.315
beh_ecomodes_rarely	−1.377	0.019	**	−0.155	0.252
beh_electro_rubbish_very_often	1.894	0.029	**	0.213	6.647
beh_led_a_lot_of_these_devices	2.243	0.030	**	0.252	9.417
beh_led_only_such_devices	2.119	0.047	**	0.238	8.322
beh_lights_very_often	0.889	0.031	**	0.100	2.432
build_after_IIWW_without_insulation	−0.917	0.020	**	−0.103	0.400
build_in_80s_XX_insulated	−1.820	0.017	**	−0.204	0.162
edu_general_secondary	2.206	0.021	**	0.248	9.084
energy_cost_50-75E	1.129	0.018	**	0.127	3.092
heating_electric	2.035	0.021	**	0.229	7.649
hot_water_boiler	−0.679	0.036	**	−0.076	0.507
number_family_4	0.779	0.011	**	0.087	2.179
number_family_7	3.918	0.020	**	0.440	50.323
occ_workers	1.507	0.044	**	0.169	4.514
p_dis_time_consuming	3.186	0.047	**	0.358	24.202
p_dis_unclear_legal_regulation	4.329	0.023	**	0.486	75.832
tariff	−0.947	0.012	**	−0.106	0.388
wnp_lack_of_need	−1.797	0.026	**	−0.202	0.166
wnp_neighbours'_opinion	−2.404	0.024	**	−0.270	0.090
wnp_unclear_legal_regulation	0.948	0.018	**	0.107	2.581

Source: Own elaboration

$^{**}p < 0.05$, $^{***}p < 0.01$

Table 6 Accuracy scores for the models

Tree	Accuracy score	Negative correct pred.	Positive correct pred.	LR +	DOR
Decision tree (4 levels only)	0.73	0.795	0.412	2.01	2.71
Logit model	0.85	0.878	0.764	6.24	23.23

Source: Own elaboration

Table 7 The confusion matrices for both models

			Decision tree			Logit model		
	False	True		No (pred.)	Yes (pred.)		No (pred.)	Yes (pred.)
Negative	TN	FN	No	155	30	No	502	46
Positive	FP	TP	Yes	40	21	Yes	70	149

Source: Own elaboration

Likelihood ratio (LR) is a very useful measure of accuracy, and is defined as the ratio of expected test results in subjects with a certain state (considering RES) to the subjects not considering RES. When both probabilities are equal, such a test is of no value and LR = 1 (Deeks and Altman 2004). The likelihood ratio for positive test results (LR+) explains how many times more likely the positive test result is in subjects considering RES than in those not considering RES (Eq. 2).

$$LR+ = \frac{TP}{FN + TP} / \frac{FP}{FP + TN} \tag{2}$$

LR is a useful measure in diagnostic testing. LR+ is usually higher than 1 because it is more likely that a positive test result will occur in subjects considering RES than in subjects not considering RES. The likelihood ratio for positive test results in the case of the decision tree equals 2.01, and in the case of the logit model it equals 6.24. The higher the LR+, the more indicative of a certain state the test is (Deeks and Altman 2004).

Another measure of accuracy of prediction is the diagnostic odds ratio (DOR), which was used as a measure of test effectiveness. The diagnostic odds ratio is defined as the ratio of the odds of positivity in subjects considering RES relative to the odds in subjects not considering RES (Glas et al. 2003). It is calculated according to the formula (3):

$$DOR = \frac{TP \cdot TN}{FN \cdot FP} \tag{3}$$

The diagnostic odds ratio equals 2.71 in the case of the decision tree and equals 23.23 in the case of the logit model. If the odds ratio is greater than 1, it means that prediction is better than random forecasting (Kufel 2013).

5 Conclusions

The study compares the results of household research using the logit model and the decision tree. They are used for classification purposes and for the selection of the most significant variables that should be used to form a model and to conduct the segmentation process of households which have not yet installed RES. The combination of these methods allows the researchers to achieve a more holistic data-set analysis. The segmentation of energy consumers was based on the most important (major) demographic and socio-economic variables. Both methods give the same results when it comes to significant variables, and the differences in less significant variables resulted from the variant methodologies of the models used. The decision tree model was truncated to four levels, so most of the leaves do not have *entropy* = 0. The decision tree model has sufficient information to conduct segmentation, and it seems to be well tailored to constructing profiles of households. However, in the presented sample, only three important segments, including consumer profiles, could be selected. Therefore, the profiles are developed using the results from the logit model. The number of significant variables in the logit model, for which the p-value is less than 0.05, equals 51 variables, of which 21 are attitudinal and behavioural variables.

According to both methods, the following variables are significant and are useful for segmentation: *living_area*, *building_type*, *age*, and *income*. It could be highlighted that the living area is the most important variable according to the classification tree method. The others, presented in Table 4, are less significant. Sometimes, the important variables have different threshold values for each method. For the classification tree, the threshold values for the living area are 80 m^2 and 150 m^2, while for the logit model the range is from 80 m^2 to 200 m^2.

According to the logit model, willingness to install RES is higher for households who have an income of less than 2000 EUR. The same threshold value was pointed out in the classification tree (in one of the profiles). The negative correlation is between being unfamiliar with energy tariffs and the willingness to install RES ($p = 0.012$ and coefficient $= -0.947$). It means that the probability of making decisions by respondents who do not know their tariff is lower than for the RG (a respondent who knows their tariff) by 10.6%.

Looking at the classification tree, it can be said that the households with greater rates of installation of RES belong to the segments which are defined by the following features:

- they live in a house, the area of which is more than 80 m^2 and no more than 150 m^2; they usually do not reprocess the battery (behavioural variable) or rarely do this, and do not have any energy-saving home appliances;
- they live in a house, the area of which is not more than 80 m^2, have a water combination boiler, do not know their energy tariff, and do the washing and ironing with different frequency during the tariff-2 period (at a particular time);
- they live in a house, the area of which is not more than 80 m^2, and do not have a water combination boiler, but have other appliances for hot water, and live in a multifamily house.

As a result of the classification tree method, each identified segment is described by four distinctive features. Every household belonging to these segments possesses all the identified characteristics, and this list could be called a consumer profile.

The interpretation of the significant variables listed by the logit model is completely different. The households can be divided independently into numerous segments according to statistically significant variables. It could be said that the household either possesses or does not possess the feature taken into consideration, but it cannot be said that households belonging to the same segment, which was created according to one variable, have several features. Of course, this could be made possible if the statistical analysis was repeated for each segment.

The logit model offers additional value in terms of information on how much more likely the households belonging to the analysed segment would be to install RES than the reference group. More detailed information is presented in Table 8 in the Appendix, in the column called *Marginal effect*, e.g. the willingness to install RES is approximately 40.6% higher among managers than among the reference group (here the RG is shop assistants). The significant segments with the highest levels of willingness compared to the RG are:

- in terms of age: people aged 30–49 years (13.3%),[1]
- in terms of occupation: office administration workers (19.3%), mid-level managers (25.7%), managers (40.6%), owners of private firms (21.2%), independent professionals, specialists (e.g. IT specialists, lawyers, architects) (34.7%), farmers (22%), unemployed (24.1%),
- in terms of building type: detached house (16.3%) compared to a multifamily house,
- in terms of education: people who have completed basic vocational education (13.1%), post-secondary education (16.7%), or general bachelor studies education (14.8%) respectively,
- in terms of monthly income: households whose monthly income ranges between 1000 and 1250 EUR (15.1%),
- in terms of living area: households who live in an area which ranges between 80 and 99 m^2 (22%), 100 and 149 m^2 (15.8%), 150 and 200 m^2 (24.6%), and more than 200 m^2 (35.3%),
- in terms of declared energy behaviour: those who switch off electrical equipment if nobody is using it: rarely (26.1%), very often (25.4%), always (20.9%).

Some of these results are puzzling e.g. higher willingness among the unemployed. Therefore, this topic needs further and deeper research. The following theses can therefore be stated: (1) an unemployed person has a partner (wife or husband) who is a manager, or (2) they would like to install RES but do not have enough money.

[1]The values in brackets show what percentage of respondents are willing to install RES in this segment, then among the RG. For each variable, the RG is highlighted in Table 2.

The behavioural and attitudinal variables in the logit model gave interesting information about the profiles of households. During the interpretation of the results, it must be remembered that, for each behavioural variable, the households who do not behave in such a manner were the reference group. The willingness to install RES is always higher for people who have electronic appliances (e.g. computer) than for the RG. With regards to the variable called *beh_battery,* the likelihood of considering RES is almost twice as high than for respondents who are not interested in battery utilisation. The probability of making decisions by respondents who "very often" utilise electro-rubbish increases by 21% when compared to respondents who are not interested in utilisation (for the variable *beh_elektro_rubbish*). A similar tendency is observed for the variables: *beh_led and beh_lights*. The probability of making decisions by the respondents with a lot of LED lights and only a few such lights increases, respectively, by 25.2% and 23.8% compared to the respondents who are not interested in LED. For households which "very often" switch off the lights, the willingness to install RES is 10.3% higher compared to respondents who are not interested in switching off the lights.

The likelihood of RES installation by respondents who chose financial benefits (*p_adv_financial_benefits*) and financial and environmental benefits (*p_adv_financial_environmental_benefits*) from among the advantages of being a prosumer is 28.1% and 48.9% lower respectively than in the RG (people who have no idea about the advantages arising from being a prosumer). This result could suggest that the potential benefits of being a prosumer are insignificant and not sufficiently motivating. Thus, the state or local governments could improve the programmes which support such initiatives.

For households who pointed out the time-consuming nature or unclear legal regulations as disadvantages of being a prosumer, the probability of RES installation is much greater than among the RG (those who claim "we have no idea (opinion) about the disadvantages of being a prosumer"). The likelihood related to the variable *time-consuming* is 24 times higher, and for *p_dis_unclear_legal_regulation* 75 times higher, than in the RG (Table 5, the column entitled 'odds ratio').

The willingness to install RES is lower among the respondents whose reasoning behind the reluctance to be prosumers was given as the lack of interest, the lack of possibility, the lack of need, or neighbours' opinions respectively than in the RG, comprised of people who were of the opinion that such a solution was "financially inefficient". Willingness is lower by 13.2%, 13.6%, 20.2% and 27% respectively among members of the respective categories. This is important information for motivational programmes, because the target group should be made up of people who have rational reasons for uninstalling RES such as financial inefficiency. Thus, financial support programmes or improvement in the technological efficiency of RES micro-installations could bear a positive effect. The changes in attitude related to the lack of need or taking the opinion of neighbours into consideration reflect more complex psychological issues. The probability of making decisions by respondents who are afraid of unclear legal regulation is 10.7% greater than for the RG (financial inefficiency). Therefore, it can be assumed that, with regard to the legislation process, its consistency and transparency should be improved and its interpretation should be simplified in Poland.

The findings from this study could be valuable for local authority, energy utilities providers and producers of RES installations. It could indicate potential target groups for environmentally friendly programmes, and for advertising target segments for RES micro-installations, etc. The behavioural and attitudinal features of households are important; some of them are correlated with making the decision to become a prosumer. The likelihood of installing RES could be strengthened, not only directly by using special supporting programmes, but also indirectly by creating certain behaviours and attitudes towards the issue.

Appendix

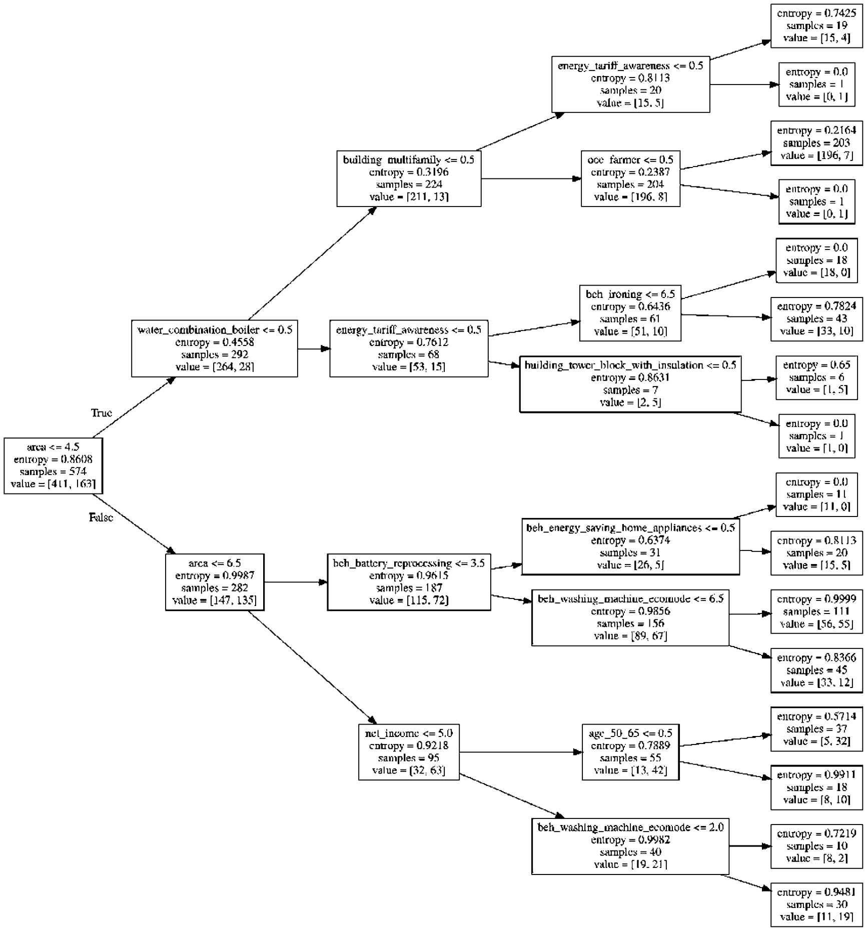

Fig. 1 Decision tree for people who considered renewable energy sources and decided not to proceed with investment (limited to four levels only). Source: Ropuszyńska-Surma et al. (2018)

Table 8 The results of estimation of the logit model for all variables

Variable	Coefficient	Std-error	t-Statistics	p-Value	Significance level	Marginal effect
const	−11.157	1.741	−6.409	<0.00001	***	
age_30_49	1.010	0.372	2.716	0.007	***	0.113
age_50_65	0.900	0.417	2.159	0.031	**	0.101
age_65	1.228	0.503	2.440	0.015	**	0.138
occ_admin	1.719	0.660	2.604	0.009	***	0.193
occ_middle_mana	2.290	0.872	2.625	0.009	***	0.257
occ_firm_owner	1.884	0.680	2.773	0.006	***	0.212
occ_specialist	3.090	0.872	3.544	0.000	***	0.347
occ_manager	3.613	1.268	2.850	0.004	***	0.406
occ_workers	1.507	0.747	2.017	0.044	**	0.169
occ_farmer	1.962	0.741	2.649	0.008	***	0.220
occ_housewife	1.276	0.797	1.601	0.109		0.143
occ_pensioner	1.210	0.624	1.937	0.053	*	0.136
occ_unemployed	2.147	0.653	3.289	0.001	***	0.241
building_type	1.449	0.375	3.866	0.000	***	0.163
number_family_4	0.779	0.305	2.553	0.011	**	0.087
number_family_7	3.918	1.681	2.331	0.020	**	0.440
number_family_8	2.378	1.370	1.736	0.083	*	0.267
number_children_5	−4.344	2.255	−1.926	0.054	*	−0.488
edu_basic_vocational	1.165	0.436	2.672	0.008	***	0.131
edu_post-secondary	1.488	0.454	3.280	0.001	***	0.167
edu_general_bachelor_studies	1.315	0.383	3.428	0.001	***	0.148
edu_general_secondary	2.206	0.953	2.315	0.021	**	0.248
edu_general_tertiary	0.752	0.443	1.697	0.090	*	0.084
income_up_to_750	0.731	0.273	2.677	0.007	***	0.082

(continued)

Table 8 (continued)

Variable	Coefficient	Std-error	t-Statistics	p-Value	Significance level	Marginal effect
income_1000-1250E	1.341	0.504	2.662	0.008	***	0.151
build_after_IIWW_without_insulation	−0.917	0.395	−2.323	0.020	**	−0.103
build_after_IIWW_insulated	−0.659	0.395	−1.670	0.095	*	−0.074
build_in_80s_XX_insulated	−1.820	0.765	−2.379	0.017	**	−0.204
building_modern_insulated	−0.829	0.457	−1.812	0.070	*	−0.093
energy_saving_building	0.798	0.547	1.460	0.144		0.090
passive_building	−1.295	0.913	−1.418	0.156		−0.145
living_area_60-79_m2	0.797	0.448	1.779	0.075	*	0.090
living_area_80-99_m2	1.954	0.472	4.142	0.000	***	0.220
living_area_100-149_m2	1.406	0.504	2.788	0.005	***	0.158
living_area_150-200_m2	2.192	0.564	3.889	0.000	***	0.246
living_area_more_than_200_m2	3.140	0.664	4.730	<0.00001	***	0.353
energy_cost_12.5-25E	0.808	0.447	1.807	0.071	*	0.091
energy_cost_25-50E	0.723	0.413	1.751	0.080	*	0.081
energy_cost_50-75E	1.129	0.475	2.375	0.018	**	0.127
tariff	−0.947	0.375	−2.527	0.012	**	−0.106
heating_fire_place	−2.912	1.114	−2.615	0.009	***	−0.327
heating_electric	2.035	0.880	2.313	0.021	**	0.229
hot_water_boiler	−0.679	0.323	−2.101	0.036	**	−0.076
wnp_high_ installation_costs	0.482	0.290	1.664	0.096	*	0.054
wnp_unclear_legal_regulation	0.948	0.402	2.356	0.018	**	0.107
wnp_neighbours'_opinion	−2.404	1.065	−2.258	0.024	**	−0.270
wnp_lack_of_interest	−1.174	0.406	−2.892	0.004	***	−0.132
wnp_lack_of_possibility	−1.212	0.416	−2.913	0.004	***	−0.136
wnp_lack_of_need	−1.797	0.807	−2.227	0.026	**	−0.202

beh_waste_very_often	1.179	0.722	1.633	0.103		0.132
beh_electro_rubbish_very_often	1.894	0.866	2.188	0.029	**	0.213
beh_battery_often	0.904	0.542	1.668	0.095	*	0.102
beh_battery_always	0.682	0.308	2.215	0.027	**	0.077
beh_lights_rarely	−1.579	0.920	−1.716	0.086	*	−0.177
beh_lights_often	0.612	0.369	1.660	0.097	*	0.069
beh_lights_very_often	0.889	0.413	2.151	0.031	**	0.100
beh_ecomodes_rarely	−1.377	0.584	−2.356	0.019	**	−0.155
beh_ecomodes_very_often	0.887	0.683	1.300	0.194		0.100
beh_computer_never	1.396	0.605	2.308	0.021	**	0.157
beh_computer_rarely	2.323	0.747	3.111	0.002	***	0.261
beh_computer_often	1.462	0.677	2.158	0.031	**	0.164
beh_computer_very_often	2.257	0.817	2.762	0.006	***	0.254
beh_computer_always	1.863	0.515	3.620	0.000	***	0.209
beh_led_no_devices	1.915	1.034	1.852	0.064	*	0.215
beh_led_a_few_devices	1.693	1.038	1.632	0.103		0.190
beh_led_a_lot_of_these_devices	2.243	1.033	2.172	0.030	**	0.252
beh_led_only_such_devices	2.119	1.067	1.986	0.047	**	0.238
beh_appliances_no_devices	0.542	0.300	1.809	0.070	*	0.061
beh_appliances_a_lot_of_these_devices	0.530	0.337	1.571	0.116		0.060
beh_appliances_only_such_devices	0.679	0.392	1.732	0.083	*	0.076
p_dis_financial_cost	1.481	0.950	1.558	0.119		0.166
p_dis_unclear_legal_regulation	4.329	1.898	2.280	0.023	**	0.486
p_dis_time_consuming	3.186	1.604	1.986	0.047	**	0.358
p_adv_financial_benefits	−2.503	0.927	−2.699	0.007	***	−0.281
p_adv_financial_environmental_benefits	−4.351	1.612	−2.699	0.007	***	−0.489

Source: Own elaboration
$*p < 0.1$, $**p < 0.05$, $***p < 0.01$

Table 9 The multicollinearity coefficients for all the independent variables

Variable	VIF	Variable	VIF
age_30_49	2.187	energy_cost_12.5-25E	2.576
age_50_65	2.794	energy_cost_25-50E	2.614
age_65	2.984	energy_cost_50-75E	1.862
occ_admin	2.196	heating_fire_place	1.16
occ_middle_mana	1.565	heating_electric	1.17
occ_firm_owner	2.173	hot_water_boiler	1.294
occ_specialist	1.428	wnp_high_ installation_costs	1.43
occ_manager	1.184	wnp_unclear_legal_regulation	1.226
occ_workers	1.706	wnp_neighbours'_opinion	1.167
occ_farmer	2.031	wnp_lack_of_interest	1.443
occ_housewife	1.623	wnp_lack_of_possibility	1.607
occ_pensioner	5.462	wnp_lack_of_need	1.165
occ_unemployed	2.371	beh_waste_very_often	1.361
building_type	2.853	beh_electro_rubbish_very_often	1.362
number_family_4	1.203	beh_battery_often	1.368
number_family_7	1.289	beh_battery_always	1.473
number_family_8	1.2	beh_lights_rarely	1.144
number_children_5	1.297	beh_lights_often	1.323
edu_basic_vocational	1.956	beh_lights_very_often	1.317
edu_post-secondary	1.72	beh_ecomodes_rarely	1.145
edu_general_bachelor_studies	2.031	beh_ecomodes_very_often	1.189
edu_general_secondary	1.21	beh_computer_never	2.086
edu_general_tertiary	1.885	beh_computer_rarely	1.523
income_up_to_750	1.344	beh_computer_often	2.041
income_1000-1250E	1.211	beh_computer_very_often	1.652
build_after_IIWW_without_insulation	2.343	beh_computer_always	3.055

build_after_IIWW_insulated	2.632	beh_led_no_devices	7.344
build_in_80s_XX_insulated	2.009	beh_led_a_few_devices	6.262
building_modern_insulated	2.456	beh_led_a_lot_of_these_devices	6.772
energy_saving_building	1.384	beh_led_only_such_devices	5.074
passive_building	1.23	beh_appliances_no_devices	1.383
living_area_60-79_m2	1.49	beh_appliances_a_lot_of_these_devices	1.351
living_area_80-99_m2	1.94	beh_appliances_only_such_devices	1.319
living_area_100-149_m2	2.607	p_dis_financial_cost	1.222
living_area_150-200_m2	2.193	p_dis_unclear_legal_regulation	1.118
living_area_more_than_200_m2	1.772	p_dis_time_consuming	1.099
tariff	1.133	p_adv_financial_benefits	1.199
		p_adv_financial_environmental_benefits	1.203

Source: Own elaboration

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How Much Might a Beer Cost in a Fancy Resort? A Possible Replication of Thaler's Well-Known Experiment

Anita Kolnhofer-Derecskei

Economics is a far richer field with more interesting, realistic, and detailed models than when I first entered the profession. (*Akerlof 2001*)

Abstract This chapter starts with an experiment which was originally presented by Thaler in 1985. In the experiment, Thaler wanted to test the standard economic thinking whereby actors should pay for a product according to the utility that they get out of it. These utilities are based on stable preferences which are expressed in buyers' reservation prices. He asked participants how much they would authorise a friend to pay to get them a beer whilst they stayed on the beach. Even though the beer bought by the friend would be the same regardless of where it was purchased, subjects who were told that the only nearby supplier was a fancy resort hotel were ready to pay significantly more and overpriced the product dramatically. In this study, this famous pricing experiment was retested on a sample population of Romanian and Hungarian students. Times have changed compared to the original American samples; in this case, the respondents are from Europe where subjects are used to their own domestic prices in their national currencies. Even so, our participants also highly overpriced the beer. Partly this was due to the situation—the hypothetical environment confused their decision; the different currencies at play were also partly responsible. It means that subjects' preferences and expected reservation prices are not as stable as assumed by mainstream theory. This study aims not only to understand how everyday actors would price a beer on a hot summer's day, but provides a deeper insight into the economic concept of "price". The definition of price is sourced from mainstream economic assumptions, which move and motivate consumers' decisions and market behaviours. From an economic viewpoint, various prices can be defined such as market price or reservation price. Here, the reference price is widely studied and compared with the reservation price. The paper starts and finishes with behavioural economics experiments as the main

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empirical research method; the current description of the subject matter and literature are reviewed afterwards. It suggests that the consumer surplus which relies on preferences is confused by various situations in the framework of behavioural economics, such as different environments or currencies.

