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The impact of mobile devices on the in-store shopping experience

Sílvia Rodrigues Cavalinhos

PhD in Management, specialization in Marketing

Supervisors:
Susana Henriques Marques, Associate Professor, ISCTE- IUL

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BUSINESS SCHOOL

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Em memória dos meus avós

"In God we trust,

all others must bring data"

W. Edwards Deming

(1900 – 1994)

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Abstract

Mobile devices have changed our daily lives and access to information. This phenomenon is continually changing the shopping experience, being an opportunity for retailers to influence customers' attitudes and behaviour. The main objective of this investigation was to provide an integrated model to analyse the effects of mobile devices use on the shopping experience in a store environment and, consequently, on customer satisfaction and their repatronage intention.

The methodology of this thesis was based on a triangulation process consisting of two preliminary qualitative studies that contributed to the development of knowledge on the subject and the construction of the theoretical model. They also contributed to the interpretation of the results of the quantitative study in which the theoretical model is tested. Data collection was based on a questionnaire, and the final sample consisted of 301 participants. The proposed model was measured and tested using Confirmatory Factor Analysis and Structural Equation Models, respectively.

This investigation dispels retailers' doubts about the positive effects of mobile devices and the scarce and scattered evidence in the literature, reinforcing that satisfaction and the repatronage intention can be increased. Additionally, the results highlight the complementary role of the mobile device in in-store purchases, assisting in decision making.

The originality of the study relies on the inclusion of the effects of mobile devices and the verification of these effects on customer satisfaction, explaining how mobile devices influence the in-store shopping experience, contributes to advancing theoretical knowledge on this topic and provides valuable insights for retailers.

Resumo

O uso de dispositivos móveis mudou a maneira como vivemos o quotidiano e a forma de acedermos à informação. Este fenómeno está continuamente a mudar a experiência de compra, apresentando-se como uma oportunidade para os retalhistas influenciarem as atitudes e os comportamentos dos seus clientes. O objetivo principal desta investigação foi fornecer um modelo integrado que analisasse o impacto do uso de dispositivos móveis na experiência de compra em ambiente de loja e, consequentemente, na satisfação do cliente e na sua intenção de voltar.

A metodologia desta tese baseou-se em um processo de triangulação composto por dois estudos preliminares qualitativos que contribuíram para o desenvolvimento do conhecimento sobre o tema e para a construção do modelo teórico, e ainda para a interpretação dos resultados do estudo quantitativo no qual propôs-se testar o modelo teórico. A recolha de dados foi baseada num questionário, com uma amostra final de 301 participantes. O modelo proposto foi medido e testado por meio da Análise Fatorial Confirmatória e de Modelos com Equações Estruturais, respetivamente.

Esta investigação afasta as dúvidas dos retalhistas sobre os efeitos positivos dos dispositivos móveis e as evidências escassas e dispersas presentes na literatura, reforçando que pode aumentar a satisfação e a intenção de voltar. Além disso, os resultados destacam o papel complementar na compra, auxiliando na tomada de decisão.

A originalidade do estudo materializa-se através da inclusão dos efeitos dos dispositivos móveis e pela verificação desses efeitos na satisfação do cliente. Além disso, explicar o impacto dos dispositivos móveis na experiência de compra na loja contribui para o avanço do conhecimento teórico sobre este tópico e contribui com informações úteis para os retalhistas.

Palavras-chave - experiência de compra, comportamento do consumidor, ambiente de loja, smartphones

JEL Classification System - M31 and L81

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List of abbreviations

(In alphabetic order)

3G - Third Generation

4G - Fourth Generation

APP - Application, developed for mobile devices

AI - Artificial Intelligence

AR - Augmented Reality

EU - European Union

Gen X - Generation X

Gen Y - Generation Y

Gen Z - Generation Z

IDT - Innovation Diffusion Theory

INE - Instituto Nacional de Estatística

MD - Mobile Devices

MSI - Marketing Science Institute

PC - Personal Computer

QR Code - Quick Response Code

RFID - Radio-Frequency Identification

SMS - Short Message Service

S-D - Logic Service-Dominant Logic

SLR - Systematic Literature Review

SOR - Stimulus-Organism-Response

SPSS - Statistical Package for the Social Sciences

TAM - Technology Acceptance Model

TPB - Theory of Planned Behaviour

TRA - Theory of Reasoned Action

UTAUT - Unified Theory of Acceptance and Use of Technology

UK - United Kingdom

USA - United States of America

VR - Virtual Reality

Statistical Abbreviations

AGFI - Adjusted Goodness-of-fit Index

AIC - Akaike Information Criterion

AVE - Average Variance Extracted

CFA - Confirmatory Factor Analysis

CFI - Comparative Fix Index

CR - Composite Reliability

GFI - Goodness-of-fit Index

NFI - Normed Fix Index

NNFI - Non-Normed Fix Index

KMO - Kaiser-Meyer-Olkin

PCA - Principal Component Analysis

PNFI - Parsimonious Normed Fit Index

PGFI - Parsimonious Goodness-of-Fit Index

RFI - Relative Fix Index

RMSEA - Root Mean Square Error of Approximation

RMR / SRMR - Root Mean Square Residual/Standardized Root Mean Square Residual

SEM - Structural Equation Model

TLI - Tucker-Lewis Index

VIF - Variance Inflation Factor

Chapter 1 – Introduction

In the last decade, mobile devices, such as smartphones, tablets, and wearables, have changed the way we live our everyday lives. The mobility they provide and the increased improvement in their software and hardware allow us to have a completely different lifestyle from what we have been used to so far. Human interactions have changed (social, family and work relationships), and all kinds of tasks have become different (e.g. shopping, work, travel) (Fuentes & Svingstedt, 2017; Varnali & Toker, 2010). Therefore, it is understandable that the evolution of mobile phones has also revolutionised consumer behaviour.

Researchers have been studying this phenomenon (mostly in the past decade), but in the context of the global pandemic and its aftermaths, this topic of the relationship between customer–technology has gained new relevance (MSI, 2020). The need for technological solutions has increased and the effects of the use of technologies, such as mobile devices, in the retail environment are still under research.

1.1. Research context

Technology of mobile devices is constantly evolving and improving software and hardware, giving customers better usability and extra tools. From the perspective of the adoption of innovations (Rogers, 2003), new technology will be embraced by more people and organisations over time. The tendency shows that more users will bring their mobile devices in-store. This assumption is based on their natural role in our society (Fuentes, Bäckström, & Svingstedt, 2017).

Despite the improvement of mobile apps and other technological innovations in online and mobile commerce, customers still prefer brick-and-mortar. The ability to play, experiment and immediately take the goods home are still the main reasons (Bäckström & Johansson, 2017; Savastano et al., 2019; Verhoef et al., 2007).

About 60% of customers use mobile devices in-store as a shopping assistant, before, during, and after the store visit (Skrovan, 2017). Even when choosing to shop in-store, they are

comparing, socialising, researching all sorts of information and doing various other things using their mobile devices and the information is gradually easy to access (Think with Google, 2018).

This type of change affects the entire consumer journey across screens, devices, and channels (Faulds et al., 2018). This is an opportunity to reach customers at the touchpoints or at the moments they are open to being influenced. Understanding the consumer journey (from awareness to purchase) is becoming increasingly important, as the number of online and offline touch-points grows continuously (Lemon & Verhoef, 2016; Pantano & Priporas, 2016).

To meet customers' needs and improve their experience, retailers currently adopt new in-store technologies and refine their online presence, whether through a website, app or social media (Lemon & Verhoef, 2016). However, the omnichannel environment requires motivation from customers (Zhang et al., 2018). In an in-store environment, where the environment tends to be as controlled by the retailer as possible, the mobile device has several roles that can help the customer manage the variables in their favour and further aid in the purchase decision-making process. The use of mobile devices affects customers' decisions in a way that the retailers cannot control them (Bèzes, 2019). As suggested by the Marketing Science Institute (2021), it is crucial to think about how different devices affect the customers, influencing their emotions and the decision-making process, which makes it more and more significant for retailers to design customer experiences that are directly influenced by the device being used.

One of the sectors which is most affected by this phenomenon is the technical consumer goods, more specifically the electronic retailers. Due to the characteristics of the products that require greater involvement in the purchase decision-making process and their associated perceived risk, electronic retailers dread this type of customer behaviour. The well-known showroom behaviour, where customers go to stores to choose products and then buy them online, makes retailers uncomfortable, even though some studies point to the benefits of the showroom. The opposite behaviour does not seem to concern them (webroom) (Spaid et al., 2019; Viejo-Fernández et al., 2020).

The industry of technical consumer goods is constantly evolving and in a world which is increasingly dependent on technologies, its trend is towards growth (Statista, 2021). Due to the diversity of technological solutions in electronic retailers, the categories of technological consumer goods are dived into consumer electronics, information technology, major domestic appliances, small domestic appliances, photo and telecom (GfK, 2021). Major electronics retailers in Portugal, such as Worten, Rádio Popular, Fnac and Media Markt, do not adopt any

distinction between categories when communicating with their customers. Moreover, recently these electronic retailers have also added products such as furniture and home décor to their stores, in order to diversify the offer and increase sales.

In recent years we have been witnessing an increase in the weight of Online sales compared to Offline, however, data still shows a substantial weight of offline sales. Even during pandemic (COVID-19), customers have been going to physical stores to do their purchases. Analysing data from 2020 in Europe in this sector, we can notice a difference of 39.8% online to 60.2% offline purchases. When analysing the Portuguese market, where this study is contextualised, we will see that the weight of offline is even higher, with 16.9% for online versus 83.1% for offline (GfK, 2021).

Overall, the sales of electronic retailers have grown in both channels, and the online channel with exponential growth, comparing to the previous year (111.1% in 2020 in Portugal) is an important channel to be properly integrated. The offline sales in 2019 show a small increase of 0.8% and contrary to expectation, in 2020 and 2021 (data from the first five months) it had an increment of 1.6% and 10.4% respectively (GfK Portugal, 2021). The data shows that the physical stores are still the favourite place to shop and the best place to experience the brand. Therefore, electronic retailers need to provide their offline customers with the best possible in-store shopping experience so that they are willing to return.

1.2.   Research problem

Shopping can be much more than just accomplishing a task, it can be a memorable event, a pleasant moment, and a desirable activity (Verhoef et al., 2009).To conquer the competition, retailers have focused on giving more than service and goods and developed their atmospherics, customer service, and other touchpoints that can improve the shopping experience (Lemon & Verhoef, 2016). Furthermore, the shopping experience is no longer exclusive to physical spaces, urging a seamless retail experience essential and despite the increase of the online channel, the sensorial aspects and immediacy of the in-store shopping experience are unique and still the focus of research (Bonfanti et al., 2020).

Becker and Jaakkola (2020, p.630) claim that "customer experience has been given remarkable attention in both marketing research and practice", yet there is still a considerable fragmentation, as well as theoretical confusion, about the concept and research approaches.

According to Bonfanti et al. (2020), the last decade (2011-2019) brought the highest number of studies about the in-store shopping experience. However, despite that, there is no agreement about the definition and measurement of the in-store shopping experience. On the one hand, we have different channels, products and service types, as well as different consumer cultures. On the other hand, we face a market under constant technological evolution.

Considering that, the use of mobile devices in-store has become the cornerstone of this reality. The shift to the omnichannel environment is mainly due to the use of mobile devices in-store, and as Pollak (2018, para.6) states, "[it] could mean the difference between customers coming into your store primed and ready to buy, or leaving frustrated and empty-handed". As Blázquez (2014) said, the in-store experience must be thought of as part of a whole and connected to customer experience. Therefore, it becomes crucial for retailers to know more about the use of mobile devices in-store to provide a better shopping experience.

Prior research shows that the current studies about mobile shopping are dispersed from the marketing perspective and diverse in methodologies (Groß, 2015; Marriott, Williams, & Dwivedi, 2017). Bonfanti et al. (2020), point out the theoretical gap on the omnichannel perspective of the in-store experience and the lack of studies about the impact of new technologies.

Also, in the work of Tyrväinen and Karjaluoto (2019), based on a literature review about mobile retailing adoption, the topic of the use of mobile devices in retail is discussed. However, only a few studies address the role they play in-store. Researchers are still focused on the technological aspects and the use of mobile devices as a channel (m-shopping) or for marketing communications. As Rippé et al. (2017, p.744) mentioned, it is essential to study different categories of products with different levels of involvement and types of motivations (utilitarian/hedonic) and "further work could test for differences in mobile devices and usage when purchasing other kinds of products (e.g., low /high involvement, utilitarian, hedonic)".

In this context, there is still research to be done on the in-store shopping experience and the way in which new technologies affect the experience and its outcomes. The research developed so far on the use of mobile devices and the in-store shopping experience has shown the following gaps:

- The need for empirical research on "the role of various devices in influencing the in-store shopping experience" (Bonfanti et al., 2020, p.123);

- Research on different settings and categories of products (besides groceries stores) (Grewal et al., 2018; Dorie & Loranger, 2020);

- Research on possible generational differences in the use of devices in-store (Bailey et al., 2020).

1.3. Research aim

This research aims to develop a model that analyses the effects of the use of mobile devices on the in-store shopping experience, and consequently on customer satisfaction and repatronage intention. Explaining the effects of the use of mobile devices in-store contributes to advancing theoretical knowledge on this topic and provides useful insights that can be used by practitioners, particularly the electronic retailers.

To achieve the main goal comprehensively and contribute to the scientific and managerial knowledge, we designed specific objectives pursued through different research stages:

- Provide an overview of the current knowledge about how the use of mobile devices in-store affects the shopping experience;
- Analyse the insights on the use of mobile devices from the in-store retailer's perspective;
- Characterisation of the customers that use their mobile devices in-store and analyse their usage preferences;
- Develop empirical knowledge about the effects of the use of mobile devices on the in-store shopping experience and the resultant outcomes.

1.4. Methodological approach

In this section, we present the philosophical post-positivist paradigm that guided the research. How do we come to know? How do we know? And how do we know? The way researchers look to answer these questions must be aligned with the inquiry paradigm chosen, in this case, the post-positivist paradigm (Guba & Lincoln, 1994):

Ontology – The nature of reality

Based on the assumption that there is an objective reality, which can be partially understood, identified and measured, the truth and understanding of reality are incomplete or probabilistic (Park et al., 2020).

"In post-positivism, the reality is inferred by observation, and theories act as organising structures for the interrelationships between relevant concepts, observations, measurements, and interpretations of how the world works" (Young & Ryan, 2020, p.696). This means that post-positivism follows an objectivist deductive perspective similar to the positivism paradigm, but with a different perspective, as the approaches can be broadened. Based on the assumption that study after study, understanding a specific phenomenon becomes more significant, as understanding reality is being built and improved (Young & Ryan, 2020).

Epistemology – The nature of knowledge

After defining the way in which we perceive the nature of reality (ontology), it is crucial to define the way in which we acquire knowledge of this reality. In contrast with the positivism approach that searches for the perfect truth, post-positivism seeks the most complete and understating truth (Creswell & Creswell, 2017).

"As knowledge accumulates, we develop insight, shift theoretical understandings, and test hypotheses in new ways and in different contexts, resulting in a deepened understanding or falsification of a current hypothesis or theory" (Young & Ryan, 2020, p.696). Thus, theories are put to the test and they are never complete. The researcher's role in this paradigm is to understand reality better and search for continuous improvement (Creswell & Creswell, 2017).

Methodology – How to conduct scientific research

Post-positivism encourages research to use a broad set of approaches, and therefore literature syntheses, qualitative, and quantitative work can all be done with a post-positivist approach, as long as the study is designed to build on existing knowledge and engages in theory derived from hypothesis testing (Young & Ryan, 2020).