Keywords Prices · Reference price · Market price · Reservation price · Consumer surplus · Framing · Currencies

1 Introduction

Please consider the following situation: “You are lying on the beach on a hot day. All you have to drink is iced water. For the last hour, you have been thinking about how much you would enjoy a nice cold bottle of your favourite brand of beer. A companion gets up to go make a phone call and offers to bring back a beer from the only nearby place where beer is sold—a fancy resort hotel. He says that the beer might be expensive and so asks how much you are willing to pay for the beer. He says that he will buy the beer if it costs as much or less than the price you state. But if it costs more than the price you state he will not buy it. You trust your friend, and there is no possibility of bargaining with the bartender.

What price do you tell him? _______ USD”

This experiment was originally suggested by Richard Thaler (1985, 205), who used this situation to represent how everyday actors evaluate their transactions in different situations. To this end, he offered two different places, namely a fancy resort hotel (as in our case) and a run-down grocery store. But according to him, in both versions, the good of consumption (beer) was the same in both cases and no atmosphere was consumed by the subjects—meaning they did not enjoy any services offered by the various environments. Therefore, Thaler was interested in buyers’ perceptions of different costs influenced by the place of purchase.

2 Theoretical Background

As Thaler (1985) underlined in the aforementioned experiment, the differences between two contexts were dramatic, because the median price in the hotel version was 2.65 USD, while in a grocery store, participants were ready to pay a median 1.50 USD. Buyers’ reference prices seemingly differ depending on the location where the purchase was made, although the product is the same in both cases.

The question arises whether a higher-priced product may offer higher quality. Ariely (2010) stated that according to his findings, a higher-priced capsule can have a real placebo effect. Medicine with the same effect but purchased at a discounted price changed the reaction of the participants. Indeed, the capsule which cost 2.50 USD was a good painkiller because almost all Ariely’s participants experienced pain relief from the pill, although the higher-priced product contained the same ingredients (simple Vitamin C) as the cheaper version. But when the price was dropped to 10 cents, only half of them felt the same way. This means that the participants identified the quality of the pills through the price. In our case, the quality of the beer was not important (moreover, participants should assume their favourite brands), but rather the estimated market price which was expected by individuals.

In Thaler's case (1985), the estimated price was fitted to different contexts. Judgements were strongly influenced by what price was judged as fair in each frame. This framing effect was firstly studied by Tversky and Kahneman (1981); hence the two situations are identical, and 'Econ'—whose preferences are rationality-bounded—should give the same price for both questions. Despite the rational actor-model, we are humans who seemingly treat gains differently than losses. Humans' preferences pertain to framed problems, and their moral intuitions are about descriptions. It is important to remember, however, that this experiment is not so much about losses as costs—and as Kahneman (2011) underlined, costs are not losses. A good, cold beer on a hot summer day at the beach cannot be treated as a loss and may be worth every penny even in cases where it must be purchased from a posh, expensive hotel. Moreover, all marketing variables constitute specific types of framing through which price is judged. Framing effect is an important concept of loss aversion and prospect theories. Loss aversion refers to actors' decisions when people handle gain and loss differently, even though the amount is the same. As the authors suggested, "the aggravation that one experiences in losing a sum of money appears to be greater than the pleasure associated with gaining the same amount" (Kahneman and Tversky 1979; 279). For example, losing 5 USD is twice as painful as the level of gratification after winning 5 USD. People are more willing to take risks to avoid a loss than to book a gain or a win. For this reason, the cost of a product cannot be treated as a loss to a buyer. Cost can be either a win (the satisfaction provided by the purchased product) or the loss of the amount paid (deficit).

Respondents may, and do, take the fairness of the cost into consideration as well (Kahneman et al. 1986). Buyers' reference prices are fitted to the costs borne by sellers, to the costs which are kept fair by the buyers; for example, price should cover the higher marketing costs at a fancy hotel. But which price can be considered fair? Before answering this question, it is worth summarising basic mainstream economic theory.

A fair price does not necessarily equal the market price, whereby market price means a price that buyers are ready to pay for a unit of a good or service. The quantity (or amount) of a good or service is what consumers are able to and willing to buy (at the level of market price), and these two factors (i.e. quantity and price) together represent the demand.

Willingness here means a desire based on customers' preferences. Demand is based on the needs and wants of customers and influenced by the market price of a specific product. However, willingness is not enough, in the sense customers not only want the product, but should be able to pay for it. That is to say, without income we cannot talk about effective demand. Other factors, including the availability and popularity of the good, the size of the population, household productions or the market for substitutes (replacement) and complements, plus the role of time (learning), also affect willingness in the context of purchase activity. Finally, the most important factor which influences demand is the expectation of buyers. All the aforementioned factors (needs, preferences, income, price, substitute or expectation) will cause a shift in the demand curve of a related good.

Of course, supply must be also taken into account, because selling and purchasing act together to move the market. Therefore, these two factors drive the level of price. Here we have arrived back at the question of the aforementioned fair or equilibrium price. Equilibrium price can be defined as the price where buyers and sellers agree; as Friedman (2007, 5) underlined: “Hence, no exchange will take place unless both parties benefit from it.” Here we focus only on the benefit to the buyers, so this paper pays attention to the role of the buyer. Moreover, the assumption here relates to the classic market proposed by Adam Smith, whereby the invisible hand of the market moves prices. The invisible market is the term that economists use to describe the self-regulating nature of the marketplace.

The market for a good or service is competitive, meaning there are many buyers and sellers, so no single trader exerts much influence on the price of the good (Camerer 1992). In other words, neither price ceilings nor price floors are detailed; however, it might be better to analyse both of them mostly in the case of more complicated markets, where both issues must be studied (Isaac and Plott 1981). Classic mainstream economic theory describes the market through rational actors, where all participants manage all required information and are fully rational; therefore, they have stable preferences (and stable expected prices respectively).

Hence, in mainstream economics, two types of dedicated prices are important regarding the buyer, namely reservation price and market price. The difference between these two is the so-called consumer surplus or buyer’s profit (Greenlaw and Shapiro 2017). This mainstream theory of pricing was broadly studied by Friedman (2007), according to whom we focus here on pricing theory and not on monetary theory. This is because the latter deals with the level of prices from a general and macroeconomic viewpoint. The former, however, deals with the allocation of resources among different uses and the price of one item is relative to another, as in this paper.

In summary, the demand curve reflects the willingness of consumers to pay for different quantities. The amount that individuals would have been willing to pay (i.e. the reservation price), minus the amount that they actually paid (i.e. the market price), is called the consumer surplus. This consumer surplus seems easy to calculate (as Fig. 1 shows) because of stable preferences which conclude in fixed reservation prices. The expression of the “reservation price” was directly used in this section, because this hypothetical reservation price is fixed compared with the reference price, which is flexible but not identified in the mainstream model.

Then why are we (i.e. buyers) ready to pay more for the same product in a different environment? Why do we feel lucky and happy when we buy an expensive souvenir abroad (e.g. an Eiffel Tower-shaped keyring in France but made in China) and do not feel the same gratification when we buy an absolutely identical product in

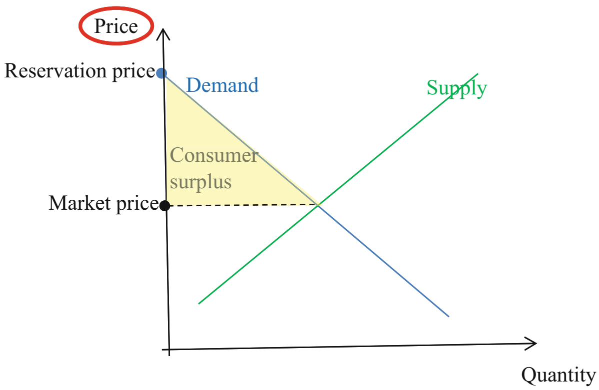

Fig. 1 Two sides of the perfect market. Source: Own elaboration based on Greenlaw and Shapiro (2017)

a domestic Chinese wholesale store (e.g. the same keyring in a 'Chinese dollar-shop' in our country)?

This is partly because all this (i.e. aforementioned mainstream model) is based on axioms and assumptions (i.e. basic concepts) which are only relevant when all or most of our assumptions hold. According to DellaVigna (2009, 315), Fig. 1 is a "simple but powerful model of behaviour. Individuals make choices to maximise a utility function, using the information available, and processing this information appropriately. Individuals' preferences are assumed to be time-consistent, affected only by own payoffs, and independent of the framing of the decision." In the mainstream microeconomic models, actors can be called Econs (Kahneman 2011), with rational self-control and unlimited attention or endless time, without feelings, emotions or moods, who are absolutely independent of any social impacts in a perfect information symmetrical space where units are free-standing, and sellers compete with each other in a fair manner, so there are no inventions or transaction costs. This model is a beautiful, easily understandable ideal solution, as demonstrated in Fig. 1. Unfortunately, real life does not mirror this model.

In the course of everyday market transactions, as Akerlof 1970, 488) mentioned: "There are many markets in which buyers use some market statistic to judge the quality of prospective purchases." Akerlof (1970) studied economic models in which "honesty and trust" are important. Honesty and trust are the kind of human emotions which have no place in theories pertaining to the rational actor. According to this Nobel prize-winning author, actors who do not trust others will only cooperate within a system of formal rules and regulations, where society creates a special type of tax (called transaction cost) that cuts down on the number of possible transactions and reduces demand. This is partly because consumers try to tailor their own reservation prices (Akerlof called them reference prices) to the estimated cost borne by sellers. In other words, buyers form a fair price in their minds which serves to satisfy either buyers' or sellers' needs. When they judge a transaction to be unfair, they will not take the risk of making a purchase. Moreover, buyers sometimes place undue emphasis on sunk cost when they should not; on the other hand, they underestimate or ignore other costs, for example shipping costs. As previous research has shown, reservation price is not able to explain and reason actors' judgements of fair price.

To solve this problem, Thaler (1985) suggested more types of price. The first of these is what he called "the value equivalent price" which for the individual is similar to receiving the relevant good as a gift. In standard theories, this is defined as the reservation price, the maximum amount that a consumer would pay for a good. It is seemingly similar to the reservation price. However, Thaler suggested another price, as well: the reference price which is the momentary or expected "just" price. Based on this, the consumer surplus could be divided into two parts:

(1) Acquisition utility or the classic consumer surplus depends on the market price paid by the consumer compared to the reservation price. Acquisition utility results from the deal until the cost of the purchased good or service is not treated as a loss, but as goodwill worth buying regarding loss aversion. In an everyday routine transaction, it is mostly near to the reference points. That means that reservation price and reference price meet during everyday transactions.
(2) Transaction utility or reference outcome represents the price that the buyer pays compared to his/her reference price. This is the value of paying market price where the expected reference price is determined by the individual. In this determination, the most important variable is fairness, which depends in large part on the expected costs of the seller.

In sum, the former depends on the perceived merits of the transaction, while the latter depends on the value of goods received compared to the outlay. It means that we may have different prices of Eiffel Tower-shaped keyrings in Paris compared to a domestic Chinese wholesale shop, so the surpluses are also different in both cases.

The previous experiment provided the perfect example because the reference price was fitted to the expectation of actors who were regular beer drinkers. They had a stable reservation price and knew the current market price of their favourite beer. They had various reference prices depending on the place of purchase without enjoying any service which arose from the respective environments. Thus, this is similar to when we order an Eiffel Tower-shaped keyring from our friends who are spending their holiday in Paris, instead of buying the same, presumably cheaper product at a Chinese corner shop.

Acquisition utility or consumer surplus was the same in both cases, but transaction utilities differed. As Steckel et al. (2017, 3) stated: "The deal would result in the same enjoyment from acquiring the beer, but the negative transaction utility from the perceived rip-off might leave a sour taste in the consumer's mouth or discourage her from making the purchase altogether." As a result, a so-called 'good enough' deal when the transaction utility is high (market price is higher than reference price) mostly results in something that was bought on sale but never used ending up at the back of the wardrobe.

The evaluation and impact of fairness have been tested in many other cases. For example, Kahneman et al. (1986) used phone interviews to measure the fairness of setting wages on the labour markets. Lichtenstein et al. (1988) underlined that price consciousness and judgement may differ according to the level at which an individual handles price in its negative role (or loss) as a decision-making criterion. Camerer (1992) suggested that subjects have an optimistic presumption that prices negotiated in competitive market settings will reflect true values, but the lack of negotiation between sellers and buyers influences us to focus more sharply on judgment issues, which finally finishes at price sensitivity. Besides, buyers also learn from each other. As Majerova et al. (2020) found, loyal consumers do not just communicate, but belong to a specific social group where members continuously inform each other and stay in touch fluently, besides preferring, bearing and consuming a specific brand, which communicates one's own social status and life values. In sum, this identification makes them less price-sensitive. In our case, there was no room for negotiation or conversation among participants, and the brand of the beer was not specified. We simply assumed a situation where participants had to order a beer.

Later, Bolton and Alba (2006) measured how the connection (intersection) between goods and (after or connected) services influence actors' perceptions of fair prices. Of course, all these extra services increased the level of the reference price. Steckel et al. (2017) not only studied evidence from a series of experiments where they encountered reference prices while shopping in real time, but they also defined explicit reference price and internal reference price, so actors have their own maximum price, which means the price that the individual expects before walking into the store and that he or she is willing to pay for the good. In our determination, it was the reservation price, but according to them, reference prices are provided by the retailers and may be sourced from actors' prior experiences and knowledge. The internal reference price is based on a buyer's prior experiences e.g. how much a similar good would cost in a non-outlet store. External reference prices are driven by the sellers and are labelled original price, regular price, list price, manufacturer's suggested price, and so on. Consumers are led to believe that a comparison of prices labelled by retailers with their own internal reference prices lead to the best options, although that is not the case in reality. Moreover, other special marketing variables must also be mentioned here e.g. type of products such as luxury goods, branding, or loyalty (Yeoman and McMahon-Beattie 2005). Environmental factors have a highly significant impact on individuals' market behaviour (Hoeffler and Ariely 1999), even including the self-confidence of buyers, and so influence preferences. As Hoeffler and Ariely (1999) found, subjects in the easiest choice environment, where the situation was obvious and only two products were offered, had very unstable preferences, but also believed that their knowledge level was high. Moreover, repeated choices increases faithfulness and loyalty, and buyers become more involved in and committed to the given good. As far as Thaler (1985) focused only on beer as a normal good, the aforementioned topics are not widely detailed and described in this paper, as when it comes to the microeconomic definition, a product such as beer, demand for which rises when income rises and vice versa, can be called a normal good.

3 Methods

We asked university students (typical subjects of experiments in the sphere of behavioural economics) about their reference prices, but in our case, only the fancy hotel was offered as "atmosphere". In other words, only the last option was presented (i.e. a fancy hotel). Altogether, 95 university students were surveyed in Romania and Hungary in 2018, where the following surrounding characteristics were determined at that time:

– In Hungary, according to Központi Statisztikai Hivatal (2019), the average price of a bottle of beer was 227 HUF (exchange rate according to the Magyar Nemzeti Bank (2019): 1 USD = 270.25 HUF), meaning that one bottle of beer cost less than 1 USD. Average monthly net income was 226,640 HUF (cc. 839 USD).
– In Romania, as per the Institutul National de Statistica (2019) the price of a similar beer was 3.24 RON, where according to the Banca Nationalá Romániei (2019) the exchange rate is 1 USD = 3.9416 RON, which also comes out to less than 1 USD for a bottle of beer. Average monthly income was 2688 RON (cc. 682 USD).
– In the original experiment (Thaler 1985) the price of a beer was around 1.70–1.75 USD at that time and in that location (i.e. in 1984–1985 in the USA), according to DeMerritt (2017).

In this chapter, just one question was selected and examined from a longer study. Price judgement was stated in USD currency throughout the experiment, as with the original study. Subjects had no opportunity to talk to each other or have any other conversations. The experiments took place during university lectures using pencil and paper.

Table 1 provides a short summary of the price of beer on various markets and lists participants' reference prices. The question of what brought about these vast differences arises. Which prices can be considered fair price? Did reference price or reservation price have a greater impact? Which of Thaler's utilities can be identified here? Can market prices be handled as an anchor when the number of the market prices as a previous knowledge drive buyers' decisions?

Table 1 Comparison of various economic data among different nations

Nation	The market price of beer (USD)	Reference price (USD)
America	1.70	2.65
Hungary	0.85	4.00
Romania	0.82	5.00

Source: Own elaboration based on national statistical databases and the results of experiments

4 Results

As Table 1 shows, participants priced the beer five times higher than the actual market price at that time. Because of the fact that the reservation price was not asked about or measured, these prices might be considered participants' reference prices. Consequently, a hypothetically fancy environment could increase the reference price. Moreover, a higher price seems to be treated as fair for this experience. Therefore, transaction utility or reference outcome can be calculated, whereby individuals matched their expected fair prices to the expected characteristics of the luxury market. However, we had no information about participants' prior experiences or the reasons why they overvalued beer as many as five times higher than the average grocery price. Thaler (1985, 206) found his results "dramatic". The results from our survey were more dramatic; outlier data (as standard deviation shows) may have partly caused this huge discrepancy, but after data clearing, the results have not changed significantly.

As a starting point for our further explanation, in the original study, the median price (in the fancy resort hotel version) was 2.65 USD while the median for the small run-down grocery store version was only 1.50 USD (as was the average market price). Later, Steckel et al. (2017) suggested that a reasonable consumer might expect to pay 6.00 USD for a beer at a hotel, which makes comparing it with a normal 4.50 USD beer seem like a good deal. Therefore, the buyer may enjoy both the consumption of a cold beer and the knowledge that he or she secured a good deal or bargain. In contrast, paying 4.50 USD for a beer at a corner grocery shop seems like a rip-off, where the expected price would be closer to 3.00 USD, which is a loss. These two final results show not only the observed problem but the influence of inflation as well. Our results give pause for thought, because when comparing them with the original study, the difference between market price and the expected luxury price is much higher.

Using Steckel et al.'s (2017) findings, participants are ready to pay double the market price for the same beer in an extraordinary environment. However, in our case this ratio was quintuple. As our empirical findings show in Table 2, Romanian students are willing to pay comfortably the highest average price for a beer, although the standard deviation (price range) was also highest there. Only two subjects

Table 2 Results and comparison (N = 95)

Nation	Mean of suggested beer prices (USD)	Median of suggested beer prices (USD)	N (number of participants)	Std. deviation (USD)
Other	3.8500	4.2500	10	1.27039
Hungarian	4.2093	4.0000	43	2.95851
Romanian	6.2857	5.0000	42	4.05021
Total	5.0895	5.0000	95	3.51817

Source: Own elaboration

indicated a price of zero for the beer; perhaps they do not drink or like beer. The highest Romanian price was 20 USD, as given by one respondent.

Last but not least, significant differences can be found among the students' answers with respect to their nationalities; comparing Romanian and Hungarian results, at a 90% confidence level, an interval of the differences using the t-test method with two-tailed signification was 0.008 (Levene's test was accepted), which proves that there is significant differences between the two samples' means.

5 Discussion

According to mainstream theory, two dedicated prices are determined on the demand side, namely reservation price and market price. Between them lies the consumer surplus (see Fig. 1). Findings from behavioural economics show that individuals have various nominated prices. As long as market price can barely be directly affected by the individual, then the individual's reference price is flexible and adapts to other market characteristics such environment or currency. Here, subjects' reference prices were examined in a situation which was first proposed by Thaler (1985). Our results indicated that a hypothetically fancy environment could increase the reference price. Moreover, subjects consider a higher price for a fashionable experience to be fair. A novel, interesting environment and new impressions stimulate individual experimentation, for which subjects are ready to pay. Lichtenstein et al. (1988) broadly studied the correlates of price acceptability and reference prices. According to them, price acceptability (how the market price will be judged) originates from the comparison with a wide variety of acceptable prices stored in one's memory. This comparison involves other important issues such as the perceived quality of each product or overall excellence (luxury) and other degrees. For that reason, the consumer makes the usual price-quality comparisons. The price will be favourable when the buyer believes that the higher price reflects better quality. Price acceptability can be described as a personal specific range for a good based on characterisation and personal beliefs pertaining to the intersection of price level and quality level (i.e. price sensitivity and price consciousness). As the authors (Lichtenstein et al. 1988, 245) suggested: "This characterisation implies a sensitivity to price differences, a concern for price as a criterion in decision-making, and also internal limits on what the consumer is willing to pay." It means that those consumers who pay more attention to the role of price-quality inferences and identify higher price with better materials and product characteristics are willing to accept a higher price. Regarding price consciousness, buyers are concerned with product classes as well. Additionally, the product's lifetime period plays an important role, so consumers may make different decisions about buying a higher-quality branded expensive food than a higher-priced and better-quality computer. In Thaler's words (1983, 231), "a consumer's behaviour depends not just on the value of goods and services available relative to their respective prices, but also the consumer's perception of the quality of the financial terms of the deal." We agree with this statement, which is why in this study, the product was a normal can of drink, regularly purchased and consumed, but in a higher-priced, good quality atmosphere, where even the buyer himself/herself does not enjoy any services of this environment. The same beers are priced differently using different frames (Thaler 1980), which means that buyers may have different internal reference prices related to the place where the product is sold. Customers may expect a place-influenced internal reference price before walking into a store or a hotel, so they are ready and willing to pay a higher price for a beer in a fancy hotel. In contrast with the mainstream model where actors should have well-defined and stable explicit reference prices, internal reference prices change our willingness to purchase a good. Moreover, further background secondary statistics should be also taken into account. As is underlined in mainstream economic theory, habits and average incomes may colour the value of each actor's cost-benefit model.

Surprisingly, there were no salient differences between the total levels of alcohol consumption per adult in these two countries. According to the WHO (Anderson et al. 2012), Hungarians consumed 14.15 litres per capita and Romanians 16.30 litres per capita. This is slightly above the EU average of 12.45 litres per capita. Similar levels of alcohol consumption seemingly proves similar beer consumption habits, hence incomes (average monthly net earnings) must be slightly different. As incomes rise, many people will buy more normal goods, but in the case of cheaper, inferior products, demand is reversed. Higher income results in fewer purchases of generic brand groceries and more of name brand groceries. Consumers are less likely to buy used cars and more likely to buy new cars. They will be less likely to buy a beer in a corner bodega and more likely to buy it in a fancy resort hotel, simply because they can afford it. However, our results prove other attitudes, namely that lower income caused overestimation in pricing. Here it must be underlined that the willingness to purchase was not observed, but rather only the reference price was measured.

This discrepancy may originate from the unusual form of currency. All of us have the feeling abroad that prices in different currencies impact our decisions, which encourages more risk-taking behaviour as we become shopaholics, or, on the contrary, more risk avoidance as at the end we arrive home without souvenirs, simply because they were so expensive. However, our mental accounting has confused us, because we are liable to concentrate on a normative level of price independently from the real economic value of various currencies. Therefore, the relative value of our purchase shows wide differences. To have a stable punctual internal reference price, the decision should be placed in a well-known environment. If the internal reference price is missing, it might be explained by the unknown currency or novel market. Currency sensitivity was broadly studied; as Nagy (2017) underlined, decisions based on the expected value have two components, namely the probability and the value or utility that is often expressed in money. He found that participants' decisions were not influenced by the real monetary value of an amount. The outcomes did not change whether the gain was 1000 HUF (cc. 30 EUR) or 1000 EUR. Consequently, one might calculate the expected values related to the currency, but that did not play an important role. Gamble and his team (2002) designed an interesting behavioural economic experiment regarding different domestic currencies and the single EU currency (i.e. the euro in the EU zone) about the replacement of national local currency with the euro. According to them, a so-called money illusion shifts our economic decision, as people are biased toward the nominal printed value on the notes and coins instead of real value (value in terms of other goods and services) when judging prices using the new currency. This corresponds with our case, where participants are used to prices expressed in different currencies. A Hungarian is likely to calculate prices in three digits whereby a price increase from 10 HUF to 15 HUF is not a big deal, mostly because the smallest coin is the 5 HUF. The normal market price of a beer in Romania is around 3–4 RON, so to give a "fiver" for a beer is acceptable.