"In post-positivism, an experiment is used as an opportunity to falsify or fail to support a theory or hypothesis or to suggest that our current understanding is incomplete" (Young & Ryan, 2020, p.696). Falsification of a theory or failure to support a hypothesis is an opportunity for the researcher to describe the exceptional situation.

As post-positivism derived from positivism, some similarities can be found. "Positivism is aligned with the hypothetic-deductive model of science that builds on verifying a priori hypotheses and experimentation by operationalising variables and measures; results from hypothesis testing are used to inform and advance science" (Park et al., 2020, p.690). This is a top-down approach, where hypotheses are first driven from concepts and then are tested. The main objective of positivist inquiry is to create associations or causal relationships that can eventually predict or control a phenomenon (Park et al., 2020; Varpio et al., 2020).

Like in a positivist approach, we search to verify hypotheses using quantitative methods and scientific humility. Since our humanity and the limits of technology mean that we can never fully comprehend the external world, findings do not prove a theory. Instead, they fail to reject the null hypothesis. When the null hypothesis cannot be rejected, the study's data contribute to evidence, suggesting explanatory capacity on a phenomenon.

1.5.   Research design and research questions

The research design involves a set of decisions regarding the topic to be studied, the population and what research methods must be chosen. Although there are many ways of studying a subject, the research design focuses on the researcher's perspective to address a particular study (Babbie, 2010). The research design is like a road map of the several research decisions to answer its questions; they are also called inquiry procedures. Besides the purpose, the research design must plan the measurements, data collection, data analysis, and data interpretation (Creswell, 2014).

The triangulation technique uses multiple data sources or multiple methods to analyse data in order to enhance credibility and develop a comprehensive understanding of phenomena (Patton, 2004).

The methodological framework determines to what degree and how the methods overlap. Researchers look for three types of triangulation: convergence, complementarity and divergence. Convergence indicates a high degree of overlap and accuracy between results using different methods. Complementarity cumulatively builds a greater understanding of research results, allowing the results of different methods to complement each other. Divergence presents a different set within the methods, and how it is interpreted depends on the conceptual

framework of the research. Divergence can indicate failed methods or results or it can be treated as new data and analysed for new insights (Carter et al., 2014; Williamson & Johanson, 2018).

Creswell (2009) distinguishes the triangulation process across methods and within methods. Triangulation across methods uses different methods to study a particular aspect, whose results are compared. Triangulation within-methods uses multiple techniques to collect and analyse data using the same method. The sequence in which the methods are applied can also differ. It can be sequential and allow the results of each phase to help in the planning and development of the next phase. Alternatively, it can be simultaneous, which gives the researcher the possibility to answer qualitative and quantitative research questions simultaneously, with the results presented separately.

In this study, the triangulation process is across methods and sequential, since both the qualitative and quantitative methods were used to perfect the theoretical framework and the questionnaire, as well as to analyse the results in a sequential chain of valorisation (Creswell, 2009). We also expect to reduce research bias by analysing the problem from different perspectives.

Because the nature of the investigation topic is scattered and, in some perspectives, even scarce, we design a research based on mixed-methods, believing that the preliminary qualitative studies were both used to increase understanding of the phenomenon and not to test the theory. Moreover, they allow to build an integrated model that is tested with quantitative research. Figure 1.1 illustrates the order in which the studies were conducted and their role in this research.
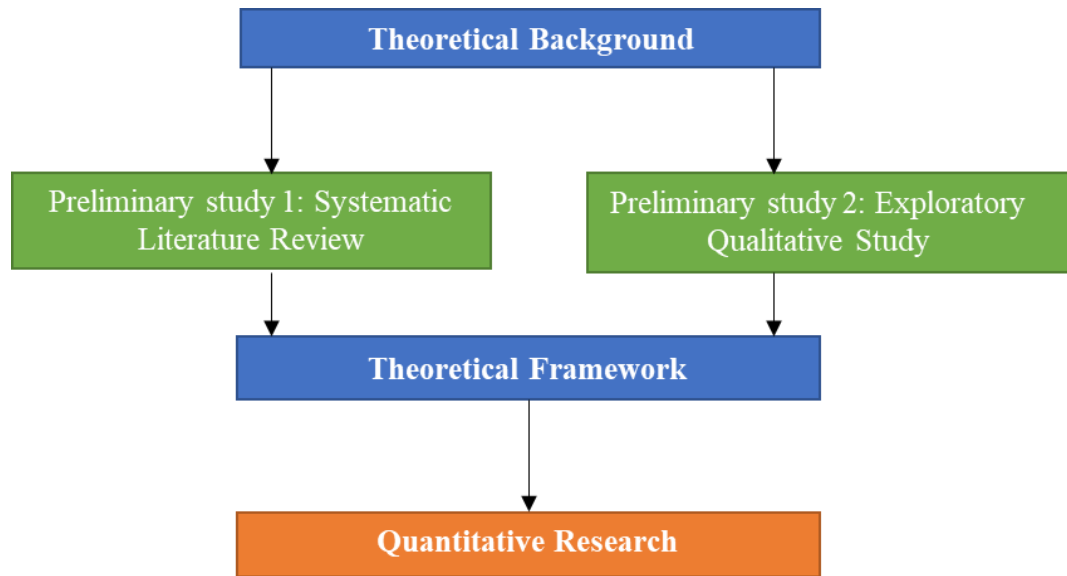
Figure 1.1 - Illustration of the research design

Preliminary study 1 - Systematic Literature Review: This study provides an overview on what is currently known about the effect of the in-store use of mobile devices on the shopping experience. It also describes the most important findings. Furthermore, it contributes with future research directions in order to extend existing knowledge. This systematic literature review has analysed a top-quality poll of papers, published in the last decade, using online databases search.

Preliminary study 2 - Exploratory qualitative research: This study involves in-depth interviews with retail practitioners of the main electronic retailers in Portugal, regarding their perspective on the use of mobile devices in-store. This exploratory research uses an inductive perspective. For the data analysis, we used content analysis to identify the presence of patterns, themes, and concepts that emerged from the interviews.

Quantitative research – The quantitative research tests the model proposed to analyse the influence of mobile devices on the in-store shopping experience and, consequently, customer behaviour. Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM) were used to validate the scales and proposed model as well as to test the research hypotheses.

Based on the objectives of this thesis, the following research questions allow narrowing the focus its main purpose. Since the research design includes two preliminary studies, the research questions are presented per study:

Preliminary Study 1 – Systematic literature review

*S1*RQ1: Which are the most important streams and studies on the topic?

*S1*RQ2: Which are the effects of the use of mobile devices in the in-store shopping experience?

*S1*RQ3: What are the research gaps and possible future research directions?

Preliminary Study 2 – Interviews with retailers

*S2*RQ1 - What are the retailers' perceptions and knowledge about the customers' consumer behaviour while using mobile devices in-store?

*S2*RQ2 - What strategies do retailers' have in order to manage their store environment to provide a better shopping experience in-store?

Quantitative research – survey with the customers

RQ1 – Do different generations and genders have different preferences and behaviour when using their mobile devices in-store?

RQ2 - How does the use of mobile devices in-store affect the perception of in-store shopping experience dimensions and consequently, customer satisfaction and repatronage intention?

RQ3 - Which of the in-store shopping experience dimensions, when using the mobile device in-store, mostly influences customer satisfaction?

RQ4 - How do perceived control and enjoyment, given by the use of mobile devices, mediate the in-store shopping experience?

RQ5 – Which of the effects of mobile device usage influences customer satisfaction the most?

RQ6 - Do gender and generation moderate the relationship between in-store shopping experience dimensions and mobile devices usage effects, and consequently, customer satisfaction?

In the course of the research, the results of the questions above are presented and discussed.

1.6. Value and originality

Analysing a specific factor is particularly valuable if it is relevant to be studied. Despite the existing literature on the in-store shopping experience, mobile devices, such as smartphones, are a highly relevant and central element of customers' in-store experience that requires further research.

Concerning the scientific domain under study, this investigation constitutes an original contribution to understanding the subject from different perspectives. In terms of the topic area, it provides a theoretical synthesis with conceptual issues, gathers original data and uses the empirical study to enlarge the theoretical understandings of the subject. Simultaneously, it provides an integrated model that analyses the mobile devices usage effects on the in-store shopping experience, and consequently on customer satisfaction and repatronage intention. Moreover, it also presents new insights concerning gender and generations preferences on the use of mobile devices in-store.

By conducting the study in a new setting, such as electronic retailers, it brings new insight into a less explored, yet important sector. Concerning the retailer sector under research, this investigation enriches the preparation of strategic decisions on the management of the in-store shopping experience dimensions and on which ones retailers have to focus in order to enhance the experience of these customers.

Because the research provides an understanding of the phenomenon, it helps retailers develop interactive marketing solutions most beneficial for customers and at the same time in a way that would be most convenient for the retailers. It also contributes with guidelines for best practices in developing mobile APPs intended to interact with in-store elements (i.e., marketing communication, logistics, payments, customer service, etc.) and generally speaking, it helps to create marketing strategies aligned with customer's usage preferences.

1.7.   Thesis structure

This thesis is structured in eight chapters, organised according to the research design. The introduction chapter presents the research design rationale and the reasoning for carrying it out, identifying its objectives and questions that guide it. Chapter 2 extracts meaningful information and theoretical foundations for the research. Chapter 3 presents the first preliminary study regarding a systematic literature review, explaining the method, discussing the results, and showing the main conclusions. The second preliminary study is presented in chapter 4 based on in-depth interviews, and it draws a better image of the phenomena from the retailers perspective. After completion of the preliminary studies, chapter 5 presents the theoretical framework and the research hypotheses. The methodology of the quantitative research is described in chapter 6. Chapter 7 is devoted to the results and discussion of the findings. The final chapter presents the main conclusions of the research as well as the managerial and academic contribution, mentioning the limitations of the present study and possible future research streams.

The content of the chapters is now presented in more detail:

Chapter 1 – Introduction: Explanation of the context under study and current scientific answers. The chapter presents the research rationale, contextualises the research problem and underlies the study's value and originality. It also describes the research design and questions and presents the thesis structure.

Chapter 2 – Theoretical background: This chapter presents the theoretical and methodological heritage, extracts meaningful information and theoretical foundations, reviewing the topic in the retail management and marketing literature.

Chapter 3 – Preliminary study 1: This chapter addresses the literature on the use of mobile devices in-store and the effect on the shopping experience using a systematic literature review with a hybrid narrative review, structured by a Theory, Context and Methods (TCM) framework. The first preliminary study provides a better understanding of phenomenon by analysing the different types of use and the value added to the shopping experience. The main findings are systematised in a conceptual framework.

Chapter 4 – Preliminary study 2: The exploratory qualitative research is the second preliminary study and it is based on in-depth interviews with electronic retailers. The results

identify and characterise specifically retailers' perceptions. The preliminary findings are presented, while obtaining inputs to the quantitative study design by generating new ideas for constructs and hypotheses.

Chapter 5 - Theoretical model and research hypotheses: Here we define the research hypotheses and the relationship between constructs developed from the theory and the results of the preliminary studies. The reasoning behind the hypotheses is discussed and the theoretical framework is presented.

Chapter 6 – Quantitative research methodology: This chapter explains the use of the quantitative methodology to test the research hypotheses and validate the proposed model. The operationalisation of variables and the questionnaire structure are presented. The sampling process, data collection, and data analysis are described.

Chapter 7 - Quantitative research results and discussion: The chapter presents the results of the quantitative research conducted to address the research questions regarding the customer's behaviours in-store while using their mobile devices and, most importantly, the effects on the in-store shopping experience. The results are presented in two parts. The first part is dedicated to characterising the sample and analysing customers' behaviour using mobile devices in-store. The second part consists of the scales and proposed model validation and testing the research hypotheses. Finally, the end of the chapter is dedicated to discussing the results of the quantitative research.

Chapter 8 – Conclusions: The final chapter summarises the main conclusions of the thesis and contributes with guidelines for academics and practitioners, discussing the theoretical and managerial implications. Finally, it identifies the study's limitations and indicates possible future investigations that can contribute to the advancement of knowledge on the topic.

Chapter 2 – Theoretical Background

In order to address the issue adequately, we need to examine the theoretical and methodological heritage. Since the literature on customer experience in retail management is vast and disseminated, we organised the state-of-the-art by topics and theoretical contribution in order to reach current knowledge on the topic of the present research. It is crucial to emphasise the aspect of interconnection between the sections and how they all lead us to the topic under study.

In this section, prior to addressing the customer experience, it is crucial to understand the types of purchase and how the decision-making process is developed. Moreover, we need to know some of the essential variables related to this process in the retail management context, such as the motivations that lead customers to begin the purchase process. Afterwards, we explore the roots of the customer experience, which derives from several previous marketing theories. Furthermore, we attempt to understand the construct multidimensionality, the perspective on the antecedents and outcomes, the specificity of the in-store shopping experience and the methodologies used to measure it. Finally, we present the customer journey evolution and channel integration. We also account for the rise of retail technologies, the introduction of the mobile channel, and how it is a game-changer in customer behaviour and customer experience.

2.1. Consumer behaviour

Consumer behaviour is a field of study that became popular in the '60s, and comes from different fields of study such as psychology, social psychology, sociology, economics, and anthropology, and is still a base for marketing research.

What was just a concern about how to maximise the benefits from a purchase of goods became a much more complex system, where consumers act impulsively and are influenced by family and friends. Moreover, their mood, emotions, and situation also reflect on both cognitive and emotional aspects of the consumer behaviour (Schiffman & Kanuk, 2007; Solomon, 2014).

Retailers seek to influence their customers, through all the decision-making stages, to buy their products and services and re-purchase them in the future. Nevertheless, not all customers

pass through all the stages in the same order, and some of them skip certain steps. This can occur if there is not enough time available, the type of product or service has different levels of involvement, or if there is perceived risk or another factor that can affect the decision-making process (Kotler et al., 2009; Levy & Weitz, 2007).

Faulds et al. (2018) refer to the five-step decision-making process as the traditional process. Despite being well-known, the also called EKB model (Engel, Kollatt, & Blackwell,1978), is still relevant and helps to understand how the customer moves between phases (Figure 2.1) (Ashman, Solomon, & Wolny, 2015).

Figure 2.1 - EKB model for the decision-making process

Source: adapted from Faulds (2018).

To understand the main steps of the decision-making process, a summary of each step is presented:

1) Problem recognition - Problem recognition does not always lead to a practical purchase. A need comes from a state of deprivation of something and can be satisfied or it can fulfil the desired behaviour (Schiffman & Kanuk, 2007; Solomon, 2014). Perception has a vital role in evaluating the actual state because it drives problem recognition, not objective reality. The problem recognition stage can be influenced by different variables, such as (Chandron, 1979):

   - Motivations;
   - Culture/social factors;
   - Lifestyle;
   - Reference groups/social class;
   - Family influence/family cycle;
   - Memory.

2) Information search - The information search is based on a learning process in which the customer usually has previous knowledge and experience related to a product.

Information gathered from external sources is based primarily on product characteristics and marketing communications. It depends on the importance of the purchase and the ease to obtain information. In this stage, customers are influenced by:

- Information sources;
- Opinion leaders;
- Memory and previous experiences;
- Perceived Risk.

In the information search stage, some steps can be followed:

1- Exposure;
2- Attention;
3- Comprehension (limited under low involvement);
4- Acceptance (after behaviour under low involvement);
5- Retention (limited under low involvement).

The stimuli provided by retailers in this phase are significant because they can relate more to stimuli than a need; they react to specific stimuli and are more likely to notice stimuli they anticipate (Schiffman & Kanuk, 2007).