Therefore, according to Gamble et al. (2002), a buyer may underestimate the real market price and view it as less expensive when the monetary unit is smaller. For example, a Hungarian traveller mostly views Australia as relatively cheap because the exchange rate is easy to manage and the price evaluation is not so complicated, as 1 AUD equates to around 200 HUF. The nominal value of the prices seems small and user-friendly at the beginning. Moreover, the price difference between 5 HUF and 10 HUF seems small when calculated in nominal value. The Hungarian traveller, who is used to Hungarian Forint, feels a 5 Forint price reduction is virtually insignificant; consequently, he or she will not be so sensitive when faced with a 1 AUD price rise, even if it means an extra 200 HUF. By contrast, when the monetary unit is high, sometimes extremely high (i.e. the number of digits is high, and the length of the price is longer)—for example, Vietnamese dong for an English traveller who is used to pounds and pennies and is faced with prices expressed in thousands, as 1 GBP comes out at over 30,000 VND—a large nominal value would cause a price to be evaluated as more expensive, whereas a low nominal value would cause a price to be evaluated as less expensive. As the authors suggested (Gamble et al. 2002, 307) "Instead of choosing the most economically beneficial alternative, they confused the real value of money with the nominal representation, the tendency to perceive numerical differences as subjectively smaller or larger depending on the size of the numbers." An everyday tourist tries to manage his or her budget and keeps also exchange rates in mind, but most of the time this is somewhat inconvenient. As a result, he or she may evaluate market prices as higher or lower compared to prices in his or her national currency. They have several possible reference prices available in their memories, but those familiar prices are perceived and coded in their own national, regularly used domestic currencies. This new market and economic environment will confuse their willingness to pay. Besides, some exchange rates (numbers) make the conversation more difficult and may, therefore, inhibit the decision process because calculation requires much more effort. The different number of digits may make it harder to carry out the standard, rapid mental conversion. Of course, for those actors who take the tasks more seriously, they pay deeper attention to the details (are more involved) in order to undertake the correct and relative calculations. Regarding the money illusion, a price increase or decrease causes similar problems, because the differences may be judged more expensive or cheaper than the real market trade-off. Finally, the reference price is impacted by such currency issues.

In our case, we do not have further information as to what kind of strategies were used by the participants in order to make correct currency conversions (or even whether there were any), nor whether they had any previous knowledge of the exchange rates. It can be assumed that they did not calculate using any exchange rates and merely skipped over the currency differences. Thaler (1980) also argued that reference prices derived from memory are sensitive to the purchase context (i.e. a new economic environment has a strong influence of nominal representation on the outcome). The subjective importance of the task also seems to be significant; for example, purchasing a souvenir is more important because it will have an impress on the memory. As a consequence, tourists may be not sensitive to the price of fridge magnets. Some consumption is essential or necessary, the costs of which cannot easily be avoided. Gamble et al. (2002) proposed an interesting hypothesis, namely that when the price is expressed in a familiar currency, the price may appear more expensive or in contrast cheaper when compared to the price in reality (economic evidence) because the familiar currency is automatically associated with living conditions in the domestic country for the most part. This means that strong stereotypes and previous, preconditioned schemes may work. However, authors found no larger differences with respect to nonessential goods or services than for essential ones, nor for low-price than for high-price goods or services. Long-term investments were not mentioned, although in our case time consistency was absolutely lacking.

Moreover, mood also influences this conversation, as the money illusion impacts a person in a good mood more than someone who is in a neutral or bad mood. Personal characteristics also influence behaviour, which perhaps could be a possible reason for the success of souvenir shops. We have to agree with all of these points, which is why the DOSPERT scale (Domain Specific Risk Taking) was added to the survey to evaluate personal differences. Using this scale, we were able to measure and compare the risk attitudes (level of risk-taking) of each participant with perceived risk attitudes (willingness to engage in a risky situation), focusing on the financial domain. The test was designed by Blais and Weber (2006) and was later translated into different languages. Here, six selected statements on two different seven-stage Likert scales were distributed in order to evaluate (1) the level of willingness to take part in each situation compared with (2) the risk level (outcome) of each situation judged by each respondent. Regarding our findings, personal differences were found on the risk-taking level in each dimension (i.e. engagement in taking part and average level of outcomes), but there were no significant differences (at the 5% significance level) on average among nations or between genders. The respondents were divided into two groups, risk-takers and risk-avoiders respectively. Unfortunately, none of the risk variables showed any significant connections (at the 5% significance level) with the originally measured beer price estimation. Finally, in order to check the reliability of our experiment, the prior knowledge of participants regarding behavioural economics was also tested. Only 18 out of 95 respondents gave a meaningful answer, responding to background information about heuristics, or recognising names such as Richard Thaler, Amos Tversky or Daniel Kahneman, which suggests that the participants did not generally have any significant level of knowledge of the original experiment nor of behavioural economic theories.

6 Conclusions

In this study, Thaler's famous beer experiment was reviewed and retested on a research sample of Romanian and Hungarian students in order to obtain a deeper insight into buyers' price concepts. Contrary to the classic mainstream microeconomic evidence, a novel type of buyer's price was implemented, namely reference price, which is influenced by frameworks of the purchase decision, the buyer's previous knowledge, habits and experiences. Most of these are sourced from the actor's everyday routines in a comfortable and well-known environment. On those markets, where purchases are repeated regularly, it thereby became an unconscious tendency. Due to this, the reference price is placed closer to the reservation price. If a buyer is faced with an unknown situation or foreign currency, rules of thumb come into play.

This chapter provided a deeper insight into the everyday decisions of buyers regarding their amateur pricing strategies, in order to understand their real microeconomic behaviours. This study focuses on the mental and psychological impact of price combined with 'old-fashioned' microeconomic theories, concentrating on the decisions of buyers (i.e. the demand side). In this section, a summary and review are presented, and the limitations of the study are described. Finally, new research is also suggested whereby further evidence pertaining to this issue might later be found.

Apart from the classic consumer surplus which derives from the difference between the consumer's reservation price and market price (i.e. the highest price of a good on the demand side), a reference surplus can be also defined. This comes from the difference between the personally expected reference price and market price. Reference prices are expected and based on the market perceptions of each individual. Product quality, income, place of purchase and currency all influence reference price. For example, depending on the place of purchase—e.g. whether it is a fancy hotel or just a small grocery store—the expected reference price can be different. Sometimes the currency and exchange rates do not exist. Although the consumer will not enjoy and consume any service, price expectations may diverge. The role of currencies is obviously quite important in the determination process of reference prices. Regarding the various currencies, the nominal printed value on the coins and bills enhance our decisions more than the real economic benefits of purchase when it comes to using real exchange rates. Due to that fact, that our attention span and mental resources are limited (Simon 2013), so a simple rule of thumb makes our decision easier and thus drives the decision-making process.

Our findings came from a small, unrepresentative sample of university students which did not allow for the use of wider statistical tests; as Thaler (1985) underlined:

"More generally, the theory presented here represents a hybrid of economics and psychology that has heretofore seen little attention" (Thaler 1985, 214). Some more limitations should be also listed, for example that experiments are focused on hypothetical pay-offs. Moreover, as Thaler proposed, two stages of decision making can be listed; here subjects only reached the first such stage, evaluating potential transactions (the so-called judgement process). The second stage is when individuals approve or disapprove of them (the decision process). Here no real transaction happened, as the situation was fully hypothetical. The fact that, in our simple experiment, individuals decided alone was not mentioned. Hence, others' reference points may serve as an example that causes what Leibbrandt (2016) termed "sticky prices". These are also connected with fairness, social norms, social preferences and reciprocity and other feelings and emotions. Future research is likely to explore these psychological phenomena as they have a strong impact on demand. To conclude, various heuristics and biases have been studied widely regarding the pricing strategy of individuals on the demand side. Still, much remains to be done. However, as DellaVigna (2009, 367) says, "hopefully, ten years from now, we will be able to assess quantitatively which psychological factors matter in which decisions". One such case was a study by Chen et al. (2006), who simulated the money and trade market on a sample of capuchin monkeys using tokens. The monkeys easily learned how to make purchases, and moreover understood the pricing mechanism, so a similar demand curve could be fitted to their market behaviour just as in the case of human markets. Even loss aversion also played a role in the decisions made by the monkeys. Although some cultural differences were found, the final question arises of whether we are born with heuristics or learn them. As Chen et al. (2006) suggested, it could be that there is no cultural impact whatsoever. Regarding their findings, biases and heuristics may be innate rather than learned.

Another crucial topic may arise from the differences between generations. The younger generation may neglect to pay by cash, more likely preferring a cashless life which may be a new form of currency. Many studies suggest that the future is headed towards the use of e-currencies or digital money through various apps which allow the user to buy, sell or transfer money regardless of where buyers are (anywhere in the world).

However, another well-known heuristic may play an important role here, namely anchoring. According to Kahneman (2011), an anchoring effect occurs when people consider a particular value for an unknown quantity before estimating that quantity. In our case, this study was based on one question selected from a longer survey, whereas in the previous question two prices were indicated, 5 and 10 USD respectively. These prices could serve as reference points, otherwise known as anchoring.

This paper aimed to observe how an unknown, novel market environment influences subjects' reference prices. In the future, other evidence which seems to affect subjects' willingness to pay should be observed and analysed. Let us close with one of the author's favourite examples (originally from Lichtenstein) where the reference price turns to zero: Please imagine that you mow your own lawn; your neighbour's child would mow it for 10 USD but you would not mow your neighbour's similarly-sized lawn for less than 25 USD. Would you hire him to do your gardening for 10 USD? Sometimes we are unwilling to pay to someone 10 USD to do something, even though we wouldn't do such a task ourselves for 25 USD. That is to say, here the reference price for hiring the gardener is zero, and the zero price is a hot button issue (Shampanier et al. 2007). What do you think about that?

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Part IV
Consumer Behaviour: Implications for Business Strategy

Omni-Channel Retailing Strategy and Research Agenda

Ioana Nicoleta Abrudan, Dan-Cristian Dabija, and David B. Grant

Abstract The paper reviews omni-channel retailing strategy to differentiate between omni-channel retailing and its precursors, multi and cross-channel retailing; delineate omni-channel strategies evolving from a retailing perspective; and present a research agenda to address a lack of research on and inconsistencies in this topic. By means of an extensive literature review, the authors focus on papers that define the concept and approach the practical aspects of implementing the strategy. We identify three approaches to defining omni-channel retailing: integrated selling channels, seamless shopping experience, and a combination of the two. Finally, this paper reveals inconsistencies in understanding implementation of the strategy. It highlights the main areas that need to be addressed by a retailer when shifting to an omni-channel retail strategy. In contrast with the existing literature, this review combines the logistic and management perspectives. It is the only study that emphasises the imperatives and alternatives related to implementing omni-channel strategy.

Keywords Omni-channel · Strategy · Retailing · Multi-channel · Cross-channel

1 Introduction

Consumers' tendency to manifest polyvalent behaviour, in conditions of constant change and evolution, enhanced by innovations in information and communication technology, brings new and diverse challenges for retailers in terms of maximising

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customer experience. Retailers need to reinvent themselves continuously and to customise their value proposition to each individual consumer. While product assortment, pricing and service policy are generally considered essential elements of a retailer's toolkit (marketing mix), the other elements appear as secondary, supporting elements. However, in the face of increased competitive pressure and the changing habits of the digital consumer, they are equally important in attracting and retaining customers.

Retailers constantly change or renew product assortments, adjust prices, rethink or restructure the environmental space in the store, reconsider the distribution and communication policy and the commercial services offered. Alongside innovation, an equally significant role is played by the customisation of these elements. To achieve maximum levels of customer satisfaction, it is useful for retailers to think about the purchase experience from an experiential marketing perspective. This involves identifying the contact points and, for each of them, the factors that activate all five senses of shoppers to create the intended feelings, thoughts and actions (Frazer and Stiehler 2014). Shopping must be an entertaining, exciting and emotionally engaging experience.

The omni-channel business model is oriented towards augmenting consumers' perceived shopping value. It has a powerful effect on the shopping experience, making it a unique, individual, customised process which favours acquisition. Customers can use any of the available distribution and communication channels, which are all integrated, at any moment of the buying process. The two worlds, online and offline, are merged to provide the ultimate experience. Physical store visits are enhanced using mobile technologies and electronic information kiosks, while online channels benefit from order pickup in stores and direct contact with the products.

Since the literature on the subject is fragmented, this paper provides an integrative view of this topic, focusing on aspects of the omni-channel concept and the strategic implications for its implementation. The next section presents our methods and the evolution to omni-channel retailing from its precursors. Subsequently, we review the omni-channel concept and its retailing strategies, identifying inconsistencies in its implementation. Finally, we present a research framework to address current shortcomings.

2 Method

The literature review process began with a search of relevant articles for the omni-channel theme. First, we searched through the main databases, Emerald Management Journals 200, Science Direct and Scopus, using 'omni-channel', 'omnichannel' or 'omni retailing' as keywords, and identified a set of 53 primary articles published between January 2013 and February 2018. We then sought and added relevant pieces of literature referring to omni-channel or omni-retailing that did not appear in the database searches for "omni-channel". This led to a total of approximately

136 articles. Among these, a total of 96 articles were relevant to the topic of the current literature review, defining the three related concepts and/or detailing omni-channel strategy implementation (Table 1).

2.1 From Multi-channel Through Cross-Channel to Omni-Channel…

Distribution strategy is an important source of competitive advantage for any retailer. It is defined on the one hand by the number and types of sales channels, and on the other by the means and level of interconnection between them (Chatterjee 2010). While most retailers start with one distribution channel, be it store, non-store or electronic, an increasing number have gradually added multiple channels to the initial one. The **multi-channel** retail approach blossomed in the 1990s, with the addition of other physical store formats, online or mobile channels to existing physical stores, direct mailing, catalogues, television-based selling channels or call centres (Grewal et al. 2004). Online retailers have also added physical showrooms or pickup points. Hence, the number of contact points between retailers and customers has increased. The trend is continuously expanding worldwide due to consumer acceptance of technological innovations such as the Internet, smartphones, social networks, and virtual assistance (De Faultrier et al. 2014).

Nowadays, the channels used by retailers to communicate with customers or distribute products may be *physical*, with tangible formats (sales force, physical stores or kiosks, catalogues, direct selling) or *virtual*/electronic, using telecommunication, information and multimedia technology (direct mail, call centres, websites, kiosks, interactive television, mobile applications or mobile internet, gaming consoles, networked appliances, automated retailing, mass communication and social media) (Verhoef et al. 2015). Consumers can select the distribution channel most suited to them from the perspective of proximity, convenience, store environment, prices, staff courtesy (Bieberstein 2015), product and information availability, and speed of delivery (Yee and Heutger 2015). This facilitates their access to products, which in turn contributes to increased frequency of visits, a higher volume of purchases, increased satisfaction and loyalty, etc.

Retailers approach the different channels which they operate in distinct ways, varying the level of integration from none to complete. Depending on the level of integration of channels, the strategy carries distinct names, from multi-channel to cross-channel and omni-channel retailing (Picot-Coupey et al. 2016).

In the initial phase of channel diversification, many retailers operate multiple independent channels, often in competition with each other. Even though they try to optimise consumer experience in each channel, this might vary across channels, as might product information, pricing and level of service (DHL Trend Research 2015). When a retailer simultaneously operates several distinct channels that are not integrated, the strategy is called *multi-channel retailing* (Wallace et al. 2004).

Table 1 The primary set of articles on omni-channel (February 2018)

Databases	Criteria/filters	Type of documents	Documents (unique documents—not found in the other two databases)	Journals
Emerald Management Journals 200	Keyword/title word: omni-channel, omnichannel, omni retailing	Research articles, book chapters, Conference Paper, Editorial, Article in Press, Review Article	11 (11)	International Journal of Physical Distribution and Logistics Management, Journal of Research in Interactive Marketing
Science Direct			11 (11)	International Journal of Production Economics, Journal of Business Research, Journal of Retailing, Journal of Retailing and Consumer Services, Telematics and Informatics, Procedia Technology
Scopus			44 (31)	International Journal of Physical Distribution and Logistics Management, International Journal of Production Economics, International Journal of Research in Marketing, International Journal of Retail and Distribution Management, Journal of Business Research, Journal of Research in Interactive Marketing, Journal of Retailing, Journal of Retailing and Consumer Services, Journal of the Textile Institute, Lecture Notes in Business Information Processing, Lecture Notes in Computer Science (including the subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics), Journal of Research in Interactive Marketing, Production and Operations Management, Telematics and Informatics
Total			66 (53)	

Source: Own elaboration

Customers can choose the channel they want for an acquisition and cannot switch to another channel during the buying process. The emphasis is placed on the channel and on improving customer experience as it pertains to the channel, not the brand.

There are many definitions of multi-channel retailing in the literature of 15–20 years ago. One of the first definitions is that of Stone et al. (2002), which states that multi-channel retailing is *'a distribution strategy to serve customers using more than one selling channel or medium, such as the internet, television and retail outlets'*. No other conditions need to be met to be considered multi-channel strategy. Neslin et al. (2006) define multi-channel as the *'design, deployment, coordination and evaluation of channels to enhance customer value through effective customer acquisition, retention, and development'*. The authors highlight the importance of channels as customer interaction points. The definition describes multi-channel as a seamless customer interface and experience across channels. In fact, this describes omni-channel strategy (Beck and Rygl 2015). The same confusion is present in the definition of Lewis et al. (2014, 44), who see multi-channel retailing as *a model in which retailers use a combination of two or more integrated channels to sell products and services to consumers"*.

A different definition is that of Chatterjee (2010, 10), in whose opinion multi-channel retailing consists of '*operating multiple channels as independent entities*'. Anderson et al. (2010) correctly use the term 'multi-channel retailer' to describe a retailer who sells merchandise through more than one channel, where the customer cannot trigger channel interaction and the retailer does not control channel integration. A multi-channel structure is simply defined by Zhang et al. (2010, 167) as *'all activities involved in the sale of merchandise or services to the consumer through more than one channel'*, that are developed separately. Such independently operated channels are aimed at certain target customer segments. The same idea may be found in the definition by Frazer and Stiehler (2014, 655): *'different channels of shopping are still being operated in isolation'*. This approach is found in many articles and books (Zentes et al. 2017); thus, it may be concluded that a consensus regarding this concept has been reached.

The addition of an increasing number of interaction channels leads to complications in the coordination effort. Channel integration becomes necessary in order to provide the same level of service to customers and to better respond to consumer need for continuous interaction throughout the purchase process. Integration is defined by Chiu et al. (2011, 271) as 'the mutual support of or interchangeability between online and offline channels'. Recently, retailers have tended to integrate selling channels. However, there are retailers who do not integrate channels because it is easier to manage them independently. Others avoid doing this because, for instance, they want to charge different prices on different channels, or the channels are targeted at various consumer segments or markets (Zentes et al. 2017).

Cross-channel retailing implies some degree of channel integration compared with multi-channel strategy. The concept is defined as 'integrated multiple channels, allowing cross-channel movements of products, money and information' (Chatterjee 2010, 10). Customers can switch retail channels at any stage of the shopping process: information search, product availability, purchasing, delivery arrangements, returns, etc. (Zentes et al. 2017). For example, they can search for information using their mobile application, then order a product online and pick it up in a store, or search for it online, buy it in a store and have it delivered to their home. According to Beck and Rygl (2015), there are two configurations of cross-channel retailing: one where customers can trigger partial interaction and/or some or all channels are partially integrated, and another in which the customer can trigger full interaction and/or at least two channels—but not all—are fully integrated.

Even though there has been much scientific research in the field of multi-channel retailing, cross-channel and omni-channel retailing are still new research themes, which is why authors sometimes confuse them (Beck and Rygl 2015; Mosquera et al. 2017; Reis et al. 2017). For instance, Cao (2014, 70) seems to consider cross and omni-channel retailing to be similar, 'integrated multichannel strategies', while Chopra (2016, 135) defines omni-channel as being similar to multi-channel, with 'the use of a variety of channels to interact with customers and fulfil their orders'. However, there seems to be a consensus in many papers regarding the meaning. Multi-channel retailing refers to the use of various selling channels that can only be used in parallel, and which are managed independently. Customers cannot move from one channel to another. Cross-channel displays a certain level of integration, with customers being able to change channels at various stages of the information and transaction process. Omni-channel represents the full integration of channels, and the ability of customers to simultaneously use all the channels at any given step of the purchasing process (Piotrowicz and Cuthbertson 2014; Mosquera et al. 2017). Verhoef et al. (2015) clearly specify the differences between omni-channel and cross-channel retailing. Omni-channel retailing has more channels; customer touchpoints are also included; the borders between channels are blurred; the focus is on the customer brand experience, and everything is redesigned around this philosophy.

2.2 The Concept of Omni-Channel Retailing

Omni-channel retailing is the natural and logical evolution or reconfiguration from multi- and cross-channel retailing (Gibson et al. 2015). It displays the highest level of integration and takes place among all channels. In this type of business model, clients use channels simultaneously, in parallel, in a continuous way and can migrate between them at any moment of the purchasing process, depending on their personal preferences (Zentes et al. 2017), because the retail system is designed as a holistic entity.

This strategy has been created as a response to changes in consumer expectations. Since they can access the Internet through multiple digital devices, at any time, customers expect to be able to use an ever-increasing number of offline, online and mobile channels and touchpoints interchangeably and simultaneously while shopping (Verhoef et al. 2015; Cummins et al. 2016). They also need immediate access to information, a personalised shopping experience and speedy delivery (DHL Trend Research 2015).

The term 'omni-channel' originated among business practitioners. According to Lazaris and Vrechopolous (2014), the first use of the term was in IDC's Global Retail Insights research unit reports; whereas Parker and Hand (2009) and Ortis and Casoli (2009) suggested that the omni-channel shopper is an evolution of the multi-channel consumer, who uses all channels simultaneously instead of in parallel.

While there are many definitions of the concept in both business reports and academic papers, variations in the understanding of the concept still exist. There is even a lack of agreement over whether there is consensus on the meaning or not. Huré et al. (2017) observe that, even though consent has emerged among academics regarding the definition of omni-channel, its features are still unclear.

We analysed the articles by means of content analysis (Kolbe and Burnett 1991) to structure the definitions, capture the main characteristics of omni-channel retailing to better understand the term, and identify two main characteristics of the concept. This analysis led us to develop three categories: (a) the retailer's point of view i.e. the integration of the selling channels; (b) the consumer's point of view i.e. achieving a seamless shopping experience; and (c) a combination of both these points of view.

2.2.1 Integrated Channels from the Retailer's Perspective

Rigby (2011, 1) was the first to present the term 'omni-channel retailing' in academic literature. He defined the concept as *'an integrated sales experience that melds the advantages of physical stores with the information-rich experience of online shopping'*. This definition mentions not only the integration of retail channels during the purchasing process, but the customer experience derived from this as well. His definition was later adopted by numerous other researchers such as Frazer and Stiehler (2014), Lazaris and Vrechopolous (2014), Lazaris et al. (2014), Piotrowicz and Cuthbertson (2014), Picot-Coupey et al. (2016), Reis et al. (2017), and Yumurtaci et al. (2017).

Fairchild (2014, 447) defines omni-channel commerce as *'combining traditional commerce with online commerce by integrating processes in a harmonious and complementary way throughout the organisational and IT chain and includ[ing] external logistics partners in these processes'*. The author underlines the idea that channels need to be integrated, extending the definition to include external partners as well. Although the emphasis in the definition is on retailers' internal processes, the researcher underlines that the final aim of this type of commerce is to satisfy demand everywhere, at any given time. Bieberstein (2015) claims that whenever the distribution channels and social media contact points of a retailer are interconnected and have symbiosis and synergy between them, there is omni-channel retailing. Ailawadi and Farris (2017) do not explicitly provide a definition of omni-channel, but rather a description of how they understand it. Here, we find the same idea, that omni-channel employs multiple distribution and communication channels, whose activities are integrated within and across channels to better suit consumers' shopping needs. The definition of Eriksson et al. (2017, 764) states that *'physical stores (bricks-and-mortar) and online channels are fully integrated. The retailer is facing the customer with one common interface for all sales channels and inventories and order fulfilment are merged across the network'*. Zentes et al. (2017, 96) also assert that omni-channel retailing '*involves total channel integration. Customers can shop via all retail channels in parallel, because the omni-channel system is designed as a holistic entity, ideally with every touchpoint of every retail channel available'*.

In business literature, the most prestigious consultancy companies agree upon the integration of channels within the omni-channel strategy. Thus, Carroll and Guzmán (2013) have a very similar approach: *'a synchronised operating model in which all of the company's channels are aligned and present a single face to the customer, along with one consistent way of doing business'*. A report written by DHL Trend Research (2015, 4) underlines the idea of convergence with the aim of providing personalised customer experience: *'it requires the previously separate sales channels to converge into a single seamless channel of orchestrated product flow—this flow must be designed to deliver not just products but also the highly personalised shopping experience customers have come to expect'*. PWC (2017, 4) describes the strategy as one where *'the role of the store and online channels are complementary and are managed in an integrated and seamless manner'*.

All these definitions emphasise the need to integrate distribution and communication channels within an omni-channel retail strategy. Apart from this, they all agree that the final goal of the strategy is to provide superior customer service.

2.2.2 Seamless Shopping Experience for Customers

What is different here is that authors consider the seamless experience of customers, and not the integration of channels, to be the main aspect of omni-channel strategy. This does not mean that integration is excluded; however it is little discussed.