3) Alternative evaluation - After searching for information, the customer has a limited number of options, and in this stage, the motivations and attitudes play an important role. The choice is mainly influenced by practical aspects such as the product or service characteristics and price, it is based mainly on learning and motivation. To limit their options, customers often rely on peer reviews (Kozinets, Hemetsberger, & Schau, 2008; Schiffman & Kanuk, 2007).

4) Purchase - After evaluating the alternatives, the customers purchase the product or service they want. In this stage, the shopping experience is crucial. It can reassure or dissuade the customer of their choices by creating value (Blázquez, 2014).

5) Post-purchase - Customers compare the expectations of performance and the actual performance. This can lead to satisfaction or dissatisfaction/ disappointment. An important component of the post-purchase evaluation is reducing any uncertainty that customers might have about their choice. This evaluation generates feedback that

increases the experience level and is included further in the learning process, influencing future decisions.

New approaches to the decision-making process are linked to the role of mobile devices in-store, as proposed by Faulds et al. (2018) and Ashman et al. (2015), which relate the use of multi-channel to the changes in the number and types of touch-points throughout the customer journey. "Each stage can be repeated, skipped, enhanced or deconstructed through it" (Ashman et al., 2015 p.140). The decision-making models and the customer's journey are related to each other but they are not the same thing. The first one is understood as a linear process, with cognitive drives and with a hierarchical structure, the second one is a non-linear process, with cognitive, affective, and behavioural drives, and above all, it involves the interaction with different touch-points and channels that customers engagement (Wolny & Charoensuksai, 2014).

Types of Purchase

The types of customer purchases can be characterised by the amount of effort customers put into making a decision. When the customer needs more information and the involvement level, as well as the risk perceived in the process are high, it is called extended problem solving and it is more frequent in planned purchases (Schiffman & Kanuk, 2007, Solomon, 2014). The other type of decision is limited problem solving, and it can be a habitual decision (routinised response), a routine, a simple process with little effort, no conscious effort or a more complex decision process, usually associated with brand and store loyalty.

When there is an impulsive buying behaviour, it is described as "more arousing, less deliberate, and more irresistible buying behaviour compared to planned purchasing behaviour" and it means that no high level of risk or involvement are associated with it (Kacen & Lee, 2002, p.162).

Involvement Levels

The level of involvement can be related to the importance of a decision outcome. A decision has a high involvement if the person judges the consequences of the purchase as essential (Laurent & Kapferer, 1985).

In a specific type of retail stores, such as consumer electronics, several products and categories are usually more expensive, more personal, with more technological complexity and a critical utility or performance component. These products are regarded as high involvement products. In contrast, there are low involvement products, such as fast consumer goods, which are frequently purchased and associated with low prices. The level of knowledge that customers have to acquire, the money they have to spend, the purchase frequency, the risk they have to take, etc., are attributes that categorise a product as high or low involvement (Solomon, 2014).

During a high-involvement product purchase, customers are willing to spend more time searching for information because they need to feel confident about the decision. There is a tendency to minimise the lack of information and use complementary sources of information, e.g., specialists (salespeople or online) (Rippé et al., 2017; Yurova et al., 2017).

Customers can experience risk in their decision-making process, as they can avoid or postpone the purchase, which can also be influenced by their personality, situation, culture, product, or service (Schiffman and Kanuk, 2007). The amount of money involved in the purchase and the number of attributes of uncertainty may also provide more perceived risk. To deal with the negative consequences of risk, customers search for information to support their decisions. Customers tend to be brand or store loyal, rely on brand and store image in most expensive products or services and look for warranties, e.g., laboratory tests or refund guarantees (Kotler et al., 2009; Schiffman and Kanuk, 2007).

The level of involvement also makes a difference in advertising, e.g., if customers have a low involvement, they assimilate prices in their internal reference prices. On the other hand, if customers have a high involvement level, they distinguish between stores. Involvement has a moderate effect on customers' mood and it can change the evaluation of the shopping experience into a more favourable one (Puccinelli et al., 2009). Therefore, retailers create personalised experiences to cause more involvement in the customers (Kotler et al., 2009; Solomon, 2014).

Motivations and value

Identifying the motives for purchase becomes an essential basis for understanding the needs of customers and segmenting them. When choosing a store, researchers agree that there are emotional and rational aspects. Motivation influences customer behaviour in a way which stimulates and directs it. Therefore, motivation can be represented in terms of its strength and direction (Solomon, 2014).

It is possible to divide the purchase motivations into two categories: the customer buys because he needs the product or buys because he enjoys the act of buying. The reason for purchasing a product refers to customers' visits to stores because they need the product, which is conceptually similar to product orientation, utility orientation and extrinsic motivations or reasons related to experience, hedonic or recreational and stimulation oriented (Groeppel-Klein et al., 1999).

Tauber (1972) classified the purchases motivations as personal (role play, self-satisfaction, diversion, sensory stimuli, physical activity and new trends) and social (social experiences, communication with other people, peer group attraction, status, and pleasure of bargaining). Motivations for purchase can also be categorised into three levels: utilitarian, hedonic, and social (Dholakia, 1999).

Utilitarian shopping activities are related to a work assignment and the motivation for convenience and time saving (Babin et al., 1994; K. Yang & Kim, 2012). The hedonic shopping motivation enhances feelings and psychological sensations and highlights shopping for entertainment purposes (Babin et al., 1994; Jones et al., 2006; Yang & Kim, 2012). Satisfaction is strongly related to hedonic rather than utilitarian in the shopping context, and while shopping has already a utilitarian component, its potential for emotional responses is substantial (Jones et al., 2006).

Arnold and Reynolds (2003) identified six dimensions for hedonic shopping motivations:

- "Adventure shopping" – experiencing a variety of sights, sounds, and smells while shopping;
- "Gratification shopping" – relaxing and offering a special pleasure to oneself;
- "Role shopping" – the satisfaction of shopping for others;
- "Value shopping" – looking for discounts, low prices, and sales;
- "Social shopping" – the satisfaction of socialising;

- "Idea shopping" – searching for trends and innovations.

Based on these six hedonic shopping motivations from Arnold and Reynolds (2003), Cardoso and Pinto (2010) identified five shopper segments: the "Minimalists", with low-hedonic motivations; the "Gatherers", assumed the practice of role shopping and gathered information about new products; the "Providers", motivated by role shopping and value shopping; the "Enthusiasts", with high-hedonic motivations; and the "Traditionalists", that revealed moderate hedonic motivations.

Seeking a successful shopping experience is often far more significant than the simple acquisition of products. Shopping motivation reveals several motivation typologies and indicates that shopping motivation is associated with emotional responses and can direct customers' attention in the retail environment (Babin et al., 1994; Arnold & Reynolds, 2003).

Retailers are the last step in the distribution channel before the product or service reaches the customer. The retail sale can be made in-store or through other non-store commercial concepts, such as the Internet, direct sales, vending machines or catalogue. The manufacturing, wholesaling, and retailing can be done by just one company, but retailers sometimes participate in the distribution and manufacturing process (Levy & Weitz, 2007; Lendrevie et al., 2015).

Retail management involves a process of developing strategy and tactical decisions to have a competitive advantage in the marketplace. The fundamental pillars of retail strategy are customer service, store design and display, communication mix, location, merchandising assortment and pricing (Kotler et al., 2009; Levy & Weitz, 2007).

Many identify the value as a trade-off between perceived product quality and price, but the value is an important moderator variable intervening in the perceptions of quality, sacrifice and product's intrinsic and extrinsic attributes and their respective choice (Babin et al., 1994; Picot-Coupeyet al., 2020; Ryu, Han, & Jang, 2010).

"Value is provided by the "complete shopping experience," not simply by product acquisition" (Babin, 1994 p.645); the value perception can be based upon direct or distanced usage experience (Bäckström, 2011; Mathwick et al., 2001).

2.2. Customer experience

Customer experience, as a marketing concept, has emerged to create a unique, pleasurable and memorable experience. Customers want satisfying shopping and consumption experiences (Jain et al., 2017).

The research topic of customer shopping experience had its start in the early '80s with the work of Holbrook and Hirschman (1982) about the experiential perspective of consumption. Consumer behaviour is no longer seen as a purely rational process; it encompasses the customer's senses, feelings, and involvement, which enter the decision-making process equation. In the '90s, with the work of Pine and Gilmore (1999) and Schmitt (1999), the retail management literature started to address the experience economy and experience marketing. The purchase of a product needs to be meaningful to the customer, but it also needs to arouse certain feelings and senses (Carù & Cova, 2003).

To better grasp the roots of customer experience in marketing, one must look into the previous marketing theories that contribute to the development of the current definitions. According to Lemon and Verhoef (2016), the customer experience, as a topic in the marketing science, derives from customer buying behaviour process models, since they aim to describe customer experience and customer decision-making as a process. This way, the experience assessment becomes essential, and customer satisfaction, as well as loyalty, become the most used constructs in order to measure the experience.

The topic of service quality starts to map the customer journey and is associated with customer experience. Later in the '90s and at the beginning of the '00s, relationship marketing and customer relationship management broaden the concept and add the customer's responses and the retailer's outcomes. Only in the later '00s and in the 10's we reach the topic of customer engagement and customer-centricity on the customer experience, meaning that the customer has a pivotal role in the experience (Becker & Jaakkola, 2020). The experience results from the interaction between a customer and experience provider and the act of co-creation between the two (Bustamante & Rubio, 2017).

The foundation of customer experience and its literature fields are rooted in theories such as the Stimulus-Organism-Response (Mehrabian & Russell, 1974), Consumption Experience (Holbrook & Hirschman, 1982), Experience Economy (Pine & Gilmore, 1999), Co-creation

Experiences (Prahalad & Ramaswamy, 2004) and Service-Dominant-Logic (Vargo & Lusch, 2004, 2008). These theories provided ground for the development of customer experience.

Becker and Jaakkola (2020) enumerate eight literature research streams on the topic of customer experience. Table 2.1 summarises the different approaches, by showing how customer experience emerges, its purpose, and its related stimuli. References for each field are provided for further details.

Table 2.4 - Literature fields that study customer experience in marketing

Field	Approach on customer experience	Examples of references
Experiential marketing	• Customer experience is created during the interactions in a customer journey; • The purpose is to create an engaging offering by staging a memorable experience; • Stimuli produced by the retailer as an economical offering.	Pine and Gilmore (1998)
Services marketing	• Customer experience is created in the service meeting, sometimes connecting with other customers; • The purpose is to provide an experience through service encounter elements; • Stimuli related to the service environment, service personnel, and core service.	Bitner (1990)
Consumer research	• Customer experience is created during the entire shopping process; • The purpose is to discover the symbolic meaning and experiential aspects of experiences; • Stimuli associated with hedonic/experiential, symbolic, and social aspects of the process.	Holbrook and Hirschman (1982)
Retailing	• Customer experience develops during the set of interactions with a retailer, sometimes including other customers; • The purpose is to improve the customer experience through retailing elements; • Stimuli connected to the retailing framework.	Verhoef et al. (2009) Grewal et al. (2009)

Field	Approach on customer experience	Examples of references
Service-dominant logic	• Customer experience grows in dynamic service ecosystems, involving many actors; • The purpose is to offer a holistic and consumer-centric view on the customer experience and evolving value-in-use; • Stimuli are not limited to one company or offer; the whole service ecosystem affects the experience tangled with value.	Vargo and Lusch (2004, 2008)
Service design	• Customer experience develops throughout the customer journey; • The purpose is to improve the customer experience through the design of the service process throughout the customer journey; • Stimuli are related to the design of the customer journey, its phases, and stages.	Patrício, Fisk, & Falcão Cunha (2008)
Online marketing	• Customer experience develops through interactions with online settings and sometimes involves interaction with other customers; • The purpose is to improve the customer experience through online elements; • Stimuli restricted to the online environment.	Novak, Hoffman, & Yung (2000)
Branding	• Customer experience emerges during a set of interactions with a brand and sometimes involves interaction with other customers; • The purpose is to improve the customer experience through brand-related stimuli; • Stimuli staged by the brand/retailer that forms the experience as an economical offering.	Schmitt (1999) Brakus et al. (2009)

Source: adapted from Becker and Jaakkola (2020)

Depending on the research field, the definition and multidimensionality of the customer experience, the construct will differ; like Lemon and Verhoef (2016, p. 74) state, the customer experience construct is "relatively broad". From the perspective of antecedents and outcomes of the experience, Antéblian et al. (2013) point to antecedents such as customer shopping

motivations (seeking economic performance, convenience, hedonic gratification, and social interactions), as outcomes or consequences of the experience they mention satisfaction, value and relationship. Lemon and Verhoef (2016) present satisfaction as an integrative element of the experience, since it results from the customer's cognitive evaluation of the experience. Furthermore, the elements of quality service can be related to antecedents of the experience since they can influence customers. Then, trust can influence the experience but it can also be an outcome. Finally, customer engagement can also be seen as an element of experience through specific interactional touch-points, such as social communities and employee relations.

Jain et al. (2017) state that customer experience can be pleasurable or un-pleasurable and that it can lead to positive or negative responses concerning satisfaction, value, quality, image, purchase intentions, patronage, loyalty, as well as recommendations. Experiential memories are relatively stable and reinforce favourable or unfavourable responses leading to approach or avoidance behaviour towards products, services, brands, stores or firms.

Gentile et al. (2007, p. 397) describe the concept as:

> "The Customer Experience originates from a set of interactions between a customer and a product, a company, or part of its organisation, which provoke a reaction. This experience is strictly personal and implies the customer's involvement at different levels: rational, emotional, sensorial, physical, and spiritual. Its evaluation depends on the comparison between a customer's expectations and the stimuli coming from the interaction with the company and its offering in correspondence of the different moments of contact or touch-points."

Since customer experience is noticeable at various levels, various dimensions must be examined to cover all perspectives of the concept. Pine and Gilmore (1999) claim that customers engage in experiences differently depending on four different attributes of the experience: esthetics, escapists, education, and entertainment; they also claim that a great experience would incorporate all of them. In this perspective, the retailer controls the variables, and customers interact through the customer journey.

Schmitt (1999) offers a perspective where specific stimuli trigger experiences with a cause and purpose. That perspective has been preferred as the basis for many researchers in the field (e.g. Bustamante & Rubio, 2017; Gentile et al., 2007; Verhoef et al., 2009) and says that experience consists of five elements: sense, feel, think, act and relate.

- Sense: Creation of an experience through the senses such as hearing, sight, touch, taste, and smell. These sensory elements are expected to add value to the product and motivate customers to purchase;

- Feel: aims to create an emotional response on the part of the client. Emotions concerning a brand or product can go from this to a feeling of belonging and pride or humour;

- Think: Stimulation of the cognitive process through intellectual activities and problem-solving, creating an experience;

- Act: Customer interactions through bodily experiences. It can show ways to carry out daily activities or to live life in a new way. This experience creates social identity when relating to a culture or reference group;

- Relate: Promotes interaction between customers and other people.

Related to Schmitt's perspective on experience, Lemon and Verhoef (2016, p. 71) summarise the customer experience as a "multidimensional construct focusing on a customer's cognitive, emotional, behavioural, sensorial, and social responses to a firm's offerings during the customer's entire purchase journey".

Researchers attempted to encompass the concept of customer experience, multidimensionality, its impact on behaviour, and its role in developing successful marketing strategies (Brun et al., 2017). As a multidimensional construct, a holistic evaluation is necessary (Gentile et al., 2007) involving a customer's cognitive, affective, emotional, social and physical responses to retailer throughout the customer journey (Lemon & Verhoef, 2016; Verhoef et al., 2009).