Departing from Rigby's (2011) definition, Kozlenkova et al. (2015, 593) define omni-channels as providing a *'seamless retail experience across all end-user channels, making products available via multiple channel formats'*. The idea conveyed by the definition is the same, namely that the omni-channel system ensures maximum information availability, visibility and consistency across multiple channels (Piotrowicz and Cuthbertson 2014; Saghiri et al. 2017). Gonzales-Lafaysse and Lapassouse-Madrid (2016, 573) have built on this idea and define omni-channel retailing as *'interacting with consumers through disparate channels so as to provide a single seamless omni-channel experience'*.

Kamel and Kay (2011) and Frazer and Stiehler (2014) reason that a true omni-channel experience is based on the *'desire to serve the customer however, whenever and wherever they wish to purchase merchandise (and return it too)'*. Kireyev et al. (2014, 29) understand the term omni-channel to mean *'a similar if not identical experience across the many different channels they may use to interact with the retailer'*. Bell et al. (2015) describe omni-channel as allowing the customer the freedom to inform and fulfil their order using the channel that they find most suitable.

However, this definition could also apply to multi- and cross-channel retailing, because it does not state clearly enough whether the channels can be used simultaneously.

In the business literature, Deloitte (2015) considers omni-channel to mean an interactive and personalised customer experience with the brand, achieved using all possible touchpoints or channels.

2.2.3 Integrated Channels Offer a Seamless Shopping Experience

Some authors rally around this view and include both aspects in their definitions. One of the most cited definitions of omni-channel is that of Brynjolfsson et al. (2013, 4): '*as the retailing industry evolves toward a seamless "omnichannel retailing" experience, the distinctions between physical and online will vanish, turning the world into a showroom without walls'*. Departing from the papers of Rigby (2011) and Brynjolfsson et al. (2013), Picot-Coupey et al. (2016, 340) define omni-channel management as '*a strategy that manages channels as intermingled touchpoints to allow consumers to live a seamless experience within a brand eco-system'*. The same idea, expressed as *'unified cross-channel shopping experience'* can be found in the earlier works of Pelet and Lecat (2014, 188) and Wisner and Wisner (2014, 14)—the '*ability to have a continuous experience across brands, across formats, and across devices that is completely customised'* and optimised. Piotrowicz and Cuthbertson (2014) add that the experience is with the brand, not with the channel. Bernon et al. (2016, 586) define omni-channel in a very similar way as '*a seamless approach to retailing that offers a single and unified shopping experience across all retail channel formats'*.

Verhoef et al. (2015, 176) stress that in omni-channel retailing, the different channels and touchpoints are used '*constantly, interchangeably, and simultaneously by both customers and firms to facilitate the customers' retail experience*'. The authors define omni-channel management as the *'synergetic management of the numerous available channels and customer touchpoints, in such a way that the customer experience across channels and the performance over channels is optimised'*. The idea conveyed by the definition is that the different channels interact with each other and can be used simultaneously. They add that it is 'virtually impossible for retailers to control this use' of channels by customers (Verhoef et al. 2015, 175). The definition has been accepted and cited by numerous academics, such as Fornari et al. (2016), Picot-Coupey et al. (2016), Hosseini et al. (2017), Kembro and Norrman (2017), Manser Payne et al. (2017), Mosquera et al. (2017), Saghiri et al. (2017), and Abdulkader et al. (2018). Cummins et al. (2016, 5) expand the definition provided by Verhoef et al. (2015), combining it with the vision of Piotrowicz and Cuthbertson (2014) to underline the end goal of achieving a unified brand experience for the customer through the integration of all retailing channels. The new definition is the *'synergetic integration of customer touchpoints and communication opportunities for the purpose of creating a unified brand experience regardless of channel, platform or stage in the selling process'*.

Levy et al. (2013, 67) introduced the term omni-retailing as *'a coordinated multi-channel offering that provides a seamless experience when using all of the retailer's shopping channels'*. Beck and Rygl (2015) consider omni-channel a selling strategy that includes all channels, is widespread, and allows consumers to fully interact with all channels. Regarding channel integration from the retailers' viewpoint, they can be partially or fully integrated. The level of integration between channels leads to the division of omni-channel strategy into two types. For Juaneda-Ayensa et al. (2016, 1), the omni-channel strategy is *'a form of retailing that, by enabling real interaction, allows customers to shop across channels anywhere and at any time, thereby providing them with a unique, complete, and seamless shopping experience that breaks down the barriers between channels'*. Juaneda-Ayensa et al. (2016) consider omni-channel only as the latter category of those defined by Beck and Rygl (2015). Thus, they consider omni-channel to be the fully integrated channels of a retailer. The same idea is underlined by Wollenburg et al. (2016), Hosseini et al. (2017), Kembro and Norrman (2017), Mosquera et al. (2017) and Reis et al. (2017), who consider that, in omni-channel retailing *'neither the customer nor the retailer distinguishes between channels anymore'*.

Chopra (2016) understands omni-channel retailing to be the symbiotic approach of clients, aimed at enhancing their experience, emotions and fulfilment of their needs and expectations, regardless of the chosen distribution channel. Based on a literature review, Mosquera et al. (2017) create an integrative framework that encompasses the main characteristics of omni-channel. These are: (1) the employment of several channels; (2) blurred barriers between them and integrated data across channels, and (3) the final goal of providing consumers with a holistic shopping experience. Thamm et al. (2016) also speak about the connection between channels using a central infrastructure, and about a unified shopping experience. Based on the literature, Ailawadi and Farris (2017), Beck and Rygl (2015), Verhoef et al. (2015), and Huré et al. (2017, 315) conclude that omni-channel could be referred to as '*the complete alignment of the different channels and touchpoints, resulting in an optimal-brand customer experience*'.

By analysing these papers and their underlying discussion of omni-channel, we conclude that the definitive characteristics of this strategy are the integration of all channels and touchpoints, and the seamless customer experience with the brand, rather than with the individual channels (Huré et al. 2017). Even the first definition in the academic literature—that of Rigby (2011)—states in a clear manner that omni-channel retailing implies the full integration of multiple channels in all dimensions and activities, an opinion which was later assimilated by other academics. Regarding the integrative experience of consumers, the researchers Brynjolfsson et al. (2013) and Huré et al. (2017) posit that an omni-channel shopping experience is seamless (i.e. without rupture or friction) if the consumer can move effortlessly from one touchpoint to another. In other words, during a single purchase, customers can switch to a different selling channel at any point of the buying process and can perform the acquisition in any combination of channels they want. This is one aspect that is clearly implied in all the definitions.

3 Omni-Channel Retailing Strategy

Having understood the meaning of the omni-channel concept, the questions that arise are: what does strategic integration mean for retailers, and how it can be put into practice? This is where we found most inconsistencies in the literature. The means of accomplishing this remain unclear for researchers and practitioners alike. Also, it is not clear to what extent the various activities should be integrated or separated (Kembro and Norrman 2017). Besides that, there is another dimension often overlooked by academics, which is whether or not integration means identical characteristics of offers across channels. In other words, can the customer experience still be considered seamless or consistent (Piotrowicz and Cuthbertson 2014; Cao 2014; Beck and Rygl 2015; Hübner et al. 2016b) if there are differences between channels? Can the boundaries between the channels and touchpoints become blurred (Verhoef et al. 2015) without identical offers, prices, delivery, payment methods and promotion? Is it possible to have identical characteristics for offers across channels? And, if everything is identical for each channel, would this not lead to cannibalisation between channels?

Existing research needs to be supplemented with further investigation of the actual means of implementing this strategy (Picot-Coupey et al. 2016). Agreement still needs to be reached as to what exactly the implementation of omni-channel retail strategy involves for companies, since most researchers have avoided or ignored it. The remaining paragraphs introduce the views expressed so far regarding the practical implications of *channel integration*. They refer to several variables (Hübner et al. 2016a; Mosquera et al. 2017), the most important being the following, which we have classified into four dimensions, following the marketing mix structure:

3.1 Retailer Offers (Assortment, Prices and Communication About the Offers)

– *Assortment*. There are two major trends in this field—one considers offers to be identical across channels, the other similar. Both options have advantages and disadvantages, so further research needs to be done on how to best implement the integration of channels.

Identical offers. Herhausen et al. (2015) point out that most omni-channel retailers use asymmetrical integration (online channels offer all the products offered by the physical channels, plus other items). Their research is important, being the first to clearly state that channels offering different assortments are not integrated, and that full integration means the same assortments across channels. Abdulkader et al. (2018) consider that companies are motivated to have all products available in-store as well as online, otherwise ruptures would appear between the two inventories, which would lead to customer dissatisfaction.

In the business literature, DHL Trend Research (2015, 4) asserts that 'the customer experience in every channel must be identical and switching from one channel to another must be seamless.' Deloitte (2015) considers that in omni-channel strategy, marketing, delivery and payment are carried out through multiple channels which are integrated, which also suggests that the offers should be identical.

Similar offers. Emrich et al. (2015) find that full integration is better that no integration but is not always superior to asymmetrical integration. Chopra (2016) argues that, in omni-channel retailing, it is not necessary to create all capabilities in every channel, but rather to assign the products and tasks that each channel is able to handle efficiently. Hübner et al. (2016a) consider the assortment of omni-channel retailers to be more extensive online than offline. In a similar spirit, Huré et al. (2017) try to define consistency from the customer's point of view, and what retailers should do to accomplish this. They consider perceived consistency to be the consumers' perceived coherence of the retailing mix of touchpoints. The researchers reach the conclusion that duplicating the retailing mix on each touchpoint would be irrelevant, considering their constraints and specificities, and that it is more advisable to replicate it in a flexible way. Kembro and Norrman (2017) forecast that in future the assortment will be larger online than offline.

– *Inventory.* Kembro and Norrman (2017) suggest that inventory management and control should be integrated (for instance, by being visible across channels and jointly managed), despite the physical network being decentralised.
– *Product information.* Providing customers and other members of the omni-channel with access to information about the offers on all channels allows for 'anytime, anywhere' problem-solving solutions. It is also useful for increasing store traffic (Bell et al. 2014). Customers can, for example, research the product online from home, then visit the physical store to evaluate the non-digital components of the product and, if satisfied, purchase the product in-store (Brynjolfsson et al. 2013).
– *Price and sales promotions tools.* Saghiri et al. (2017) understand by integration in this area that all prices are synchronised, and any changes are visible to all members of the omni-channel.

3.2 Fulfilment (Logistics)

Omni-channel consumers expect to be able to combine the different channels in whichever way they find suitable for their purchasing, any time they want. This includes everything from pick-ups and returns of online purchases in the physical stores to personalised help from knowledgeable sales staff, as well as convenient online checkout procedures (Zhang et al. 2010). The integration of logistics allows consumers to trace, track and change the products, stock-keeping points, delivery or return points and transportation modes across all channels at any point during the purchasing process (Saghiri et al. 2017).

– *Shipping, logistics, picking up/delivery and return.* In this area, a critical aspect is that of integration and centralisation (Kembro and Norrman 2017). Research by Cao (2014) and Hübner et al. (2016a) suggests that retailers increasingly centralise inventories and operations in one distribution centre. There is, however, another trend of decentralisation, because certain retail stores act as fulfilment centres, pick-up points and return points (Ishfaq et al. 2016). Supporting these findings, Wollenburg et al. (2018) identify three main logistics network configurations that omni-channel grocery retailers can choose from: a traditional bricks-and-mortar logistics network, an independent online distribution centre that covers a portion of online orders, or a single channel-integrated distribution centre.
– *Customer service.* Integrated customer service implies the same or compatible service standards which are delivered by all members of the omni-channel (Saghiri et al. 2017). Omni-channel retailing forces both retailers and their suppliers to rethink their competitive strategies. In a market report published by DHL (2015), three strategic areas for the successful implementation of omni-channel retailing can be identified: personalised in-store shopping experience, personalised customer engagement beyond the store, and customer loyalty. The shopping experience can be enhanced by personalised service, making product information easily accessible, providing store shopping assistance from home (such as mobile phone applications that allow customers to create shopping lists at home), and on-the-go promotions targeting shoppers who are detected near a certain store. Omni-channel customer engagement continues via online channels, using applications that provide virtual expert advice, or via social media. Customer loyalty can be leveraged with the aid of automated ordering systems that simplify the process of replenishment for consumers and allow shoppers to customise products to their liking.
– *Payment (transaction).* Transaction integration involves the possibility of using multiple payment instruments and securing accessibility to customer transaction data via various channels on behalf of the retailer, the consumer and other parties in the omni-channel (Saghiri et al. 2017).

3.3 Communication

Integration in this dimension is based on the requirement of omni-channels to focus on brand experience. It involves integrating all selling, promotion, communications channels and contact points. Omni-shoppers regard all selling channels as one entity.

– *Promotion.* Promotional tools should be shared across all channels, channels should promote each other, and the message transmitted should be consistent (Saghiri et al. 2017).

– *Consumer data.* Integration in this dimension implies the creation of a unified system where consumer information coming from online, offline, social and mobile data is gathered. This information includes not only personal characteristics, but also past transactions, visits to online or offline stores (to understand customer visiting patterns and the movement behaviours of customers and employees within each store), searches on websites, on search engines, likes on social media, and check-ins at various places. Footage from store security cameras and intercepted mobile phone and Wi-Fi signals are useful sources of information regarding visits to physical stores. The main challenges here relate to finding the appropriate means to collect data, store it, analyse it and then use it to enrich customer experience.

3.4 Internal Organisation

Omni-channel strategy involves the complete transformation of the retailer's business model. It changes everything, whether it be management, organisation, human resources management, information systems, supply chain management, the design of processes, ordering systems or customer relationship management. The key concept of this makeover is integration. Picot-Coupey et al. (2016) suggest that the implementation process of omni-channel strategy can be carried out in two phases. The first stage deals with organisational, cultural, managerial, marketing and resources adjustments and integration. In the second stage, the retailing mix, information systems and customer relationship management need to be dealt with. Adjustments in organisational structure, organisational processes and organisational culture have not been tackled in the literature at all so far.

4 Conclusions

The main contributions of the current literature review to omni-channel retailing can be divided into four areas. First, it provides the most extensive overview of the term to date, both in academic and business literature (literature reviews and empirical research). Second, it differentiates the omni-channel business model from similar concepts of multi- and cross-channel retailing, which sometimes overlap in the literature. Another major contribution is that it identifies three major streams of views on the definition of the concept: the retailer view, the consumer view and both. Fourth, it highlights inconsistencies and gaps in the understanding of the practical implications of the concept, something that has not so far been tackled at all. These voids in the literature indicate important directions for future research. One area that remains underinvestigated is how exactly channel integration and a seamless experience for customers can be achieved; another being to what extent channels should be similar or complementary. Also, the attractiveness of omni-channels for geographic and demographic consumer segments would be a useful area of study.

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How Marketing Shapes the Behaviour of Culture Participants

Magdalena Sobocińska

Abstract Significant changes concerning the ways in which cultural needs are met are observed in the sphere of consumption. They are associated with the development of the processes comprising the so-called new consumption and are characterised by the intensification of consumer behaviours expressed in the occurrence of trends such as homogenisation and heterogenisation, servicisation, dematerialisation, virtualisation, presumption and individualisation. These processes are clearly revealed in the sphere of the behaviour of culture participants. The aim of the study is to show the role of marketing in shaping the behaviours of culture consumers and the typology of cultural institutions that takes the scope of their orientation towards culture participants into account. The study is based on the results of empirical research of quantitative character which was conducted on a sample of 451 managers of cultural institutions in Poland. At the stage of analysing research results, one of the taxonomic methods was applied, namely Ward's method, which allowed the researchers to identify four types of cultural institutions by the extent to which they are market-oriented, with the changes of the marketing paradigm taken into consideration. Cultural institutions oriented towards acquiring new consumers and satisfying their needs form the first and largest typological group. The entities on the cultural market focused on creating loyalty among recipients towards works that meet the needs of artists constitute the second-largest group of cultural institutions. Entities that are oriented towards creating loyalty among consumers and satisfying their needs forms the next group of institutions. The last of the types of cultural institutions identified is characterised by the fact that the functioning of the entities forming it is not consistent with the principles of marketing concepts.

Keywords Marketing · Behaviours of culture consumers · Typology of cultural institutions · New media · Ward's method

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1 Introduction

There are significant changes occurring in the approach to culture, which are expressed in the search for its relationship to the economy and creativity, as well as the innovativeness of individuals and social groups. Culture and entities that create a cultural offer are increasingly often approached through the prism of autotelic and instrumental values, as well as a tool of social change and creation of trust that constitute the foundation of social capital. The complexity of the culture sector is expressed by the functions it performs and the values it creates, and by the multitude of forms of participation in culture.

The adaptation of marketing concepts to the sphere of culture is multidimensionally determined and is related to the need to increase the level of participation in culture, the development of new lifestyles, changes in the hierarchies of life values and the place of culture and leisure therein, as well as the development of new media, among others.

The aim of the study is to show the role of marketing in shaping the behaviours of culture consumers and the typology of cultural institutions that takes into account the scope of their orientation towards culture participants. The research procedure aimed at the achievement of the goal is based on literature studies and the results of empirical research, which was conducted on a sample of 451 managers of cultural institutions in Poland. The analysis of the research results is focused on the identification of the scope of application of marketing in cultural institutions, in the context of ongoing changes in the behaviour of culture consumers. Among changes in the behaviour of culture participants, there is a special focus on diversity in the models of participation in culture, virtualisation and individualisation of participation in culture and the development of a culture of participation.

2 Literature Review

Changes that are inherently associated with the coexistence of opposing tendencies, including the homogenisation of culture consumer behaviours and the heterogenisation of these behaviours, are occurring in the sphere of behaviours of culture participants. On the one hand, behaviours that express consumer preferences for products of global and Americanised culture (Gomery 2005, 17) are observed; on the other hand, behaviours that are a consequence of increased acceptance of various forms of niche culture, as well as the development of ethnocentric attitudes (Alsughayir 2013, 51–54; Bizumic 2019, 23–30), representing the attachment to native cultural goods, are noticeable.

The changes taking place in contemporary societies mean that the market for mass culture has been replaced by a mosaic of cultural niches (Anderson 2009, 15). Participation in culture is diversified due to the multitude of tastes, motivations, attitudes towards culture, as well as the urgency of cultural needs and their position in the hierarchies of life values of culture consumers, the level of cultural competences, age, education, place of residence, and cultural systems in which it takes place. Determinants diversifying the behaviours of culture consumers also include the frequency of contact with cultural goods as well as lifestyles and related approaches to consumption that can be a source of positive mental experiences and sensations, the emanation of the personality of an individual, a form of enjoyment that facilitates social contact, as well as a method of highlighting social status (Holt 1995, 1–16).

Participation in culture can also be perceived through the prism of dematerialisation of consumption, which on the one hand is associated with servicisation and moving to higher stages of consumption development, as well as with meeting constructive needs that support the humanisation of consumption, and on the other hand represents approaching participation in culture mainly in terms of the brand of a cultural event. This is because dematerialisation of consumption is also defined in the context of objects of consumption, which are given a symbolic, non-material meaning. This is related to the emergence of the model of consumption in which the consumer becomes a "permanent tourist" (MacCannell 2013, 39–50), a pleasure-seeking collector of experiences, impressions and sensations. In this case, the dematerialisation of products is a kind of anthropomorphisation, because symbolic meanings are given to the objects of consumption.

It should be added that the increase in the amount of free time, rather than income, is the main determinant of the development of dematerialisation of consumption in highly developed societies and among wealthy culture consumers (van der Lippe 2007, 693–711).

The idea of collaborative consumption is also reflected in the behaviour of culture consumers (Belk 2010, 715–734; 2014, 1596–1597; Cruz et al. 2018, 1–15). Processes based on exchanging, sharing, donating, and borrowing are the essence of such a concept. Bookswapping, i.e. meetings where readers exchange books for free, could be an example here. The development of these processes is affected by new technologies and the emergence of internet platforms dedicated to sharing. Thus, showing changes in the behaviour of culture participants requires reference to the concept of technological determinism (Servaes 2014, XIV). Technological determinism can take both soft and hard forms (Smith and Marx 1994; MacKenzie and Wajcman 1999). The soft form of technological determinism means that technology is one of many determinants of the changes taking place in culture, society and the economy. However, according to the hard type, changes result mainly from the development of technology, whereas other development determinants are less important. At the same time, it should be stated that regardless of which form of technological determinism is recognised as dominant, it should be agreed that the implementation of new technologies brings about changes that extend considerably beyond the scope of its functioning.

It should be noted that, unlike many branches and industries of the economy, it is characteristic of the sphere of culture that the introduction of various types of technological innovations does not considerably translate into a reduction in the cost of production of culture nor an increase in labour productivity, because it is not possible to replace the human factor with developing technology (Towse 2010, 10–11).

The development of the application of new technologies in culture leads to virtualisation and individualisation of participation in culture, as well as changes in the way time is perceived, which in turn represents the emergence of a new category referred to as instantaneous time. The disappearance of the "culture of waiting" and the metaphor of instantaneousness serve to indicate the behaviour of culture recipients, who can watch several episodes of their favourite series one after the other using new technological solutions, rather than having to wait a few days for the next episode to be broadcast on TV. The consequence of changes in the perception of time is also a feeling experienced by some recipients of culture that the pace of life nowadays is too fast and sometimes contradicts other aspects of the human experience (Urry 2000, 105–130).

The fundamental change caused by the spread of the Internet is the emergence of a new type of democratised culture—a culture of participation—referring to the competences of culture recipients (Solomon and Schrum 2014). It opens up new possibilities for expression and co-creation of content, but also expresses the disappearance of the division of roles between creators and recipients. This may be conducive to the emergence of amateur culture that violates the foundations of a culture created by professionals. It should also be noted that culture is undergoing another paradigm shift related to media convergence. This is accompanied by expanding the possibilities of creating transmedia projects, the essence of which is work that functions on many levels by the fact that a story presented in one medium is developed in another. The concept of transmedia projects includes the use of various forms of communication, including movies, novels, and classic websites, but also blogs, social networking sites, comics, concerts, theme parks or computer games, which are gaining in importance. It should be emphasised that the reception of works of art using various media, including the Internet, contributes to deepening the experience for fans, who can also co-create narrative and expand the world presented in song through their activity (Jenkins 2006, 2, 5).

The increasing diversity in the behaviour of culture participants discussed in this study is also due to the fact that the sphere of culture is affected by the laws of continuity and change, because the development of new models of participation in culture and forms of satisfying cultural needs is not accompanied by the complete disappearance of earlier areas of culture and ways of participating in culture.

Bearing in mind the purpose of the study, the behaviour of culture participants should also be looked at from the point of view of the relationship between culture and economy (Frey 2019, 3–11), taking into account marketing achievements in the management of cultural institutions. It should be emphasised that the role of marketing related to the specificity of culture in this sphere is often expressed in finding the right audience for works resulting from artistic work (Mokwa et al. 1980). In the case of cultural institutions, the use of marketing does not mean that the artist must create work which is adapted to the tastes of the recipients. Marketing in culture is about reaching market segments that may be interested in the work and meeting their needs. Forms of promotion and distribution of the work, as well as pricing policy, should be adapted to the types of recipients and their differing behaviours. The role of marketing in culture is often expressed in shaping the tastes of recipients, creating ties with them, sensitising them to culture, and not only in satisfying current needs (Byrnes 2015, 423–457; Colbert 2007, 4, 12; Colbert and St-James 2014, 566–575; Diggles 1986, 243; Varbanova 2013, 156–157; Walter 2015, 150–181). Attention is increasingly often being focused on the brand of cultural institution and the forms of its creation (Belenioti and Vassiliadis 2017, 115–121; Pusa and Uusitalo 2014, 18–30). It is worth noting that the focus of marketing in the sphere of culture is both the recipient as well as the artist and his work, as well as ensuring contact between creators and recipients (Wróblewski 2017).

Given that marketing is a multi-paradigmatic category, there are premises for the implementation of various marketing concepts by cultural entities, including the classic concept of marketing, relationship marketing, which is focused on building the loyalty of cultural participants, as well as strategic marketing. In this context, the question arises about the use of marketing in the processes of competing cultural institutions and in shaping the behaviour of culture participants, as well as about the diversity of approaches to recipients, indicating the types of marketing concepts implemented by cultural institutions.

3 Methodology

The results of the quantitative research, in which 451 computer-assisted telephone interviews (CATI) were conducted, constitute the basis for the empirical verification of the formulated objective of the study. General directors, artistic directors and managers, managers of marketing, promotion and sales departments, as well as the owners of entities which shape the cultural offer in Poland, participated in the study. While attaching great importance to the selection of the research sample, a database of cultural institutions was created, constituting the most up-to-date and representative collection of cultural entities in Poland that met the research assumptions. This required the integration and verification of available databases. The entities were selected for the study by means of stratified random selection. Computer-assisted telephone interviews which made use of the standardised questionnaire prepared by the author were conducted in the CATI studio of the ARC Rynek i Opinia research institute in Warsaw. The empirical study was carried out as part of the research project N N112 391940 entitled "Determinants and perspectives of the development of market orientation in the sphere of culture", financed by the National Science Centre (Sobocińska 2015).