Experience is created by elements controlled by retailers (e.g. service, atmosphere, assortment, price, brand) and factors outside their control (e.g. the influence of other people, purchase motivations, mobile devices) (Bustamante & Rubio, 2017). Measuring the customer experience is a complex task, mainly because the definition and dimensions lack a clear definition. Still, studies emphasise the need to develop metrics for its measurement (Verhoef et al., 2009). In the retail management and marketing area, these are some of the scales developed, related to the construct:

- Experiential Value Scale (Mathwick et al., 2001);
- Brand Experience Scale (Brakus et al., 2009);
- Customer Experience Quality (Maklan & Klaus, 2011)

- Customer Experience Index (S. Kim et al., 2011)
- Utilitarian and Hedonic Shopping Value (Babin et al., 1994),
- Retail Service Quality (Dabholkar et al., 1996)
- Smart Shopping (Atkins & Kim, 2016)
- Retail customer experience (Bagdare & Jain, 2013)
- In-store customer experience (Bustamante & Rubio, 2017)

The development of measurement scale diverges into two main streams:

The first one is related to the service perspective, derived from the customer's perceived service experience and it is based on evaluative judgments about the service. Their starting premise is based on the service experience as a reformulation of the traditional concept of service quality (e.g. SERVQUAL - Parasuraman, Zeithaml, & Berry, 1988). The second approach follows the conceptual model of Strategic Experiential Modules, developed by Schmitt (1999). This framework includes the elements of cognition, feelings, sensations, social, and physical responses triggered by an experience creator.

To perform customer experience management, retailers have to identify and incorporate the right set of stimuli at touch-points across all the stages and journey, incorporating interactive elements for co-creation that can measure the customer's responses (Jain et al., 2017).

2.3. In-store shopping experience

The in-store shopping experience can be understood as a derivation of customer experience, focused on the customer experience in the physical retail shopping environment. When analysing this concept in the literature, it is necessary to explore similar expressions, often homonymous. In addition to not having an exact definition, the designation of the phenomenon is not always the same (e.g. retail shopping experience, customer shopping experience, retail experience, consumer shopping experience, store experience) (Bonfanti et al., 2020). Therefore, the phenomenon does not have a single definition, but it is fundamentally based on hedonic shopping and understood in terms of social experience, entertainment, and an immersive shopping process (Arnold & Reynolds, 2003; Jones et al., 2006).

With the evolution of the customer journey and channel integration, also the definition of in-store shopping experience shifted from the perspective of Person x Object x Situation, proposed by Punj and Stewart (1983), to an omnichannel experience perspective, depending on the channel management by retailers, competitors or by customers (Lemon & Verhoef, 2016).

In the last decades, the most used models that analyse the phenomenon have been the Strategic Experiential Modules (Schmitt, 1999), Stimulus-Organism-Response (Mehrabian & Russell, 1974) and Pleasure-Arousal-Dominance (Mehrabian, 1996), showing a lack of research on the in-store shopping experience considering the digital era (Bonfanti et al., 2020).

Nevertheless, the physical aspect of the experience is still a critical dimension; according to Jones (1999), the competitive advantage offline stores have is the customer's opportunity to physically feel and sense the products and the added value connected to the enjoyment of going shopping. Moreover, the interaction between customer and employee is perceived by many customers as necessary, which leads most customers to continue to purchase in-store.

Retail environment

It has been recognised for a long time that retail environment impacts customer behaviour and experience. Atmospheric elements become increasingly important when customers have a significantly wide choice, but they are also essential in situations where the product is purchased or consumed. These elements are crucial for retailers (Kotler, 1973) as they can manipulate all the environment variables to create satisfying shopping experiences or to minimise the unsatisfying factors such as noise, unpleasant odours or crowded places (Machleit et al., 2000).

The experience is created by interacting with all the store elements (Bäckström & Johansson, 2006). Retailers may act on different dimensions of the store environment: senses such as smell, sound, and touch (environmental factors); the design and layout of the store, the functionality, the furniture (design elements); and social characteristics (Baker, 1986). Over the years, many researchers have approached the effects of the retail environment from different perspectives.

The psychological perspective refers to the customer's physiological responses to the interaction with the environment, such as comfort or discomfort (Bitner, 1992). Researches interested in customer culture, such as "servicescapes", "marketplaces", or "retail spaces", have evolved the dominant psychological perspective of the store environment. From their point of

view, it is a place that is organised to evoke certain kinds of experiences and behaviours, and therefore being also a place, which controls the movement of people. Researchers also recognise the customers as active participants in the activities that take place within the "servicescape" (Kozinets et al., 2002; Sherry, 1998).

The retail environment is facing changing conditions: the technological aspects have turned into new and important elements of retail store environments, and new ways of organising the physical store, such as showrooms or click-and-collect, are projected and assessed (Bäckström & Johansson, 2017b).

Entertainment

As mentioned before, the retail environment can provide entertaining experiences and stimulate the cognitive and affective experience. "Entertaining shopping experience can be defined as fun and pleasurable shopping experiences and are similar to leisure or recreation experiences, perceived freedom, and involvement"(Jones, 1999, p. 129).

The purchase is not an essential element of the experience; customers can have fun and enjoy the experience without buying (Tauber, 1972), so the shopping experience can be influenced by the fun the store can provide (Pantano & Naccarato, 2010). Shopping can have substantial "escapist" and "fantasy-like" qualities because it helps people to forget their problems in other aspects of their lives (Babin et al.,1994; Arnold & Reynolds, 2012).

We can differentiate entertaining from non-entertaining shopping experiences when they are purely utilitarian. This can occur because the product or service is bought efficiently (Jones, 1999). An entertainment context can substantially impact the customer's satisfaction and add value to the retailer's goods and services (Pantano & Naccarato, 2010).

The design of entertainment experiences, which leads the customer to emotionally engaging experiences, has been named through several articles as "Experiential retailing", "Entertaining experiences", "Entertailing", and "Shoppertaiment" (Kim, 2001; Jones 1999; Bäckström & Johansson, 2006). The concept of "Retailtainment*"* handles the variables of the environment, salespeople, games, and others to generate entertaining shopping experiences and arouse the desire for some products or services in the retail store (Eastlick et al., 1998 Lendrevie et al., 2015).

Gamification

The use of game elements and learning environments triggers psychological outcomes. Gameful experiences can motivate specific behavioural outcomes (Huotari & Hamari, 2017). From a marketing perspective, they might include attitude, purchase/re-purchase, retention and engagement (Hofacker et al., 2016). Robson et al., (2015, p. 418) state that the term of gamification is "the application of lessons from the gaming domain to change behaviours in non-game situations". Situations that are not usually associated with a gaming environment can be analysed and experienced as if the participant was involved in playing a game.

Gameful experiences mediate the effect of gamification on behavioural outcomes. These experiences need to emerge in order for the behavioural outcome to occur (Huotari & Hamari, 2017) since they are only created when the gamer is engaged in playing (Huotari & Hamari, 2017; Högberg, Shams, & Wästlund, 2019) and it is also only when they become effective (Högberg et al., 2018).

In-store shopping experience dimensions

According to Bonfanti et al. (2020), on average, there are three to five dimensions analysed in the literature and they are mainly related to design, atmospherics, social aspects, convenience, and service. We focused the analysis on the cognitive, affective, social, and physical dimensions following the perspective of authors such as Bustamante and Rubio (2017), Verhoef et al. (2009) and Schmitt (1999).

Cognitive experience

It can be understood that the cognitive experience emerges from stimulating the customer's mental processes and it can be created when interacting with the retailer's environment, acquiring new knowledge, or engaging creatively with the store (Gentile et al., 2007; Schmitt, 1999). The customer's cognitive responses to the retailers stimuli can be ideas, memories or thoughts (Brakus et al., 2009), as retailers frequently aim to surprise, inspire and arouse the curiosity of their customers (Gentile et al., 2007).