Aiming to distinguish the types of cultural institutions, a taxonomic method was used to group objects in such a way that the degree of relationships between objects from the same group was the highest, and with the objects from other groups the lowest. The criteria proving the scope of market orientation of the cultural institutions that were subject to empirical study were used to distinguish the types of cultural institutions. They included:

1. The ways in which decision-makers in cultural institutions understand consumer orientation,
2. The conditions that accompany a cultural institution's pursuit of meeting the needs of culture consumers,
3. The importance attributed to meeting the needs of recipients in the management of cultural institutions,
4. The approach to consumers applied by cultural institutions that indicates the types of marketing concepts implemented.

On the other hand, the variables including the number of workers employed in the cultural institution, length of operation on the market, form of ownership, type of business, management priorities, formulation of marketing plans, types of marketing activities, and the nature of relationships with other cultural institutions, among others, were used to describe the types of cultural institutions.

To ensure the comparability of features, while identifying similar entities creating an offer in the cultural sphere, the variables were subject to the process of unitarisation. The following formula was used at this stage of the research procedure:

$$x_i' = \frac{x_i - x_{\min}}{x_{\max} - x_{\min}}$$

This standardisation allowed for the conversion of values assigned to responses into a sequence of values belonging to the numerical range [0;1] $-0 \leq x_i' \leq 1$, where $x_i' = 0$ for, $x_i = \min$, $x_i' = 1$ for $x_i = \max$.

In the next stage, a distance matrix was developed by calculating Euclidean distances according to the following formula (Kolenda 2006, 43–44, 53):

$$d_{i,k} = \sqrt{\sum_{j=1}^{m} \left(x_{i,j}' - x_{k,j}'\right)^2} \ \ (\mathrm{i}, \mathrm{k} = 1, \ldots, n; j = 1, \ldots, m).$$

where:

$d_{i,k}$	is the metric distance between the *i*-th and *k*-th cultural institution
$x_{i,j}', x_{k,j}'$	are the values in the *i*-th and *k*-th lines of the standardised data matrix x' with respect to j characteristic j
m	number of features

Then, the Ward method was used to distinguish the types of cultural institutions. On the basis of the distance matrix, the least distant pairs of clusters were sought. According to the assumptions of this method, objects that were initially in separate groups were combined into higher order groups, successively reducing in number until all the objects were combined into one cluster. ESS (Ward 1963, s. 236–244), also called the error sum of squares, is the measure of minimal variation in relation to the average values of the created clusters adopted in this method. The calculations used to identify the types of cultural institutions were performed with the use of

Numerical Taxonomy software. The SC (silhouette coefficient) measure was used to evaluate the quality of grouping results (Rousseeuw 1987, 53–65). For the adopted configuration, SC is 0.776. According to the interpretation of the value of the SC measure proposed by Rousseeuw, the developed classifications can be considered relevant if the SC measure is within the 0.71–1.00 range. This allowed the researchers to draw the conclusion that the performed typology of cultural institutions meets this criterion.

4 Research Findings and Discussion

When showing the importance of marketing in shaping the behaviour of culture consumers, attention should be paid to the approach of cultural institutions to segmentation and selection of the market or target markets. Our analysis of the results of the study allows us to state that more than two-thirds (68.5%) of decision-makers who participated in the survey indicated that the offer of the cultural institutions they represent has a diverse character and is adjusted to different types of recipients. 5.8% of the cultural institutions surveyed operate in such a way that they focus their activities on a selected market segment. On the other hand, a quarter of the cultural institutions surveyed (25.7%) address their offer to all market participants, while not differentiating marketing activities nor applying the division of recipients into homogeneous groups.

When aiming to show the scope of application of marketing in cultural institutions in Poland, consideration should be given to the ways in which cultural institutions compete on the market. At the same time, it should be stated that cultural institutions often compete with other entities that provide leisure time activities rather than with each other. At the same time it should be stated that cultural institutions often compete with entities from non-cultural sector rather than with each other. Competition in the sphere of culture is not devastating. It concerns the ways of reaching the consumer and conducting a dialogue with them.

Over 93% of the surveyed institutions compete by means of their unique offer. Such a wide range of application of this approach is influenced by the specific character of the sphere of culture, which is expressed by a relatively high level of uniqueness of cultural goods and their vertical and horizontal diversity. A high percentage of respondents (89%) also indicate that the competition process is based on the brand and on the creativity and professionalism of the team of employees, creators and artists. Over 80% of cultural institutions compete on the market by means of an attractive location of services offered and the time of provision of these services that is adjusted to the needs of consumers, as well as through the provision of timely information about the offer through activities in the sphere of public relations and advertising or using a personalised approach to culture consumers.

However, it seems important to present a hierarchy of significance of the applied competition instruments, which indicates the approach of managers of cultural

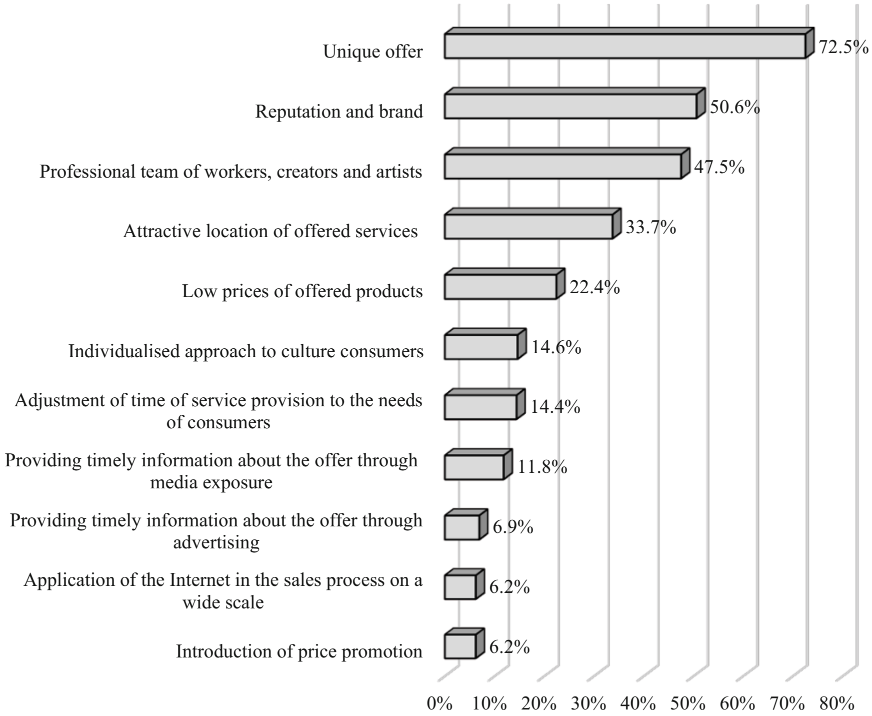


Fig. 1 Most important competition instruments. Source: own elaboration. Comment: The results do not total 100%, because the respondents were able to choose three answers

institutions to marketing and culture consumers. The ranking of the most important competition instruments was created on the basis of three fundamental forms of competition selected by the respondents (Fig. 1).

Non-price methods of competition, especially those related to creating and having a unique offer in terms of artistic experience, are applied on the cultural market to a much greater extent. The uniqueness of the offer was chosen as one of the three most important ways of competing by 72% of respondents, while the introduction of price promotions as an important form of competition was indicated by 6.2% of respondents. In this context, it needs to be emphasised that economic determinants, including the prices of cultural goods and services in relation to income, constitute a barrier to participation in culture only for people who have cultural needs and want to increase the scope of their participation in culture. The main problem associated with low cultural activity is largely caused by the lack of cultural needs or the low position of these needs in the hierarchy of life values, rather than by economic determinants.

While conducting a comparative analysis of the ways of competing across the types of creative sector entities, it can be noticed that diversity exists in the sphere of application of certain marketing activities related to brand, reputation, attractive place of service provision, low prices and price promotions. The results of quantitative research show that competition is based on brand and reputation in publishing houses, art galleries and salons, as well as in theatres, more often than in other cultural institutions. On the other hand, competing through an attractive location is especially characteristic of museums, whereas the price aspect of competing both with respect to the level of prices as well as applied price promotions is of special interest for cinema managers (Table 1).

Considering the ongoing changes in the behaviour of culture participants and the changing role of the culture consumer in the processes of value management, responses to the question concerning the scope of application of new media in marketing activities by cultural institutions were crucial. Almost all cultural institutions (97.8%) have a website. Over 82% of the cultural institutions surveyed use social media in marketing activities. At the same time, the conducted quantitative research shows that the targets of marketing activities conducted by cultural institutions in social media are quite diverse in nature.

The main purposes of using social media indicated by managers of the cultural institutions surveyed include creating the image of cultural institutions and shaping relationships with culture consumers. This is indicated among the three main goals by 71.2 and 51.3% of respondents respectively. Advertising cultural institutions is in third place in the hierarchy of the reasons for using social media (44.9%). In the cultural institutions surveyed, social media generally supports the sale of cultural goods and services (30.9%) and obtaining information for the needs of management of a cultural institution (30.4%) to a lesser degree. When formulating managerial implications regarding the trends of development of cultural institution marketing in social media, the vast potential of social listening, netnography and empathic research should be emphasised. Monitoring the opinions expressed by consumers on social media is the essence of social listening. It allows one to identify consumer responses to conducted marketing activities. On the other hand, netnography, as an ethnographic method, aims to understand human behaviour in online communities through observation. In contrast, empathic research consists of participant observation and entering the sphere of consumer community, as well as recognition of their latent needs and attitudes. Empathic research is close to classical ethnography, which requires personal observation and often interviews with members of the communities studied as well (Kotler et al. 2016, 110–113). Considering that the essence of using social media is to engage recipients in the process of creating value, it should be emphasised that only one in three of the surveyed cultural institutions that conduct activities based on social media include co-creation of the offer with culture recipients. An even smaller percentage of the cultural institutions examined in total (17.2%) perceive the use of social media as an opportunity to obtain suggestions for changing the offer. Figure 2 shows the hierarchy of goals of using social media and the place in which engaging culture recipients is found in the process of creating an offer across the types of studied cultural institutions.

The results obtained in the research, and concerning the involvement of culture recipients in the process of creating an offer, may prove that managers of cultural institutions notice the negative consequences associated with the departure from the

Table 1 Relationships between the type of cultural institution and the ways in which they compete

Ways of competing with other institutions	Percentage of indications within the type of cultural institutions [%]						Crammer V	χ^2	df	p-value
	Museums	Art galleries and salons	Cinemas	Theatres and musical institutions	Publishers	Cultural centres and other cultural institutions				
Reputation and brand	38.8	65.2	45.1	57.3	72.2	50.0	0.2047	18.9046	5	0.002
Attractive location of services provided	50.4	36.4	30.5	16.7	0.0	36.7	0.2922	38.5164	5	0.000
Low prices of products offered	21.7	4.5	32.9	21.9	22.2	30.0	0.2073	19.38	5	0.001
Introduction of price promotions	2.3	1.5	20.7	4.2	5.6	3.3	0.2868	37.0916	5	0.000

Comment: The numbers do not total 100% because the respondents were able to indicate three out of 11 ways of competing
Source: own elaboration

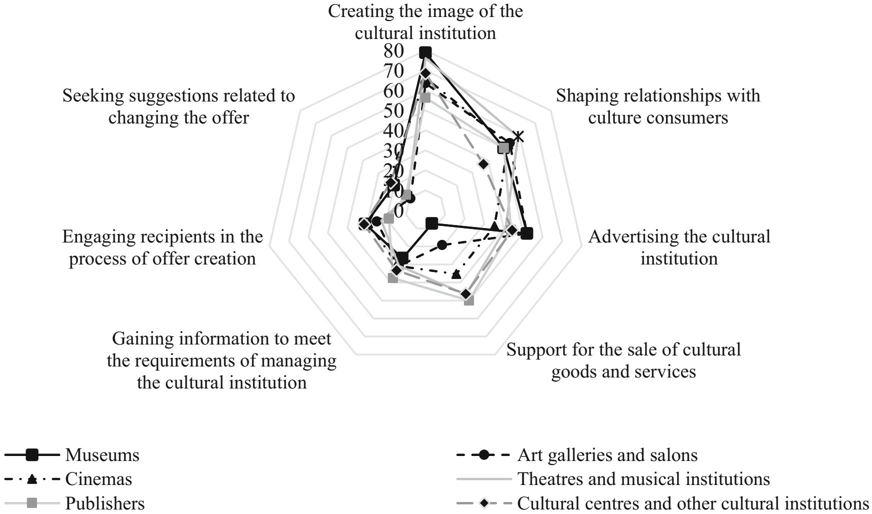


Fig. 2 The objectives of using social media across the types of cultural institutions. Source: own elaboration. Comment: The results do not total 100%, because the respondents could indicate three answers

classical division of roles into professional creators, artists and consumers of the offer, as well as a certain lack of trust in the knowledge and level of artistic competence of social media users. It should also be emphasised that the role of customers is revealed in the process of creating evolutionary rather than radical innovations, not only in the sphere of culture, but also in other areas and industries.

The quantitative research also shows that cultural institutions most often use internal sources of inspiration and ideas for changes introduced in the offer. In this respect, the key figures are managers of cultural institutions (72.9%) and employees (72.7%). However, every second respondent (51.2%) indicates culture recipients among the three main sources of suggestions for changes in the offer of cultural institutions. This proves the relatively high importance of culture recipients as the source of changes in the marketing activities of cultural institutions from the perspective of decision makers. This is reinforced by the fact that culture recipients rank first among external entities whose ideas are applied in the process of development of the offer created by cultural institutions. Only 23.7% of the cultural institutions surveyed indicate cooperating cultural institutions as other environment entities which are the source of innovation.

It is an important dimension of the presentation of the results of quantitative research concerning the approaches to the implementation of marketing in the sphere of culture observed in practice that the typology of cultural institutions shows the scope of their market orientation and considers changes in the marketing paradigm, while consequently indicating the attitude to the culture consumer.

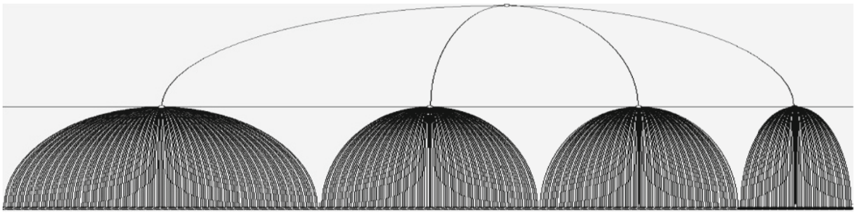
4.1 Typology of Cultural Institutions

Cultural institutions oriented towards acquiring new consumers and satisfying their needs form the largest typological group. Decision makers representing this type of cultural institution believe that recipients give meaning to artistic activities, and therefore they take the needs, motivations and behaviours of culture consumers into account in the management of cultural institutions. For this group of cultural institutions, it is also important to strive to meet the expectations of buyers, and even to create goods and services aiming to meet the current needs of recipients. It is more important for them to acquire new buyers of cultural goods and services rather than to build the loyalty of existing culture recipients, which is in line with the concept of relationship marketing. This approach is associated with the perception of the function of cultural institutions in the context of the need to reduce the scope of exclusion of individuals from participation in cultural life and the pursuit of development though reaching new culture consumers with their offer. On the one hand, these cultural institutions perceive marketing according to the essence of this philosophy of activity on the market, i.e. through the prism of identifying and satisfying the needs of recipients, and on the other hand pragmatically in the context of activities supporting sales. In comparison with other types of cultural institutions, a relatively large percentage of institutions of this type develop marketing plans. At the same time, it should be added that most of these cultural institutions conduct marketing research on large samples. These cultural institutions oriented towards acquiring new consumers indicate the introduction of innovations to their offer as well as the expansion and modernisation of the material basis among management priorities. They also attach great importance to the development of distribution channels to increase the number of consumers of the cultural goods and services offered.

Entities on the cultural market which focused on creating loyalty amongst recipients towards works that meet the needs of artists constitute the second-largest group of cultural institutions. This type of cultural institution is created by market entities which—similarly to the first type of institution—believe that culture consumers give meaning to artistic activities and aim to meet their needs; yet their distinguishing feature is that they perceive the role of marketing in the context of finding appropriate recipients for works corresponding to the artistic vision of the creators and not adjusting the offer to consumers' tastes. Managers of cultural institutions of this type more often use an approach focused on building loyalty rather than acquiring new buyers. It is characteristic of this type of cultural institution that they perceive marketing as the leading philosophy of operation of the entire cultural institution, which nevertheless does not translate into conducting marketing activities in a strategic dimension, as a relatively large percentage of this type of cultural institution does not have a strategy or marketing plans. However, it is important to note that most of them feel the need to develop this type of plan in the future. It should be added that taking care of the artistic quality of the offer is high among their managerial priorities. The difference between cultural institutions that acknowledge the primacy of the creator in comparison to other institutions is also rooted in the fact that they attach great importance to having a unique offer as well as a related brand and reputation.

The entities on the culture market that are oriented towards creating loyalty amongst consumers and satisfying their needs forms the next group of institutions. The difference between them and the institutions forming the first group is that, in their approach to culture consumers, they mainly focus on building loyalty among current recipients rather than on acquiring new culture consumers. It is also typical of this group that the cultural institutions found there perceive the role of marketing through the prism of creating goods and services that meet the current needs of recipients, and not finding buyers for works that express the needs of creators. This, in turn, differentiates this group of institutions from the second type of cultural entities. This sort of cultural institution is also characterised by the fact that, in striving to meet the needs of recipients, it perceives them as important entities whose participation in culture gives meaning to creative activities, and not as a potential source of revenue. The fact that a relatively large percentage of cultural institutions have a marketing plan, including a long-term time horizon, is a reflection of the implementation of the principles of marketing management by such cultural institutions. Apart from applying some of the principles of strategic marketing, these cultural institutions also implement assumptions that are the hallmarks of relationship marketing. This is because building long-term relationships with culture recipients is in fact the priority in managing them. Cultural institutions included in this group attach great importance to having a unique offer and a professional team of employees.

The last of the types of cultural institutions identified is characterised by the fact that the functioning of its component entities is not consistent with the principles of marketing concepts. The relatively low sensitivity of these cultural institutions to the recipient is proved by the fact that, in comparison with the other three types, their managers try to meet the needs of recipients the least—and if they do, it is brought about by the desire to increase revenues. The perception of marketing also proves the adoption of a sales perspective by these cultural institutions. Despite having marketing services, these cultural institutions often approach marketing in an instrumental way and define it in the context of promotion and activities that support sales. Most of these types of cultural institutions do not conduct marketing research and do not feel the need to do so in the future. However, they attach great importance to analysing sales data, and revenue growth is high among managerial priorities. In these cultural institutions, there is a risk that economic goals will be prioritised ahead of statutory goals associated with the development and promotion of culture. It is also characteristic of them to perceive their relationships with other cultural institutions through the prism of competition, including pure competition, but not cooperation. However, the share of these institutions in the population studied is rather small, comprising only 13%. Figure 3 presents the features of the types of cultural institutions identified and the typical way in which marketing is understood by the people managing them, as well as the scope of its application.



Type 1 Cultural institutions oriented towards acquiring new recipients and meeting their needs	**Type 2** Cultural institutions focused on creating loyalty of recipients towards works that meet the needs of artists	**Type 3** Cultural institutions oriented towards creating loyalty among recipients and satisfying their needs	**Type 4** Cultural institutions focused on sales and increasing revenues
• they perceive the recipients as those who give meaning to art through their participation in culture and marketing in the context of identifying and satisfying the needs of buyers, as well as sales support • they have marketing plans • they conduct marketing research on large samples and often have been doing so for over 10 years • introducing innovations in the offer, as well as the expansion and modernisation of the infrastructure are high among managerial priorities, • they attach great importance to the development of distribution channels • they compete through their brand and reputation as well as attractive location of service provision more often than other cultural institutions, • they perceive their relationships with other cultural institutions primarily in terms of cooperation with elements of competition • they feel the need to develop features related to openness to change and skills in the sphere of acquiring talents • they have been operating in the cultural sector for a long time • institutions of this type are most common among the state-owned cultural institutions	• they treat culture recipients through the prism of giving meaning to artistic work and marketing in the context of the leading philosophy operation of the entire cultural institution and finding appropriate and loyal recipients for works that correspond to the artistic vision of the creators • they do not have marketing plans, but they intend to develop them • caring for the high artistic quality of the offer is ranked high among managerial priorities • they attach great importance to having a unique offer as well as brand and reputation • they see their relationships with other cultural institutions primarily in terms of pure cooperation • they feel the need to develop skills in the sphere of caring for the development of employees and the attitude of lifelong learning • they have been operating in the culture sector for a long time • local government-owned cultural institutions are predominant	• they perceive the recipients as important entities that give meaning to artistic activities and marketing through the prism of the leading philosophy of the operation of the entire cultural institution and creating an offer that meets the current needs of the recipients • they have marketing plans • building a long-term relationship with culture recipients is a managerial priority • they attach great importance to the unique offer and having a professional team of employees • they perceive their relationships with other cultural institutions primarily in terms of pure cooperation • they feel the need to develop skills in the sphere of caring for and retaining talents, and adopting a long-term management perspective • local government-owned cultural institutions of medium- to long-term market operation	•they strive to meet the needs of the recipients to a smaller extent •they perceive marketing as promotion and sales support • they do not have marketing plans •they do not conduct marketing research on large samples •they strive to increase revenues •they analyse sales data •they differentiate prices •while competing, they use advertising •they perceive relationships with the environment through the prism of competition •they feel the need to develop features related to creativity • they have been operating in the sector for a relatively short time and are perceived as private entities
Type 1 **(37% of respondents)**	**Type 2** **(26% of respondents)**	**Type 3** **(24% of respondents)**	**Type 4** **(13% of respondents)**

Fig. 3 Types of cultural institutions and their specificity. Source: own elaboration

When discussing the results of one's own empirical research and the results of the analysis of literature studies, it needs to be stated that the fulfilment of consumer needs by cultural institutions and establishing relationships with said consumers is in line with the goals of functioning of cultural institutions. These include creating and promoting art, as well as building cultural experience and conducting dialogue with the consumer (Smith 2014). At the same time, it should be emphasised that, while being a manifestation of the internal activity of a person and an expression of their internal life, participation in culture supports the humanisation of consumption.

5 Conclusions

Stimulating cultural activity and shaping the behaviours of culture consumers with the use of modern marketing instruments that are an expression of the adoption of a market perspective in managing the sphere of culture cannot take place in isolation from the ongoing changes in consumption and lifestyles. Increasing the scope of application of marketing in cultural institutions is becoming a determinant for the development of the sphere of culture and its growing role in society.

The empirical study shows that, among the premises for expanding the scope of application of marketing by cultural institutions in the future, the key role is attributed to endogenous factors, which represent the conviction of decision makers in cultural institutions that developing marketing activities will translate into greater efficiency in managing cultural institutions and will facilitate their development. This internal motivation is a good predictor of the development and application of marketing in the sphere of culture.

In this context, it is important that the scenario assuming that all cultural institutions will increase the scope of marketing applications in the long run, although probably not equally, materialises. This is because it would be disadvantageous to implement a scenario of the bipolar development of buyer orientation in the cultural sphere. In this less desirable scenario, it is assumed that cultural institutions which broadly implement the principles of marketing concepts and gain positive experience in this respect will continue to develop marketing activities and introduce innovations, whereas cultural institutions that currently implement marketing concepts to a lesser degree will try to retain the status quo. As a consequence, this will lead to an increase in the distance between cultural institutions applying a marketing approach and those that do not see development opportunities in marketing. In the scenario of bipolar development of marketing in the sphere of culture, an analogy to the division of the world into broadcasting centres and peripheries can be noticed. In this case, cultural institutions with a brand, reputation and relatively good financial position, often located in large cities and being open to introducing innovation and expanding the scope of marketing application, play the role of broadcasting centres. In contrast, cultural institutions which implement marketing principles in management to a lesser degree, focus on survival rather than development, and which do not intend to open up to recipients and expand the scope of marketing activities are found in peripheral positions, even though they may also have valuable artworks.

Opportunities to materialise the desired scenario of marketing development in the sphere of culture, consisting of the fact that all cultural institutions will increase—though not equally—the scope of its applications should be seen in managerial education, the growing expectations of culture consumers, as well as in the dissemination of new technologies, the implementation of which can be an impulse to introduce marketing innovations in the sphere of culture.

The conducted research procedure, which targeted implementation of the assumed goal, allows one to state that the application of marketing principles performs an important role in the functioning of the sphere of culture in Poland, even though in this respect there are multi-dimensionally determined diversities that are accompanied by the tendency to increase the scope of implementation of marketing in the management of the entities shaping the cultural offer.

The trends of future scientific research in terms of the issues undertaken in the study should include a more comprehensive scope and include cultural institutions from countries on diverse levels of socio-economic development, as well as countries with various models of state cultural policy and different attitudes of the state to the scope and forms of financing of the cultural sector. It would be particularly interesting to recognise the differences in the role attributed to marketing in the processes of creating value for culture consumers on the American market and on selected European markets. It would also be advisable to empirically verify the proposed typology of cultural institutions and recognise the scope of occurrence of specific types of cultural institutions in other countries. The implementation of research among culture consumers should be another important direction for further empirical study, especially due to the fact that the development of the culture market depends on the aptitude for dialogue with the viewer. Due to the fact that each study has its limitations, another potential direction for future research could be to perform another measurement on a similar sample of cultural institutions in order to recognise the changes in the scope of application of marketing in the processes of creating value for customers on the culture market in Poland.

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Determinants of Purchasing Decisions of Restaurant Consumers: A Case Study Analysis

Agnieszka Werenowska and Olga Kresan

Abstract Understanding the determinants of purchasing decisions which condition customer behaviour is of particular practical importance. It is possible to predict and maintain profits at the highest possible level, but in order to do so each individual gastronomic establishment manager needs to both be aware of patterns and changes in the dining behaviour of his customers and must analyse data on how the abovementioned factors change. There are many factors which are important in the purchasing decision-making process in every industry, but especially in catering—the most significant are quality, taste and price. These factors affect customer loyalty as well. Given these facts, the aim of the chapter is to present the determinants of purchasing decisions made by customers of gastronomic establishments, taking into account the specifics of the industry. A case study of the Warsaw restaurant L'Olivo was used as the research method herein. The analysis was also supported by Internet statistics and available reports. The analysis of the results indicate that taste and price are the main determinants of the choice of gastronomic establishments.

Keywords Consumer · Determinants · Decision · Gastronomy

1 Introduction

It is crucial to understand the determinants that condition the behaviour of customers in relation to making purchasing decisions. Recognising the determinants of purchasing decisions which condition customer behaviour is of particular practical importance. The process of making purchasing decisions is one of the most frequently studied areas in the field of consumer behaviour (Erasmus et al. 2001;

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Hamzaoui Essoussi and Zahaf 2008; Miklošík 2015; Stankevich 2017). Nevertheless, there are many ambiguities regarding this issue. Much of the research to date has been based on the assumption that consumers make informed purchasing decisions (Kim et al. 2010; Cha and Borchgrevink 2019). By contrast, some research is conducted on the assumption that many choices are unconscious, depending on the environment and emotions (Bargh 2002; Kenning and Linzmajer 2011; Martin and Morich 2011; Budzanowska-Drzewiecka 2014).

Being aware of changes and patterns in the behaviour of customers of gastronomic establishments, it may be much easier to predict and maintain profits at the highest possible level by analysing data on how the described factors change. In the catering industry, there are many factors that are important in the purchasing decision-making process. Key among them are quality, taste, and price, which also affect customer loyalty (Iglesias and Guillén 2004; Lin and Chen 2006; Dąbrowska 2011; Kang and Rajagopal 2014; Bianchi 2017). Given the facts presented, the aim of the study is to present the determinants of purchasing decisions made by customers of gastronomic establishments, taking into account the specifics of the industry. A case study analysis based on L'Olivo restaurant in Warsaw was used as the research method. L'Olivo review statistics data gathered by TripAdvisor, Google, Facebook, the websites of the suppliers Pyszne and Uber, and the 'Poland on a Plate 2018' report were used in the analysis. Unchanging consumer behaviour is an important factor affecting the food service sector. According to Duhigg (2013), restaurants can change consumer behaviour if they understand not only measurable data on shopping patterns, but also consumer motivations. Assuming the veracity of this statement, the following analyses were conducted:

1. An analysis of the gastronomy market in Poland, its features and consumption patterns.
2. An analysis of individual stages of the decision-making process and the factors affecting consumer purchasing decisions.
3. The determination of ways to shape long-term competitive advantage on the gastronomy market.

The thesis that the existing specific determinants in the purchasing decision-making process of consumers on the gastronomy market allow for the formulation of a model of the purchasing behaviour of consumers of a selected gastronomic establishment and the determination of ways of influencing their decisions and behaviour was advanced.

The study is structured as follows. The first section presents the essence of purchasing decisions in the area of food consumption and consumer purchasing styles. This is followed by a description of the methodology. Subsequently, the research section concerns the presentation of the research results defining the main determinants of purchasing decisions made in the gastronomy industry and a discussion of the results. This is followed by the conclusions and limitations of the study.

2 Theoretical Background

The modern consumer and consumption model have changed enormously. The development of civilisation, globalisation, acceleration of the pace of life, the invasion of new products and behavioural patterns of particular countries mean that there has been rapid development of consumption services (Kwiatkowska and Levytska 2009).

Consumer purchasing decisions relate to the choice of needs, resources and options for satisfying them. Taking into account their behaviour, the following models can be distinguished: economic, passive, thinking and emotional person models (Smyczek and Sowa 2005, 52). A rational consumer, referred to as an economic person, approaches the purchasing decision being aware of the existence of various ways to meet his or her needs and correctly assessing alternatives by identifying the benefits and possible losses resulting from this choice. However, according to Gerald Zaltman (2008), this is a rare phenomenon because consumers do not think rationally or linearly, since approximately 95% of human thought processes are unconscious. A passive consumer is primarily influenced by promotional activities; he or she is an irrational and impulsive buyer who acts in accordance with the expectations of the seller. A thinking person model applies to consumers who search, process and evaluate information about a selected product, as a result of which shopping preferences are shaped. An emotional consumer bases his or her choice primarily on current feelings and emotions. It cannot be said that this behaviour is irrational, because purchasing decisions that provide emotional satisfaction are considered rational consumer behaviour.

Food plays a crucial role in everyone's life. It provides a range of different experiences, ensuring the implementation of social and cultural functions. Contemporary gastronomy has several important functions, among which the most important are (Renko et al. 2010; Levytska 2011): (1) information on the origin of products and dishes; (2) adjusting the gastronomic offer to individual lifestyles; (3) communication, enabling interpersonal contact; (4) adding value to the image of a tourist destination and by reinforcing the tourists' experience in certain places; and (5) offering opportunities to relax and spend free time. The model of spending leisure time is changing. The development of gastronomic services is caused, among others, by changes in the lifestyle and daily routine of modern consumers.

Some people prefer eating out because it is more convenient for them, e.g., they go for a meal during their lunch break, while for others it is a way to spend their free time. It is then a more reasoned and wilful decision (Longart et al. 2016). In Poland there is a continuous increase in spending on catering outside the home. According to the report 'Poland on a Plate 2018', Poles spend less on meals in restaurants and premises during a working week than on a weekend. During the week, 68% of respondents spend between 11 and 40 PLN on a meal, while on weekends expenses are seldom less than 20 PLN, with 65% of respondents spending between 21 and 70 PLN.

The worldwide food services market is driven by more significant disposable income on a global scale. This results in a growth in consumer spending when it comes to eating out or ordering home catering services (Cho et al. 2019). The availability of modern technologies, e.g. online payments and the activation of mobile applications on the gastronomy market, allows customers to order easily and conveniently. Loyalty programmes for customers have changed the relationship with the foodservice market over the course of a decade (Research report 2019).

The globalisation and Europeanisation of consumption patterns are also observed in Poland. Grębowiec (2010) notes many changes in the sphere of consumption, including the lower birth rate, the ageing society, a reduction in the size of households, greater professional activity of women, changes in the time and organisation of work, an increase in consumer expectations regarding quality, safety, and convenience of consumption and public health education among others. In general, his conclusions confirm the thesis that Polish society is adopting the lifestyles of Western societies.

Changes in food consumption depend on many factors (Morone et al. 2019; Nettle et al. 2019), e.g. related to the environment (choice of gastronomic premises) and the characteristics of the offer (choice of dishes). The purchasing process in the foodservice sector can take different forms among different consumer groups. There is no single model that takes specific behaviour and the issue of consumer attitudes during the decision-making process entirely into account. It is difficult to comprehensively discern purchase determinants in the catering segment that could be used to strengthen communication between the consumer and the catering facility. The factors which prompt specific purchasing and consumption behaviours are not entirely clear (Zych 2008).

Decision making is one of the most common activities of every consumer (Sands et al. 2019). It is a choice made from the available alternatives. It refers to items, activities, or solutions that are the subject of choice. The decision-making entity is an individual or a group of people who make the selection and are responsible for their decision (Gajewski 1997, 129).

According to Kotler (2018), the first stage of the purchasing decision-making process is identifying problems. This occurs when the consumer recognises a perceptible and sufficiently significant difference between the actual level of satisfaction of his need and the expected level of satisfaction. The next phase of the purchasing decision-making process is searching for information and identifying alternative solutions. Information is crucial for a future purchasing decision. It is worth noting that, apart from traditional information channels, the importance of new media in the process of information transfer and active dialogue with the consumer is growing. EY research (EY report 2019) shows that 57% of Poles shop simultaneously through online and offline channels. 66% of Polish consumers look for information on products and prices on the Internet, which means that consumers in Poland are multi-channelled. There are two levels of consumer stimulation when it comes to motivating the search for information. The first is to draw his attention, after which the consumer becomes open to information about the product or service. The second is the active search for information, which means looking for reading materials, discussions, and searching for information on the Internet. After examining the information and identifying possible alternatives, the consumer proceeds to the next phase of the purchasing decision process—the mental evaluation of existing alternatives (Kotler 2018). At the evaluation stage, the product or service is classified, and the intention to purchase is formulated. The purchasing decision-making process does not end with making the decision. There is still a rating to be made after the purchase. This is the phase in which the consumer analyses the degree of reasonableness of the decision made.

The purpose of gastronomic establishments is to acquire and retain loyal customers (Izquierdo-Yusta et al. 2019). Just as a customer assesses after purchasing, so catering establishments carry out an analysis of the customer in terms of suitability and meeting his expectations and needs. Decision making affects customer satisfaction or dissatisfaction. The latter will certainly not return with negative experiences in mind (Olejniczak 2017).

Food is a primary good, social, and cultural heritage (Cheung 2019; Kim et al. 2019). It is necessary for life, health and well-being, much more so than products of other industries, which is why it is so essential (Morgan and Sonnino 2010).

The specificity of the gastronomy segment means that the decision-maker is usually a single consumer or a group. In both cases, purchasing behaviours and decisions are widely diverse (Tyszka and Falkowski 2006). They can be made in various ways: conscious, unconscious, or habitual. The choice may depend, for example, on consumer knowledge of the product and its characteristic features. Consumers do not carry out a complete analysis and assessment of products when making a purchasing decision. Their choices are inconsistent: the consumer can choose one alternative, and then another with the same set of alternatives. The consumer is not always motivated to make the effort to make a rational decision. A common reason for the lack of consistency in consumer choices is the limited ability to process available information.

Consumers can use different combinations of decision-making rules when choosing a product (Zuschke 2019). The strategy of maximising usability is the most complex. It provides the highest accuracy of choice and allows one to compare alternatives in every respect. It consists of the fact that a product which is defective due to one feature can be balanced out by its advantage due to other features (e.g. high quality). When making a choice, the consumer reveals a tendency to evaluate alternatives and to look for diversity that may result from repletion with a good. However, the consumer may decide to choose a less-preferred good before repletion with a preferred good (Tyszka and Falkowski 2006). The twenty-first century consumer is aware, and expects his needs to be met. He can find the information which is required in order to make shopping decisions.

3 Methodology and Research Object

Primary and secondary information sources were used in the study. The primary sources were: company financial statements, fiscal reports, periodic reports containing consumption data, sales statistics and data obtained directly from consumers. Sources of secondary information were: data from the Central Statistical Office on the macroeconomic conditions of the market, specialised Polish and foreign scientific and popular science publications, scientific articles in Polish, English, French and Italian, gastronomy, economic and sociological trade journals. Observations from 2015 to 2019 were also the source of numerous conclusions and facts presented.

The conducted research used the case study method. As one of the methods of interpretive research within the induction method, it corresponds to the specificity of the presented problem. There are many definitions of the case study in the literature. In these studies, the definitions of Dul and Hak were adopted (2008, 4). They treat the case study as an examination of a selected case embedded in the real, everyday context of functioning. In this method, contextuality is particularly emphasised by the impact of various conditions and features of the subject's environment on the results of the research (Dundajewska 2016).

The subject of the research is an Italian restaurant-pizzeria called "L'Olivo" in Warsaw. It specialises in selling Italian specialties such as pizza and pasta. The restaurant cooperates with suppliers and offers take-out food. Food products are purchased from certified suppliers who can document the fact of meeting all required legal standards, both Polish and EU. The unique selling point is the offer of real Italian cuisine and selected wines. The restaurant, with an area of 83.9 m^2, is located in the business precinct of the Wola district. The primary source of the company's revenues is catering, which is characterised by systematic growth on an annual basis. Revenues of the premises are characterised by seasonality, which is caused primarily by weather conditions and the associated variable number of tables and fewer sales days in the winter months. The highest revenues are achieved in the third quarter of the year, and the lowest in the first quarter. The company limits the impact of seasonality of revenues by means of direct cooperation with suppliers and building lasting ties with them and a subsequent sense of loyalty. This allows the company to continually offer a high-quality product while maintaining a profit margin. The main barriers to the dynamic development of the premises are the high costs of running a restaurant, and in the event of breaking through the growth barriers, the need to bear additional marketing and management costs.

The perception of the premises in the near future will be influenced by an understanding and acceptance of the strategy aimed at safe development, improvement of the company's balance sheet and results, growth rate and quality, the effects of promotional activities on social profiles, and the implementation of forecasts.

4 Research Findings

4.1 *Quality of Ingredients*

The source of success on the catering market is, above all, knowledge of the needs and expectations of buyers. The main advantages of L'Olivo restaurant are the high-quality ingredients and the use of traditional Italian recipes. As many as 90% of ingredients for food and beverages are of Italian origin and are supplied by the largest supplier in the European Union, the Cremonini Group, which in 2018 generated revenues of EUR 4184.1 million (Cremonini 2017). Products for L'Olivo are delivered daily, which ensures the high quality of the dishes served. Quality is also associated with the professional equipment on the premises. The analysis of the research results, using data from L'Olivo reviews on TripAdvisor, Google, Facebook and on the websites of the suppliers Pyszne and Uber, indicate the great significance of quality. It is an element that not only affects the choice of a given premises but more importantly the return of customers, which is an element of forming loyalty that is crucial for the operation of gastronomic establishments. Returning customers represent their potential and the guarantee of their continued existence.

The relationship between the determinants of the assessment of the examined premises by means of guest reviews in the aggregators of opinions about the companies—TripAdvisor, Google, Facebook, and partner services Pyszne and Uber—and the variables collected during the survey conducted by IQS at the national level are unambiguous. All the examined variables have shown that L'Olivo customers and consumers nationwide confirm that the quality of the food service market is a particularly important determinant in the decision-making process (Fig. 1).

4.1.1 Perceived Quality and Rational Consumer Judgment

Quality is crucial in the purchasing process. Perceived quality refers to the rational and subjective perception of the product by the customer. It is associated with marketing activities carried out by the company. It applies, among others, to making the buyer aware of the product's features and its ability to meet the needs of the customer (Przybylska 2010). Participatory observation of sales on the premises ($n_1 = 60$) showed a high perceived level of quality to that which was expected, which directly adds to the positive assessment of the premises. It is worth emphasising that the features perceived by customers affect the number of sales and consequently constitute an argument and justification for the introduction of higher prices (Fig. 2).

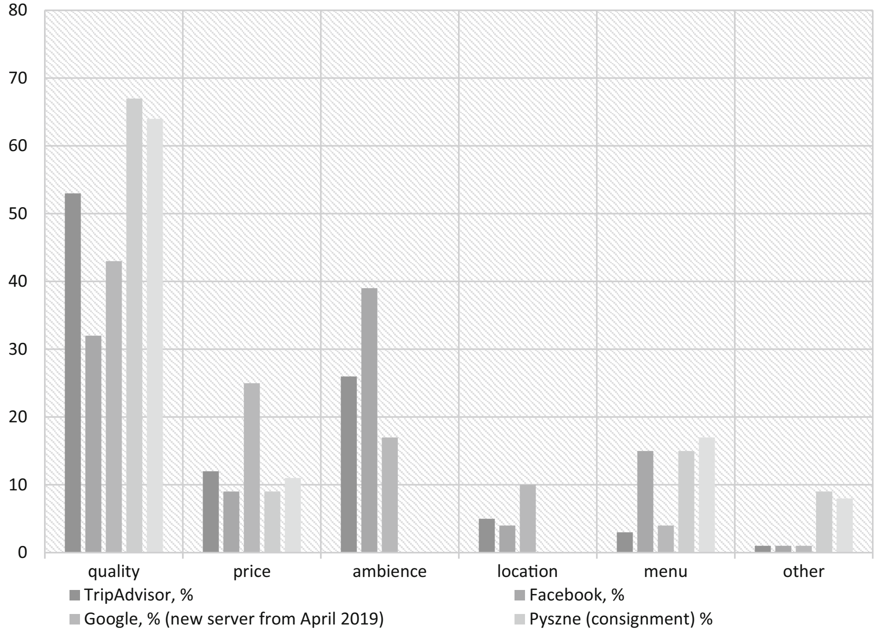

Fig. 1 Most important variables for the consumer rating of the premises. Source: own elaboration

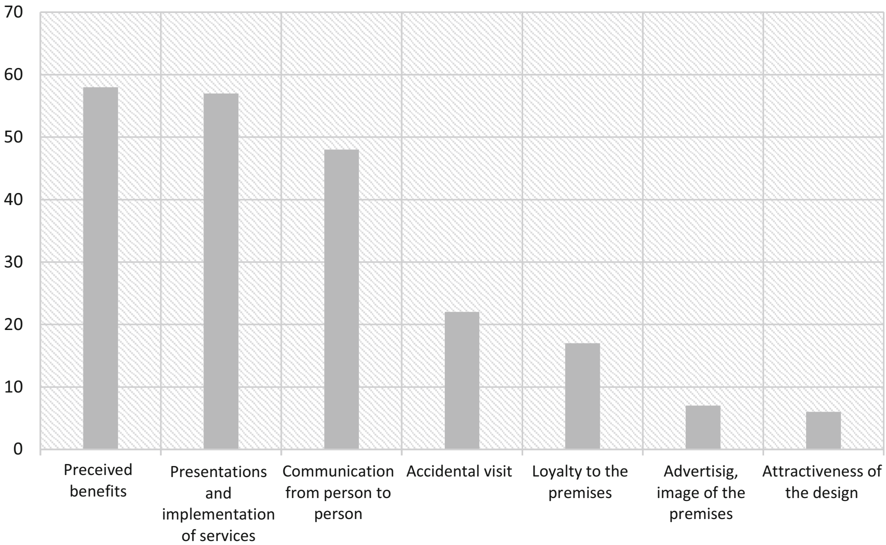

Fig. 2 Perceived quality elements influencing the choice of L'Olivo; n = 215. Source: own elaboration based on observations of sales on the premises (n_1 = 60) and statistics data from L'Olivo reviews in TripAdvisor, Google, Facebook (n_2 = 155)

4.1.2 Taste in Shaping Eating Behaviour

All areas of economic activity are continually changing. This rule also applies to gastronomy. A large amount of variety is observed, which is associated, *inter alia*, with the evolution of the taste of dishes and thus the growing consumer demand for a wide selection of dishes on the menu. According to the 'Poland on a Plate 2018' report, the main factors of choice in gastronomic establishments were primarily taste (66%) and price (49%). 29% of respondents attached importance to the quality of service on the premises, and 22% to the location. The interior design and atmosphere, the varied menu or the chef were also of limited importance (catering report 2018). The evaluation of the premises, the variables from the report (Fig. 3), as well as data from L'Olivo, including sales statistics and data from participatory observation, were analysed. It is essential that both L'Olivo customers and consumers nationwide identify quality mainly through the taste of the product.

The assessment of organoleptic characteristics sensed during consumption is the primary motivation of consumer eating behaviour. Perceptions of taste, aroma, texture, and the aesthetics of a dish largely determines food preferences, habits and ultimately the choice of premises (Fig. 4). On this basis, it is reasonable to say that the role of taste in shaping eating behaviour cannot be overestimated. However, socio-demographic variables such as income, level of education, employment status,

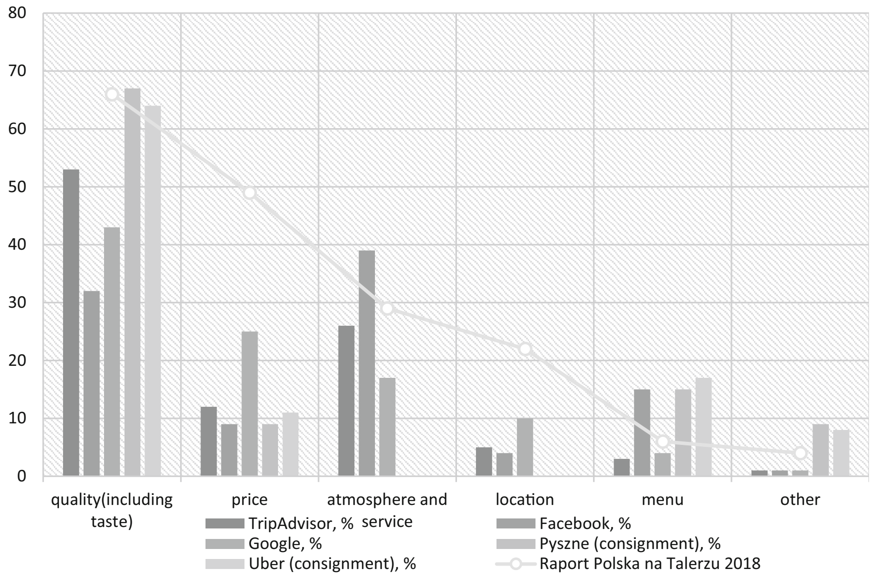

Fig. 3 Comparison of the variables of L'Olivo ratings by consumers and factors affecting the decision to return to the premises from the analysis of the gastronomy market in Poland. Source: own elaboration

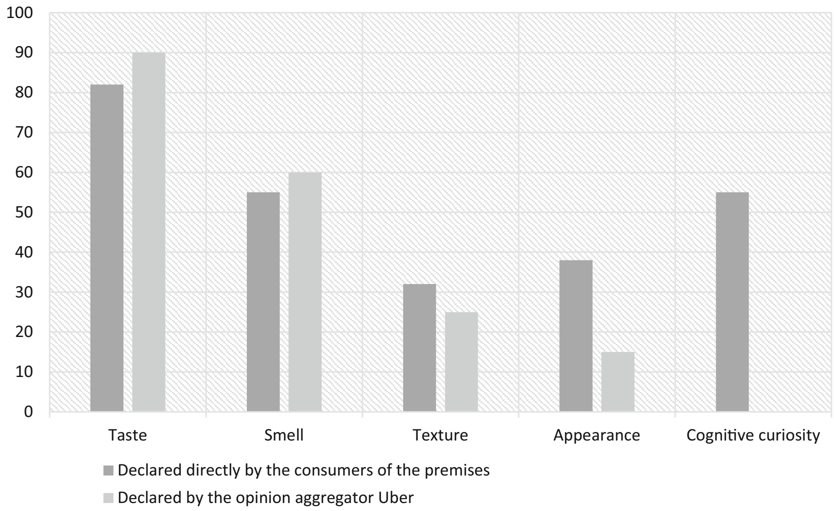

Fig. 4 Perceived psychological variables of taste declared by consumers of the restaurant L'Olivo, %, n = 92. Source: own elaboration based on participatory observation of sales on the premises ($n_1 = 60$) and data from L'Olivo review statistics using the Uber opinion aggregator ($n_2 = 32$)

and marital status determine consumer attitudes and preferences to an ever-decreasing extent.

4.1.3 Price as a Factor Affecting the Image of a Restaurant

Price is one of the most important determinants of customer choice. It relates to most industries. Gastronomy, as it turns out, is governed by other laws. Data from the 'Poland on a Plate 2018' report shows that 68% of consumers pay between 11 and 40 PLN for a meal during the week, while during weekends, an increase in expenses is noted, which ranges from 21 to 70 PLN. An analysis of the POS sales system data for 2018 was carried out, and the average value of expenses per person concerning the number of guests, turnover fluctuations, and the average value of expenses per person at gastronomic establishments in Warsaw were analysed.

An increase in the average value of expenses per person was observed, even when the pricing policy changed along with the update of the L'Olivo menu. The indicators of average expenditure per person in L'Olivo and average expenditure per person at gastronomic establishments in Warsaw concerning L'Olivo turnover were also analysed.

There was no correlation between the price level and the change in the behaviour of regular restaurant customers, turnover fluctuations, and the number of people visiting the premises. This demonstrates customer loyalty and appreciation of the quality of services and products served in the restaurant which was the subject of research. This is a clear message for restaurateurs who do not always focus on quality, but rather choose to engage in "price wars" at its expense, that price is not the main factor in determining consumer choice in the gastronomy industry.

4.1.4 Loyalty Programmes as a Way of Shaping Long-Term Competitive Advantage

One should also add that the modern customer is aware of his needs and his significance to producers and service providers. There is huge competition in the catering industry, especially in large cities. From data included in the 'HORECA Market in Poland 2018' report, the gastronomy market is worth over PLN 30.9 billion, which means a 7% increase year-on-year (catering market in Poland report).

Measuring customer loyalty requires the choice of the right indicator. Among many such indicators which it is possible to use for research purposes, the Customer Loyalty Ratio (CLR) indicator was used, which is based on the likelihood of repeated purchases according to consumer declarations (Table 1).

The CLR conditional indicator constitutes the ratio of customers who declare a conditional tendency to remain with their choice if the competitors' offer is comparable and the purchase is not associated with any inconvenience and an unconditional willingness to purchase, compared to the number of respondents. The enhanced CLR indicator constitutes the ratio of customers who declare only unconditional purchase intent to the number of respondents.

The CLR customer loyalty ratio is not perfect because it is based solely on the behavioural aspect of loyalty, and respondents' answers do not always express actual intentions and future behaviours. This is due to the uncertainty of the respondents pertaining to their behaviour in the future and whether the situation, their needs and expectations will change.

The results of the observation carried out directly in the examined premises indicate that the main determinants of loyalty amongst L'Olivo customers are primarily the quality of dishes, customer service, and the prevailing atmosphere on the premises. Interestingly, customers return to the premises even though loyalty programmes have never been used there.

Table 1 Customer loyalty index of the CLR premises surveyed, n = 79

Month	Standard CLR loyalty indicator for L'Olivo customers	Enhanced CLR loyalty indicator for L'Olivo customers
1.2019	$\frac{5}{9} \times 100\% = 55.5\%$	Not applicable
2.2019	$\frac{11}{14} \times 100\% = 78.5\%$	$\frac{8}{14} \times 100\% = 57.1\%$
3.2019	$\frac{14}{19} \times 100\% = 73.6\%$	$\frac{9}{19} \times 100\% = 47.3\%$
4.2019	$\frac{16}{18} \times 100\% = 88.8\%$	$\frac{14}{18} \times 100\% = 77.7\%$
5.2019	$\frac{17}{19} \times 100\% = 89.5\%$	$\frac{11}{19} \times 100\% = 57.8\%$

Source: own elaboration

4.1.5 Research on Consumer Behaviour in Creating Strategies to Influence Purchasing Decisions

Modern consumers are highly aware. Evidence shows that they often purchase in a manner that contradicts common sense. When making economic decisions, they are guided by non-economic reasons. Thus, it is possible to analyse mechanisms that increase the tendency of customers to make a purchase. Aurier and Sirieix (2016) point out that gastronomy is a platform for understanding the mechanisms of food consumption. It is based on the recognition of factors affecting food consumption. Gastronomy research includes many factors, including those related to enjoying food as well as its maximisation and impact on purchasing decisions. Understanding the process of the consumer's evaluation of food, identifying related variables and their mechanisms of action is particularly important in the subsequent introduction of effective management and development strategies. All the variables studied have shown that L'Olivo customers and consumers nationwide identify quality mainly by the taste characteristics of the product (Fig. 5).

The main determinants of loyalty amongst L'Olivo consumers are primarily the quality of the dishes, customer service, and the atmosphere prevailing on the premises. Digital technologies and statistics of aggregators of opinions about enterprises in the catering industry allow researchers to more effectively examine the behaviour of a selected group of recipients, including socio-demographic variables. They also allow for the optimisation of the offer, the final product and the creation of individualised offers. The primary determinant of the impact on purchasing decisions in the establishment is, above all, maintaining a constant level of quality,

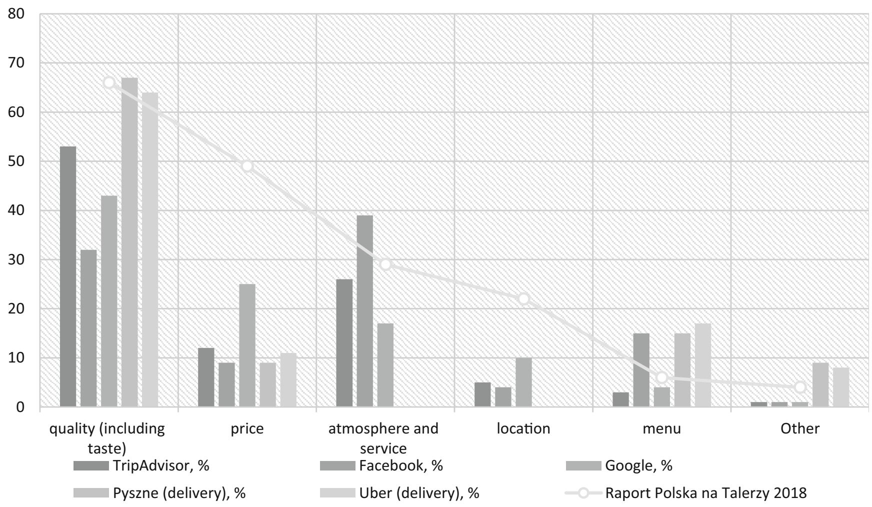

Fig. 5 Comparison of the variables of L'Olivo ratings by consumers and factors affecting the decision to return to the premises from the analysis of the gastronomy market in Poland. Source: own elaboration

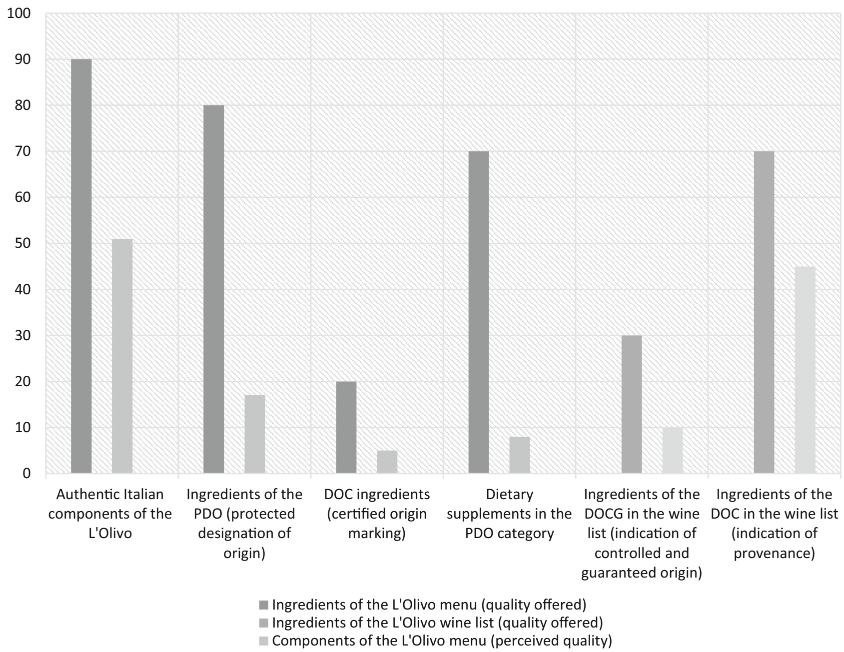

Fig. 6 Comparison of quality measures offered by L'Olivo and perceived by consumers [%]. Source: own elaboration

including maintaining or improving the organoleptic characteristics of the dishes served, the level of service and interior design (Fig. 6).

The analysis of quality measures offered by the examined restaurant and perceived by consumers shows that one of the main tasks in creating a strategy to influence consumer purchasing decisions is to disseminate information on the quality of ingredients for the dishes served and the highest quality products as presented in the offer. These are products with European quality labels such as DOC (designation of confirmed origin), DOCG (designation of controlled and guaranteed origin, a higher category of wine classification), and DOP (protected designation of origin), which constitute the majority of L'Olivo's offer. A study of consumer behaviour at a selected gastronomic establishment allows researchers to define the main determinants of impact on purchasing decisions and further allows for the creation of strategies to increase consumer confidence in the premises and thus to increase sales.

5 Discussion

The results of the research are confirmed in the analyses of other scientists. It is worth paying attention to e.g. the determinants of consumer behaviour defined by Liczmańska (2015), who noted four basic trends. The first such trend is a conscious consumer who knows his needs and expectations, knows what gives him contentment and satisfaction, and knows a great deal about a product or service. The second trend is a consumer who seeks information from very different sources, predominantly on the Internet. The third trend is satisfaction. Modern consumers know what satisfaction means to them and where it comes from. The last such trend is loyalty. As Liczmańska indicates, respondents know the reasons for their loyalty, and are aware that it not only means shopping repeatability but also recommendations. A modern consumer is demanding and inquisitive. Anh Phan and Phuong Hoang Mai (2016) came to similar conclusions. Even when choosing fast food restaurants, the main determinants were: health awareness, perceived value, food safety and price. Customers seeking information expect recommendations from other users of the premises. According to Kieżel (2018), recommendation systems are based on customer reviews confirming the quality of gastronomic services. These reviews become an incentive for other consumers to visit such places. It is important that the recommendation systems become a sort of link in a bilateral relationship between gastronomic entities and their clients.

Nowadays, Polish society is more willing to spend money, including on catering services (Kwiatkowska and Levytska 2009). This is also evident in the assessment of price as a determinant of making purchasing decisions in relation to gastronomic services. The results of research conducted by Świątkowska et al. (2017) indicate that for the clients surveyed, the most important factors which shape satisfaction and affect the choice of premises are the taste of the products offered, the duration of order processing and the location. Price is not the first-choice factor indicated by consumers.

Restaurants operate in a competitive and changing environment. Mróz (2014) notes that it requires entrepreneurs to be flexible and constantly adapt to consumption trends and consumer needs. This requires continuous research and responses to the market and trends thereof. It is necessary to create a long-term marketing strategy.

6 Conclusions

The gastronomy industry is enjoying increasing popularity among customers. Eating out is becoming the standard, especially in large urban centres. Due to large-scale competition, only those establishments that provide high-quality services have a chance to survive and gain loyal customers. When it comes to the concept of quality, the taste and quality of the product should first be taken into account. It is common nowadays for a customer of catering establishments to look for information from various sources when selecting a specific location. He makes sure that it meets his expectations and enjoys a good reputation, which includes not only the taste and quality of the product but also the quality of service. Regardless of size, gastronomic establishments should continue to conduct research aimed at assessing the services provided and fulfilling the needs of their customers. The analysis of the results of such research is crucial in defining the determinants of purchasing decisions and creating an effective promotional and sales strategy.

Consumer behaviour is conditioned by various factors. The results obtained are related to the empirical context of the research. However, it is worth extending the study, taking into account other variables and possibly other methods of analysis to increase the effectiveness of the study. Continuous research on consumer behaviour, its changes and dynamics allow for a better understanding of the consumer and ultimately an increase in sales. More research is needed, along with other trials, other variables, and possibly other methods of analysis, to increase the effectiveness of these studies. It is also possible to replicate this study with diverse gastronomic products whose hedonic assessments allow for a factor solution and an effective analysis of the perception of individual components of the enterprise's product value. Detailed knowledge of the determinants of purchasing decisions that condition customer behaviour is of great practical importance. Being aware of the changes and patterns of eating behaviour of consumers of a gastronomic establishment, it is easier to prepare data analysis on how the described factors change in order to maintain profits at the highest possible level in conditions of fluctuating periodic demand.

The results of the study cannot be generalised. However, it seems that they would be similar at least as far as other Italian restaurants in Warsaw are concerned, the purpose of which is to provide catering services at a very high level. The existing research barriers open up the possibilities of replication of this research in order to increase economic efficiency and reduce operational risk given the seasonality of local demand for catering services.

The research did not give rise to psychographic variables, because the study of individual differences in personality and lifestyle is the subject of research of qualified specialists, taking into account the field of psychological diagnosis.

It is worth emphasising that so far no model has been developed that entirely takes into account the specific behaviour of consumers during the decision-making process in the gastronomy sector. That also includes monitoring the impact on purchasing decisions and maintaining customer loyalty, as well as long-term competitive advantage on the analysed market. The lack of such a model confirms the need to broaden the knowledge in this area and conduct intensive research.

The variety of determinants of food consumption justifies its selection as the subject of research in many disciplines, such as nutrition, psychophysics, sensory evaluation, economics, or social sciences in general. The contribution of each field to understanding food consumption behaviour is undeniable. Detailed multidisciplinary research has a huge advantage considering the impact of the interaction between specific variables. In particular, sensory evaluation seems to be very important in gaining a better understanding of consumer attitudes towards products on the gastronomy market. The sensory evaluation emphasises the role of research into taste and diversity concerning the products, which is essential for marketing studies and creating development strategies for gastronomic enterprises. The complementarity of approaches seems attractive, both in the field of research and from the point of view of management, especially at a time when an increasing number of companies in the industry are conducting a study on sensory assessments and consumer behaviour. Their results contribute to the implementation of effective marketing strategies.

After a survey of a group of customers of the establishment, it can be concluded that the inherent characteristics of the food served, such as quality and taste, are most appreciated by consumers. The research was limited to socio-demographic and psychographic variables due to the lack of data on neurological mechanisms and consumer preferences for a specific food. The analyses carried out are therefore the starting point for further replication studies.

Particular knowledge of the determinants of purchasing decisions that condition customer behaviour is of great practical importance. Awareness of changes and patterns of eating behaviour of customers of gastronomic premises, together with the analysis of data on how the described factors change, allows for the preparation of an effective marketing strategy, and consequently an improvement in the financial results of gastronomic facilities.

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Consumer Behaviour and Private Donations: The Effect of Marketing Communication and the Reputation of Non-profit Organisations

Jarmila Šebestová and Dana Šebestová

Abstract The main goal of this chapter is to determine an optimal communication mix with donors in non-profit organisations within a social marketing concept based on the reputation of an organisation. Each donor or end-user of social services or products fills the role of "non-profit organisation customers". This relationship is influenced by trust, transparency and communication with public supporters. The case study is conducted using mixed methods based on secondary data (eight well-known concepts will be analysed), and primary data survey based on 87 interviews will be presented to determine the optimal communication strategy to minimise barriers and motivate donors to support selected non-profit projects. Four research questions will be answered, pertaining to: (1) the means of communication by which to share information about donations, (2) which communication channels are negatively ranked by donors, (3) the best concept of the communication mix in case studies, and (4) the worst concept of communication.

Keywords Consumer behaviour · Donations · Marketing communication · Reputation of non-profit organisation

1 Introduction

It seems simple to manage a non-governmental non-profit organisation (NGO). However, this market is very specific and conceals a significant number of peculiarities. In the current business environment, a non-governmental non-profit organisation has to use managerial methods which are mainly developed for commercial companies that do not have a social or environmental business goal in the first place. Generally, a non-profit organisation has two main goals: first, to obtain funds from donors; but second, and arguably more importantly, to acquire regular recipients

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(customers) of their product itself. Unexpectedly, there is strong competition on the non-profit market, which requires careful analysis in order that one might find the right way to differentiate itself from others.

However, marketing in the non-profit sector deserves special attention. The basic marketing principles are the same as in the commercial sphere. The difference could be seen in the use of marketing techniques and tools, as some marketing principles still have a generally negative perception in this area (especially promotion and selling activities). Sometimes, the main goal for those organisations is to sell unnecessary items at the highest price to obtain funds. For this reason, many organisations are often cautious about the use of marketing in the non-profit sector. Paradoxically, they have the impression that if they wish to present their pure and honest work in NGOs through marketing, they would at once receive a negative label (Bačuvčík 2011; Gustafsson et al. 2017).

Therefore, in the current business environment, it is critically important for non-profit organisations to recognise the significance of private donations and marketing communication; this chapter contributes to this understanding by examining how non-profit organisations in the Czech Republic can achieve this goal using trust, preferences and media communications. In this case, two informational streams were used. To obtain a relevant description of the current situation, eight well-known concepts were analysed in detail as the basis of an internal evaluation of trust, relationships and the use of media in non-profit organisations. In the next step, primary research (based on 87 interviews) will confirm or disprove the hypotheses drawn from previously analysed information. Finally, the research findings were compared with relevant studies in order to gain an optimal perspective of marketing communication in the social area.

2 Theoretical background

2.1 Role of the Customer in Non-profit Organisations

Marketing itself is described by Philip Kotler as "a social management process in which individuals and groups gain what they need and want by creating and exchanging products and values" (Bačuvčík 2011, 10). The marketing of NGOs, or more precisely "social marketing", is not so different from commercial marketing. The aim of this philosophy is to find a consensus between the product offered and the customer. Different tools and techniques will vary according to the situation, when the primary goal in the "profit sector" is the sale of goods and services that will make a financial profit for the company. By contrast, social marketing contributes to social and individual gain (Lee and Kotler 2015, 22).

As already mentioned, many organisations believe that marketing is useless in the non-profit sector. It is assumed that customers are connected to the organisation through informal ties and it is easy to find them whenever they want. However, it is necessary to communicate with regular customers as well as to reach new potential donors. Of course, organisations often do not have enough resources to fulfil the classical communication mix, if not integrated communication marketing, and they prefer not to do it at all.

The term "customer" takes on a broader meaning here. A non-profit could have up to four kinds of customers. The main group are donors, who are often distrustful of foundations. They need to know where their contributions go, and more specifically whether they were really used for charitable purposes. The non-profit sector specifies the target group (direct and indirect clients, employees, volunteers) and supporters (donors, sponsors, volunteers, members of the statutory body). Both groups need to be analysed in detail, especially their needs, so we know what the offer will look like. Only the right communication, transparency and credibility can overcome problems of trust (Šedivý and Medlíková 2017).

It is worth mentioning that in the non-profit sector, marketing focuses not only on the customer, but also on who finances their projects (Boukal et al. 2013; Rektořík et al. 2007). Most of the funding is provided by the public, companies or public budgets. Therefore, it ranks among the important fundraising marketing tools.

In the non-profit sector, the dual customer concept applies. The organisation communicates with both the end-service user and the donor. However, this is perceived by employees as an obligation. Organisations often work with a small circle of people. If they want to specialise in a wider range, or recruit specialised staff, they need to expand this range by actively reaching out to new customers. This is associated with another myth in which customers who use these services seek out the organisation themselves. The need for services is often difficult to find; it is a so-called hidden demand, as in the commercial sphere of marketing. It is important to highlight the importance of social demand. One of the reasons is that those organisations have to find out how to service consumers actively, as well as new members of the organisation or future donors. In the commercial sphere, the individual value perceived by the customer will be higher than the price and the social value may be irrelevant, while in the NGOs the social value perceived by the customer would be higher than the price, but the individual value would be lower. This implies that NGOs must also search for customers who do not want to use their services. Another myth among non-profit organisations is the perception of competition, which is quite massive in this sector. Organisations compete for the same services they provide to the same customers and they use the same resources. Often, workers also have no insight into their services and are not able to engage outside (Bačuvčík 2011; McLeish 2011). This can be (1) a commercial firm, a foundation, a state, (2) an individual donor, (3) a state or a public institution. When the concept also includes the public as part of a producer-customer relationship, this gives rise to the concept of the triple-line customer of the organisation. The public can also ask the state to meet their needs with the help of non-profit products. The organisation thus has four customers. Consumers play a significant role in that market; they are a source of capital and demand. They could support crowdfunding and networking, usually via the Internet. Recent decades have been typical with changes in the role played by consumers based on the enrichment and empowerment of their relationship (Lusch et al. 2007; Ordanini 2009, Ordanini et al. 2011). For an end-service user, the complication is that communication is often one-sided.

2.2 Marketing Communication in Non-profit Organisations

According to Karlíček (2016, 10) marketing communication means "controlled information and persuasion of target groups, with the help of which companies and other institutions fulfil marketing goals". In today's hyper-competitive markets, most commercial and non-commercial organisations cannot do without marketing communication. Businesses motivate potential customers to buy products and services which they offer, as opposed to governmental and non-profit institutions who try to promote socially beneficial behaviour (such as public collections).

A non-profit can use all the tools (media) that marketing communication offers them, but they do not have the available resources. They apply the same approach to target groups that use specific forms of communication. Many organisations use the services of communication agencies that carry out so-called promo campaigns "pro bono" (for free) for a good cause—in this case, all participants are free to show their ability and creativity (Bačuvčík 2011, 87). In addition to that, a similarity between the promotion activities of a non-profit and the promotion of a commercial company can be seen, as non-profit organisations have a plan of communication, but—as opposed to commercial companies—they suffer from a lack of financial funds to put their plans into action (Alanazi 2018; Clohesy 2003; Gibbon 2003).

The most important roles in the communication of non-profit organisations are played by personal sales, personal communication with the donor and the user, public relations, event marketing and advertising for promotion of the event or for social advertising. It is also worth mentioning new media, which brings about an opportunity for non-profit organisations to use "cheaper" channels such as Internet channels or e-mail for reasons of efficiency.

2.3 Relationship Building Towards Social Media Trust and Preferences

Social media, such as Facebook, Instagram or Twitter, has been identified as an effective marketing tool of interaction between non-profit organisations and donors, but has not yet been examined in terms of building trust and maintaining relationships (Aabeid et al. 2016). Unfortunately, it has become slightly difficult for non-profit organisations to build strong connections between an organisation, donors and volunteers based on trust and long-term relationships (Waters 2010; Reynolds 2011). On the other hand, other authors (Homburg et al. 2009; Netemeyer et al. 2012; Boenigk and Helmig 2013) who focused on studies of customer loyalty measured by outcomes suggested regular donor satisfaction surveys to support long-term relationships and donor loyalty.

According to a study by Sargeant (2001), the main weaknesses arise from wrongly addressed correspondence, requested feedback or poor relationship quality. The non-profit may fail when it wishes to take the wishes of its donors into account or acknowledge the nature of the relationship that has developed over time. Non-profits often ask for inappropriate amounts of funding for their projects, communicate at the wrong time of year, or fail to recognise the giving history and specific details that suggest the nature of the relationship (if any) that a donor might wish to be party to. In line with this, private donations depend on two main groups of stakeholders—the users (beneficiaries) and the providers of funds (donors) who require appropriate care and relationships based on communication and long-term ties.

This approach seems to merely copy the concept of Customer Relationship Management (CRM) widely used in the for-profit sector, when all focus groups are treated as strategically significant "customers" (Popović and Stankovic 2010; Kara et al. 2004). The basic knowledge, which is transferable to the non-profit sector, is to understand what customers want and expect from their relationships with non-profit organisations. It is important to ask questions about their identification with the main focus group, output and welfare to build their loyalty. When an NGO receives money from their customers (donors), donors expect that they will be rewarded in turn through marketing methods (customer care). In many cases NGOs fail in this regard with unchangeable products, mission or other visible assets (Blery et al. 2010). Building this relationship could create a better reputation on the non-profit market (Richmond 2012). Following that, it has to be mentioned that non-profit organisations mostly offer ideas and lifestyles to their customers to obtain funds and to be able to help those in need (Blery et al. 2010; Jordan 2008). A promotion mix mostly includes advertising, personal selling, sales promotion, publicity, word-of-mouth and public relations (Nour and Almahirah 2014; Liu and Ko 2012; Mainwaring and Skinner 2009; McClymont and Jocumsen 2003), and every activity has to be compared before and after the implementation of those marketing tools. The above-mentioned activities are closely connected with building long-term relationships with donors, which is very important in order to support the allocation of financial resources from fundraising activities (Khodakarami et al. 2015). In line with that, non-profit organisations have to start, continue or increase support for their end-service use customers by means of a portfolio of benefits (Andreasen 2012; Pratono and Tjahjono 2017; Sisson 2017; Sundermann 2018). The best practices from the commercial sector have to be adapted to the non-profit sector to build an optimal relationship based on consumer behaviour (Wymer 2013; Ehrenberg 2000). This means that it is very important to (1) increase the role of marketing communication (Kennedy and McColl 2012), (2) build an appropriate corporate identity, and (3) build a brand which is uniquely distinguishable from their competitors (Bennett 2006; Faulkner et al. 2016).

Based on a review of the existing literature, we have identified a research gap in connection with the three dimensions of customer behaviour to support NGOs with private donations. The previously mentioned studies did not keep an eye on the relationship between the three variables—customer preferences, customer trust and preferences in terms of communication channels. If we are able to triangulate those three variables, we will be able to optimise the relationship with the customer and deepen it in order to make it last longer.

3 Research Methods

Although this study is unique, here we offer a general outline of this study. External and internal evaluation could be used to evaluate the reputation of a non-profit organisation. For the purposes of internal evaluation, we used the self-evaluation of eight main concepts, widely known in the Czech Republic, which copy the three main criteria in the identified research gap. The evaluation is based on secondary data, own experience with support and the review of social media campaigns based on a study by Milde and Yawson (2017). Secondly, an external evaluation of those concepts has been conducted by means of interviews. The topic areas were inspired by a study by Greeves (2006). Questions in standardised interviews covered the following areas:

- General preferences—which areas (goals) of support respondents prefer to solve within a competitive environment between non-profit concepts.
- Reputation measures: includes questions on level satisfaction with the organisation, and idea presentation.
- Donor behavior: amount of gift, preferences, and preference for the information channel by which to receive feedback about the use of the money.

The set of questions focused on non-profit organisations that are interested in public problems, problems of consumers of products themselves or supporting various activities in cash or non-cash form. This may include helping shelters, raising the standard of living for seniors, taking care of children in children's homes, providing medical aids, helping the sick and disabled, supporting the environment or helping people in need. Since these interests are services or philanthropic according to the typology, they will be associations, foundations and endowment funds. In these forms of organisation, communication can take place at all four levels of customers, (1) service users, (2) corporate donors, (3) individual donors, and less often with (4) a public institution or state. This research focused on communication with individual donors, which we consider to be the most problematic as classical forms of communication are not effective. Furthermore, organisations of different forms of communication will be selected so that respondents can express their impact on them.

To develop an appropriate communication strategy, we need to know the entire communication planning process. The phases of the communication plan are not unidirectional and must be internally consistent. First, a situational analysis of the market is required. It is not only problems and opportunities which can be defined on this basis, but also market trends. The next important phase is setting communication goals, which determine how and when to conduct marketing communication. A communication strategy is then developed to specify how the set communication objectives will be achieved. The communication strategy must be in line with the marketing strategy and concerns the marketing message, creativity and an appropriately chosen communication and media mix. The entire process is closed by a timetable and budget, the amount of which determines whether the communication strategy may be implemented (Foret 2011; Duquette 2017).

4 Results and Discussion

4.1 Examples of Good Practice

We chose a total of eight non-governmental non-profit organisations as examples of good practice. We evaluated their origin, possibilities of donor assistance (in terms of customer care), the purpose of the organisation, the concept, marketing communication, campaign partnerships, transparency, website design and communication on social networks (Facebook and Instagram). They had to operate within the Czech Republic.

4.1.1 Click and Feed

The Click and Feed association was founded in Prague in 2016. However, its scope has recently been extended throughout the country. The association provides voluntary services and supports the adoption of animals from shelters. The cooperation is based on the strategy of the company Brit, which supplies pet food for selected shelters, and its partnership principle. The amount of pet food depends on the number of clicks which correspond to filling the animals' bowls. This service is offered completely free of charge. In April 2018, a total of 235,164 bowls were filled. Among other things, people can contribute by donating money for the vaccination of pets, buying items via an e-shop or having their pet painted. The Click and Feed project is based on online communication. The company has well-designed websites that are clear, simple and understandable. It also uses PPC advertising. There are numerous PR articles about the organisation, describing the interesting concept of the foundation and cooperation with selected shelters. The foundation is active on social networks, mostly Instagram, every day and communicates through pet stories and information about the number of shelters. Its Facebook profile has 27,072 likes and its Instagram account has 2245 followers. To date there have been 437 posts with the hashtag #clickandfeed. The association uses a non-violent, unconventional way to help shelters by means of partnerships. The company informs its donors about its activities in the news section of its webpage and on social networks.

4.1.2 Nejen srdcem

The Endowment Fund supports shelters, asylums and quarantine stations for dogs. It was established in 2016 and operates mainly in Prague and its surroundings. It supports programmes dealing with problems related to adoption and breeding facilities. It also prepares charity events, the proceeds of which are donated to specific projects of the foundation. The donor can donate money to the foundation's account, purchase items from an e-shop, and support the organisation through money boxes in pet shops or at charity events. They use social networks for customer communication, where they post news about their activities. Their Facebook profile has 2003 likes, their Instagram profile 4505 followers, and the largest number of posts with the hashtag #nejensrdcem is 572. Well-known personalities promote the company on social networks, also helping to contribute to the promotional activities of the foundation. Personal contact is encouraged at events which they organise themselves or at other events where their products are offered.

4.1.3 Dobrý anděl

The foundation helps families with children who have been in financial distress due to severe illness. It has been operating since 2011, and is based in Prague though it operates throughout the Czech Republic. Its message is to redistribute the contributions received each month to the last penny. A donor can become a "good angel" by sending a given amount every month using the mobile app, which also makes it possible for the donor to see who the post helped, together with the story behind it. Every month, the foundation publishes a newsletter informing the recipients about a selected family which has benefited from the generosity of the foundation. In 2018, the Foundation collected an incredible CZK 232,149,173 from 1,093,129 donors. The Foundation uses TV spots to communicate. It also enlists celebrities in its promotional activities to gain the confidence of prospective donors. Thanks to media partnerships, it features in numerous PR articles and also uses outdoor advertising. The website is up-to-date, full of information and well-designed. All figures are published since the foundation of the foundation, or individually by year or month. The foundation is active on all social networks. It has 85,207 likes on Facebook despite not currently running any advertising campaigns. It has 6434 followers on Instagram and 442 posts with the hashtag #dobryandel.

4.1.4 Rainbow Run

Originally a hockey club based and originally operated only in Ostrava, its *raison d'etre* was completely changed in 2016. Now it organises several cross-country races a year in several cities. The proceeds from the entry fee go to particular families who have been dealt a bad hand and whose children need help that their parents cannot afford. Every runner can help the family by paying the entrance fee and buying rainbow souvenirs. Throughout the day there is also a richly varied programme of events accompanying the run called Rainbow Fest, for which runners can also sign up to help. In 2018, 5000 people attended the event in Ostrava. During the event there is a fun shop with themed products. The action is unusual in that before the start everyone dresses up in rainbow-coloured clothes. Thanks to media partnerships, the event is promoted on Óčko TV, Time Radio, Helax and in Patriot magazine. There are numerous PR articles about the concept from partners, cities where the event takes place, and various information portals. Of course, the organisers are active on social networks. It has 35,034 likes on Facebook and 3839 followers on Instagram, where there are 24,600 hashtags with #rainbowrun. Both profiles share high-quality video edits from the entire event, photos from the preparations and behind the scenes, from the event itself, and from participants. However, there is a lack of information regarding the utilisation of the funds collected.

4.1.5 Krása pomoci

The foundation was founded in 2008 in Prague and these days is active throughout the Czech Republic. Donors can contribute financially on the website, buy interesting items from the e-shop or undertake volunteer activities. The Foundation runs campaigns that address a selected issue in the field of senior care. Every year it announces grants in which it cooperates with various non-profit organisations. With the assistance of participating companies, they provide retired seniors with jobs, tackling a social problem that has been neglected to date. Its founder and a member of the board of directors is Miss World, UN activist and SDGs ambassador, Tatiana Gregor Brzobohatá; at the same time Ondřej Gregor Brzobohatý, a well-known actor, is a member of the Supervisory Board. The famous personalities at the head of the organisation have a significant impact on its success, mainly due to interesting contacts and the involvement of other influential people in the activities of the organisation. The foundation's Facebook profile informs followers about different statistics and research results, covering issues through people's real-life stories. It also publishes photos from events, interviews and PR articles with Taťána and Ondřej, who are the main activists of this foundation. There are 4928 followers on Facebook and 798 on the Instagram profile, and 1778 posts with the hashtag #krasapomoci. The foundation's media partner is Czech Television, which has also helped the Foundation create promotional material to be broadcast on television.

4.1.6 One Man Show: Buzz Marketing

The use of buzz marketing can also be found among non-profit organisations. The One Man Show, which is broadcast on the stream.cz video portal as an Internet talk show, is proof of this. Its moderator and producer is Kamil Bartošek, known by the pseudonym Kazma. He has created several “viral programmes” and has brought social problems that need to be addressed to the attention of viewers. His campaigns always overlap and are based on the concept of drawing attention to an existing problem. One such project focused on the severity of Tourette’s disease. Viewership of the One Man Show reached 2,500,000 after the video had been posted for 3 days, and set a new record in terms of Czech internet audience. The media value of the contribution thus reached an incredible CZK 7,340,464. The public became interested in the disease and even contributed to its treatment. At the end of 2017, after the new One Man Show on Tourette’s syndrome, Kazma founded the One Man Show Foundation, which helps people all over the country. It also provides assistance to road accident victims. Donors can contribute any amount or buy a T-shirt from the 1/10 campaign, which draws attention to the fact that only one in ten drivers stops in a traffic accident. The Foundation website consists of one page with contacts, logo, the name of the organisation and links to Facebook and Instagram. It also has the account number with a link to the transparent (publicly visible) account of the organisation at the bank, where it is possible to observe all transactions in the account. During its short year of existence, the profile gained 1065 likes. With an Instagram profile of 5557 followers, 135 posts were found with the hashtag of the organisation’s name.

4.1.7 Charita ČR: Three Kings Collection

A registered legal ecclesiastical entity which was established in Prague in 1999 and operates throughout the Czech Republic. The charity also includes the Three Kings Collection, where volunteers go from house to house around villages and towns and collect money in money boxes. Each collection comes under the charity of the city, into which the proceeds are then distributed. In exchange for each donation, the donor receives a small gift. At the same time, the Three Kings Concert is broadcast on CT1, where many Czech singers from different generations perform. A total of 22,005 spectators contributed CZK 1,266,496 to this year’s concert. The proceeds go to support people in need. These may include the sick, the disabled, the elderly, mothers and others. One-tenth of the annual proceeds go to humanitarian disaster relief. Donors can also contribute by sending an SMS or funds directly to the charity account. The Three Kings Collection has media representation at CT1, which broadcasts the concert itself, and at Czech Radio. Since it is a church-based legal entity, proceeds are also distributed among the dioceses. On the website of the Kings Collection, individual amounts are allocated by district for different purposes, which are described in very general terms. The donor thus learns only that the money goes to charity, but the purpose is unknown. There is also a guide to safely identify volunteers who belong to a charity. The Facebook page has 10,992 likes and is most active during Christmas and the Three Kings holiday. However, the charity is not particularly active on Instagram; the profile has 15 followers and 447 posts contain the hashtag #trikralovasbirka.

4.1.8 KontoBariéry

This is a project that comes under the Charter 77 Foundation, which was established in 1990 in Czechoslovakia. The project focuses on people with health problems and disabilities. There are countless stories on the Barrier Account website to which you can contribute any amount of money. For each story, the amount currently collected and how much until the target is reached is displayed. It is also possible to engage in other projects, such as cross-country events or buying a collection of painted postcards. The donor can also choose from the following projects: New Start (contribution to a car for a handicapped person), Sport Without Barriers (support for handicapped people to participate in sport), Barrier Scholarship (support for handicapped students), or Bionic Hand (the possibility to contribute to a bionic hand designed for a selected person). Thanks to a media partnership with Czech Television, the Barrier Account has regularly been featured on TV. Another of the foundation's media partners is Mafra, through whom it is possible to publish information about the Christmas collection at iDnes.cz. Yet another important media partner is Economia, sponsored by Hospodářské noviny, Ekonom, Respekt, IHNED.cz, Aktualne.cz, Žena.cz and Vaření.cz. Furthermore, Burda, which includes 40 magazines such as ELLE, Marianne, Apetit and others, is another media supporter. The foundation cooperates with Czech Radio. One form of cooperation worth noting is with RAILREKLAM and JCDecaux, which rent advertising space throughout the Czech Republic. The project has 5632 likes on its Facebook profile and publishes posts twice weekly about activities and life stories for which they hold collections. On Instagram they are also active and have 915 followers.

All concepts are summarised below in Table 1, where the main criteria were the focus of the given non-profit organisation, the amount of contributions received in 2018, means of support, information channels and the media of communication used for donor feedback.

Table 2 evaluates individual components of organisational communication. The rating scale ranges from 1 to 5, with 1 being the best and 5 the worst. We will not evaluate the mission of those organisations, because any such assessment would be highly subjective; nor will we rate the amount collected for the year, because in some cases this information was unavailable. When any information was not made available, for example in the case of a newly established organisation, the organisation is assigned a rating of 0 in that category.

According to this evaluation, the concepts of Konto Bariéry, Dobrý Anděl (1.25) and Click and Feed were internally rated as the best concepts in terms of transferability to other non-profit organisations. By contrast, Charita ČR was deemed to have the worst concept of relationship building and communication. Those concepts were also evaluated by respondents in the primary research.

Table 1 Comparison of NGOs

Name	Focus/ Amount of contributions in 2018	Means of support	Information channel	Media of communication
Click and feed	• Aid for animals • 57 tonnes of pet food • 307,656 CZK	• Online support - • Financial contribution to a transparent account • Purchasing an item	• Transparent account • Occasional contributions on social networks, regularly sharing stories on Instagram about working with shelters • Statistics on the website	• Quality, simple website • PR articles, interview on TV • 27,072 Facebook likes • 2245 followers (437 posts) on Instagram • Active social networks, stories • PPC promotion
Nejensrdcem	• Aid for animals • 417,818 CZK	• Online support • Financial contribution to a transparent account • Purchasing an item	• Transparent account • Occasional social network contributions, regularly sharing stories on Instagram and websites about working with shelters	• Well-designed web pages • Organisation of charity events • 2003 Facebook likes • 4505 followers (572 posts) on Instagram • Active social networks, stories
Dobrýanděl	• Children, families in need • 232,149,173 CZK	• Financial contribution to a transparent account • Regular gifts	• Apps informing about the use of a post (instead of a transparent account for family protection) • Selection statistics every month • Transparent account • Active social networks	• Spots on TV • PR articles • Outdoor advertising • 85,207 Facebook likes • 6434 Instagram followers (1442 contributions)
Rainbow run	• Children, families in need • No amounts published	• Registration for the rainbow run	• Most active during events, information and news published on the social networks	• Promotion of the events on TV Ocko, time radio, Helax • PR—patriot magazine • 35,034 Facebook likes • 3839 Instagram followers (24,600 posts)
Krásapomoci	• Seniors • 61,004,417 CZK	• Financial contribution to a transparent account	• Regular contributions to social networks • Quality ofinformation on the website	• Quality website • A leading personality of the organisation • Spots on TV • 4928 Facebook likes

(continued)

Table 1 (continued)

Name	Focus/ Amount of contributions in 2018	Means of support	Information channel	Media of communication
		• Purchasing an item		• 1786 Instagram followers (798 posts)
One man show foundation	• Concrete life stories • • New project	• Financial contribution to a transparent account • Purchasing an item	• Transparent account • Regular contributions to social networks on the activity and dedication of checks and recovery	• Simple webpages without activity • Promotion of campaigns through the show on stream.Cz (buzz marketing), over 2.5 million viewers • Collaboration with acquaintances (13,721,648 video views) • 1065 Facebook likes • 5557 Instagram followers (135 posts)
Charita ČR	• People in need • 116,305,402 CZK (total amount)	• Financial contribution	• Social networks are only active during Christmas • On the website there is a detailed breakdown of profits from the concert, the amount is also divided among individual church entities, but the purpose is not specified (very opaque)	• Website obsolete, confusing, no activity • Spots and a concert on CT1 • Radio Czech radio • 10,992 Facebook likes • Instagram is not active, 15 followers (447 posts)
Kontobariéry	• Disabled people • Not published	• Financial contribution on transparent account • Regular gifts	• Transparent account • Regular contributions to social networks • Carefully designed web pages, showing the activities of the organisation	• Quality, comprehensive website • Spots on CT1 • Radio—Czech radio • Rental of advertising space • Printed matter—Economia, Mafra • 5632 Facebook likes • 915 Instagram followers (more than 500 posts)

Source: own elaboration

Table 2 Communication components—an individual rating

Name of NGO	Difficulty in fi nding information about the year 2018	Means by which to use fundraising methods—preference knowledge	Information about contribution—trust building	Media communication	Average score
Click and feed	2	1	1	2	1.5
Nejensrdcem	3	2	2	3	2.5
Dobrýanděl	1	2	1	1	1.25
Rainbow run	4	1	3	1	2.25
Krásapomoci	2	1	3	1	1.75
One man ShowFundation	0	3	2	2	2.3
Charita ČR	1	5	4	3	3.25
Kontobariéry	1	2	1	1	1.25

Source: own elaboration, scale 1–5, a new component = 0

4.2 *Primary Research Evaluation*

The primary research was based on a standardised set of questions in the form of personal interviews (Kozel et al. 2011). Each interview lasted an average of 40 minutes. Responses were received from a total of 87 respondents. The questionnaire contained 24 questions which were based on previously mentioned studies, covering three main areas, such as customer preferences, customer trust and information channel preferences. At the beginning, the research objective was explained to the respondents. We were also obliged to inform them of issues pertaining to anonymity and the use of the provided data to meet the GDPR standards.

The first three introductory questions had a filtering and demographic function. This was followed by a section on contributions, their amount and the issue of NGOs. In the next part, respondents responded to the evaluation of the communication mix and the credibility of NGOs; and in the final part they evaluated their awareness of specific NGOs.

The research sample comprised 65.5% women and 34.5% men, born between 1946–1964 (5.7%), 1965–1977 (19.5%), 1978–1994 (64.4%) and 1995–2001 (10.3%). Their main preferences when it came to recipients of donations were families in trouble, children or particular people with their life story. The average size of a gift was 20 EUR per activity in each case.

Customer Preferences To deepen relationship the between non-profit organisations and customers (donors), each organisation needs to know their preferences (or demand). In the primary research, respondents could choose from one to all possibilities in terms of how to support a selected non-profit organisation (Table 3).

The most preferable form of support was the purchase of an item (65%), followed by a Charity Concert Admission and Charity Sports Day Entry Fee (60%), a financial

Table 3 General evaluation of customer preference

Factor	Percentage share (preference)
Purchase of an item	65%
Charity concert admission and charity sports day entry fee	60%
Financial contribution	58%
Admission to an educational workshop	55%
Social sharing. Networks	31%
Contribution to the volunteer moneybox	25%
Involvement in the concept in the form of a game on the website	18%

Source: own elaboration

Table 4 General evaluation of the trustworthiness of an NGO

Factor	Percentage share (preference)
Transparent account	76%
An application that informs the donor about the use to which a gift has been put	68%
Document informing donors about problems	54%
Organising social events	50%
Frequent contributions to social networks with regard to NGO activities	41%
Well-known mentors	40%
Viral video shared on social networks	34%
Existence of several PR articles	35%
Advertising on billboards and leaflets	23%

Source: own elaboration

contribution (58%) or admission to an educational workshop (55%). It seems that the respondents wish to be actively involved in non-profit activities, rather than mere observants.

Reputation and Trustworthiness of an NGO This part was very significant in terms of confirming what respondents feel are factors of a trustworthy organisation (Table 4). This factor is closely connected with support preferences and frequency of donations.

The greatest number of respondents believe that they could trust an NGO which they have supported when the organisation has a transparent (publicly visible) account (76%). Other factors which enhanced trustworthiness included an application that informs the donor about the use to which a gift has been put (68%), the organisation preparing a document informing donors about the issue which the donation was dedicated to (54%), and finally social events which enable donors to meet members of that organisation in person (50%). This part confirmed the personal ties between NGO and private donors, who want to maintain contact with the organisation, and really appreciate information about their activities and sharing information about the purpose for which their donations are used.

Table 5 General evaluation of information channels

Communication media	Percentage share (preference)
Website	72%
Transparent account	65%
Notification by e-mail	62%
Facebook profile	47%
Annual report or application	37%
Instagram profile	28%

Source: own elaboration

Table 6 General evaluation of communication concepts

Name of NGO	Average score, self-evaluation from secondary data	Average score, from primary data	Difference
Click and feed	1.5	1.8	−0.3
Nejen Srdcem	2.5	1.9	+0.6
Dobrý Anděl	1.25	1.25	0.0
Rainbow run	2.25	1.2	+1.05
Krása pomoci	1.75	1.3	+0.45
One man show foundation	2.3	3	−0.7
Charita ČR	3.25	2.1	+1.15
Konto Bariéry	1.25	2	−0.75

A positive difference means a better evaluation from respondents; a negative difference means a better position in terms of the internal analysis (from the authors' point of view)
Source: own elaboration

Information Media Channels Given that the group of respondents consists of different age groups, it seems that media use will also be different (Table 5).

Surprisingly, respondents prefer traditional communication channels such as websites (72%), transparent accounts (65%) and notification by e-mail (62%). In this case, donors had a lower level of trust in social media channels.

Finally, we asked the respondents to evaluate the concepts mentioned in Table 2 to be able to compare the internal (authors) and external (respondents, donors) points of view in Table 6. We accounted for the arithmetic deviation between evaluations to be able to explain the different levels of sensitivity of donors and external evaluators.

Only one case (Dobrý Anděl) confirmed the same level of loyalty and behaviour of both groups (independent evaluators and respondents), when the difference was equal to zero. The highest positive difference was calculated for the concept of Charita ČR (+1.15), when respondents in primary research trust this project more than the authors. The same situation can be observed with the Rainbow run project (+1.05). Finally, the Nejen Srdcem foundation obtained a better evaluation (+0.6). In contrast, Konto Bariéry (one of the oldest concepts on the non-profit market) was evaluated as having the largest negative difference (−0.75). It seems that not only those main groups of factors could change customer behaviour when it comes to donations. This idea arose from interviews during which respondents said something about those concepts such as "I like this idea" or "I agree with their philosophy". It is a much deeper relationship than trust and the right use of media. It is about identification with the mission, which is in line with Blery et al. (2010).

5 Conclusions

The primary research has shown that non-profit organisations have to support the transparency of their activities, build trust, and finally learn to use modern technology to support customer relationship building. Social media, the internet and supporting networks can help organisations meet the triple bottom line (the triple-line customer). Unfortunately, social media was ranked as the last option by respondents, but it is widely used by non-profit and hybrid organisations to expand their activities (see Table 3). The novelty of social media use for respondents was confirmed only by the results of a study by Milde and Yawson (2017). This opens up new possibilities for non-profits to obtain funding or feedback for activities. As mentioned, this area of communication is presented as a new channel, which is confirmed by the results of previous studies and primary research from the Czech environment.

Macduff (2012) opined that Facebook is the most commonly used social media platform; 87% of non-profit organisations used Facebook, followed by Twitter (used by 59%), YouTube (49%) and finally LinkedIn (33.9%). Within the Czech environment, the most popular social media amongst non-profits is also Facebook, followed by Instagram. Twitter and LinkedIn are not widely used to build relationships with donors. Furthermore, donors care about their money and how it is used for charity projects. This case study and primary research supported the results of a study by Sargeant (2001), which found that donor expectations are quite similar to the sum they give to an organisation. Donors want to be informed in detail about how their money were used. Most of the donors mentioned in the case study, may welcome guidance and a selected communication channel about money use to feel a deeper connection with the selected non-profit organisation which they have supported (information on website 72%, transparent account 65%, notification by e-mail 62%, see Table 6).

Non-profit organisations need to know the donors, which is a strategically important matter. It is pointed out that the main information that should be focused on preferences, trust motivation and the communication channel characteristics of the donor (Popović and Stankovic 2010). Based on previous experience and personal motivation, non-profit organisations could build deep and long-term relationships with donors. A non-profit-customer analysis from the case study represents an informational basis for long-term relationship building within non-profit organisations based on eight best practice concepts used in the Czech Republic, which were used for internal and external evaluation procedures. The aim is, therefore, to support donor (customer) identification with the beliefs, philosophy, and values of a non-profit organisation. It could help to improve the image of non-profit organisations with the highest level of difference in communication concepts and use the strategies which were perceived as successful to motivate domestic and international donors (Dobrý Anděl, Charita ČR or Rainbow Run, as shown in Table 6).

Our study has several limitations. After evaluating the interviews with respondents, it was found that they were sure how to define and classify trust and the factors which motivate them to support non-profit organisations. The interviews have also shown that respondents are not sure of the true impact of projects in some cases. Those organisations also do not have a deeper ability to focus on a particular type of communication channel or how to build trust in their organisations in the future. The results are also influenced by the small size of the research sample, which may not accurately reflect all non-profit organisations on the market. Only 87 panel respondents were discussed for research purposes. However, this research only precedes further research in this area. Another limitation was obtaining secondary sources in the form of webpages, social media, and non-profit marketing studies in the Czech Republic, which are very limited.

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