They try to create an immersive environment that engages and stimulates those thoughts, e.g. involving the customers with products/services, the servicescape, retail technologies, etc.

(Bustamante & Rubio, 2017). Hence, the cognitive dimension of the in-store shopping experience can be understood as:

> "the ability of stimuli the customers to think and reflect, arouse curiosity, awaken creativity, inspire, etc. Such mental activity may be stimulated through direct experience with the object provided by cognition or by combining the experience of the object with information connected to various sources to provide the customer with novelty, relevance, and/or learning" (Bustamante & Rubio, 2017 p.890).

The cognitive ability to process information varies between customers and it is impossible to have many experiences simultaneously. To engage in an experience, the customer has to be present mentally and physically, the customer can be physically present but mentally absent from an experience. The absence can be due to external or internal distractions or because of the lack of external stimulation provided (Duerden et al., 2018).

Affective experience

The affective experience encompasses the emotions and moods that emerge from the cognitive evaluations of situations or thoughts. According to Schmitt (1999), the experience can be slight or intense, positive or negative.

For the customer, the shopping experience can bring emotional responses (Machleit & Eroglu, 2000) and therefore, creating emotionally engaging experiences for in-store customers is now more important for retailers (Bäckström & Johansson, 2006) so that they can influence customers' purchase decisions (Schmitt, 1999).

The same retail environment can create different feelings for the customers. It depends on the customers' goals (Puccinelli et al., 2009), and it can be task or recreation-oriented (Levy & Weitz, 2007). A better understanding of the customers' feelings while interacting with the environmental elements, such as excitement, joy, interest, pleasure, anger, surprise, frustration or arousal, can play an important role in shopping behaviour and respective outcomes (Machleit & Eroglu, 2000).

A positive emotion leads to a longer permanence in-store, more money spent, and increased propensity for impulsive buying, nevertheless a negative emotion can be stronger than a positive

emotion. Therefore, the experience that the retailer can provide to the consumer can, and will, define the consumer behaviour (Babin & Darden, 1996; Bäckström & Johansson, 2017).

Social experience

Retail stores are social contexts where the customer perceives, interprets, and interacts with the elements to engage in individual and collective processes. The shopping experience can be co-created with other people and therefore, the store turns into a place for human interaction.

According to Gentile et al. (2007) and Schmitt (1999), social experience is the interaction between customers and employees and/or other customers, and that in turn influences customer satisfaction. The social experience is founded on the quality and intensity of the relationships between the customer and the other people with whom the individual interacts. Both employees and customers are part of the servicescape, performing actions, which implicates designing the environment bearing in mind their presence (Bitner, 1992). The people closest to customers are most likely to significantly impact customer satisfaction and repatronage intention (Hansemark & Albinsson, 2004).

The interaction between customers can be something such as give/receive advice/opinions creating engagement through interaction (Bagdare & Jain, 2013; Stein & Ramaseshan, 2016). On the other hand, the customer interaction with employees can be something such as give an opinion/ receive advice creating engagement through interaction (Alhouti et al., 2015; Haas & Kenning, 2014; Sharma, 2001).

The direct interaction between customer and employee is critical when confronting different touch-points, especially during purchases in-store (Stein & Ramaseshan, 2016). Employees can help create a great experience, but unhelpful or overly assertive employees may be seen as offensive, and poor performing employees can negatively affect the shopping experiences (Jones, 1999).

Physical experience

The physical experience relies on the customer's internal physiological response to the store environment. Customers have physical responses to the stimuli, such as well-being, comfort, relaxation or the opposite physical effects, such as discomfort and stress (Baker, 1986; Bitner, 1992).

Studies on physical experience are often based on a stimulus organism-response perspective (Mehrabian & Russell, 1974). The role of store atmospherics and its specific physical stimulus has been studied (e.g. Babin & Attaway 2000; Bagdare 2013) such as music (e.g. Jain & Bagdare 2011), colour (e.g. Babin et al, 2003), and scents (e.g. Madzharov, Block, & Morrin 2015). Bäckström and Johansson (2017) point the lack of account on the role of moderating variables such as customer's perceptions and previous experiences in previous studies.

Sensory stimulations can work as a complementary element to other experiences, and when perceived as positive, create positive feelings for customers (Cachero-Martínez & Vázquez-Casielles, 2017). As stated by Bitner (1992), the customer's perception of a retailer's quality might change according to the atmospheric elements and for customers they are a base to categorise a store.

Measurement

Regarding the measurement of customer experience, the specific moment of the in-store shopping experience also lacks measuring instruments. Some attempts were made (e.g.Terblanche & Boshoff, 2006; Terblanche, 2018) and a measurement instrument was even created (Bagdare & Jain, 2013; Bustamante & Rubio, 2017). However, it is not consensual, it does not serve all sectors of activity and it does not consider elements that lead the customer to have multi-channel and omnichannel experiences.

Nevertheless, we can find common elements in the attempts to measure customer experience, such as the outcomes: satisfaction, loyalty, and repatronage intention (Bagdare & Jain, 2013; Bustamante & Rubio, 2017; Oliver, 1980; Terblanche, 2018). Burns and Neisner (2006) found that both cognitive evaluation and emotional reaction to the experience explain the level of satisfaction in a retail setting. Customer satisfaction leads to many advantages: lower price sensitivity, loyalty towards the brand, customers buying more and staying longer in-store and augmented willingness to come back (Hansemark & Albinsson, 2004). Retailers

and researchers usually know the importance of a satisfactory customer experience and consider it a significant constituent in establishing a competitive advantage (Balaji & Roy, 2017).

2.4.   The customer journey and channel integration

Designing a customer journey or creating a customer journey map is an important strategic management tool to understand and manage the customer experience, but a model of a customer decision journey process is still under research (Rosenbaum, Otalora, & Ramírez, 2017).

Its definition can be understood as "customers' search and purchase usage of all online and offline touch-points from various sources, including retailer-owned, competitor-owned, and additional touch-points" (Herhausen, Kleinlercher, Verhoef, Emrich, & Rudolph, 2019, p.11), i.e. customer journey is defined as a series of steps with repeated interactions between a retailer and the customer. Frequently customer journeys are described from the customer viewpoint (Følstad & Kvale, 2018).

The touch-point concept in the customer journey lacks a definition but it can have different meanings; touch-points understood as service management service encounters, and touch-points understood as encompassing the channels or physical surroundings (Følstad & Kvale, 2018). There are constructs related to the characterisation of a touch-point; it can be related to stimulus, encounters and interfaces: Stimulus – is an element that offers an objective function to the customer; Encounters – The moment when the customer is in contact with the touch-point; Interface – Is a group of several touch-points, mediated by stimuli that enable encounters (Barann et al., 2020).

Lemon and Verhoef (2016) categorise four customer experience touch-points: brand-owned (e.g. advertising, websites, loyalty programmes, packaging, service, price, convenience, salesforce), partner-owned (e.g., marketing agencies, multi-channel distribution partners, multivendor loyalty programme partners, communication channel partners), customer-owned (e.g., payment method, online contents), and social/external/independent (e.g., other customers, peer influences, independent information sources, environments).

As the customer journey perspective has been adopted to support the management and design of the customer experience, customer journeys are understood to concern the responses of the emotional and cognitive customers (Følstad & Kvale, 2018).

Technological advancements blur the distinct boundaries between physical and online retail shopping, allowing retailers to accomplish customer interaction across multiple touch-points, revealing a combination of offline information and online content (Brynjolfsson et al., 2013; Juaneda-Ayensa et al., 2016; Mosquera et al., 2018).

Value creation through multiple-channel strategies depends on the relationship between customers shopping motivations, retailers customer value proposition and retailers multiple-channels strategies (Yrjölä, Saarijärvi, & Nummela, 2018). The retailers choice for multiple channel integration can be named multi-channel, cross-channel, or omnichannel retailing strategy (Verhoef et al., 2015). Figure 2.2 illustrates the different types of channel integration of multiple-channel retailing strategies.
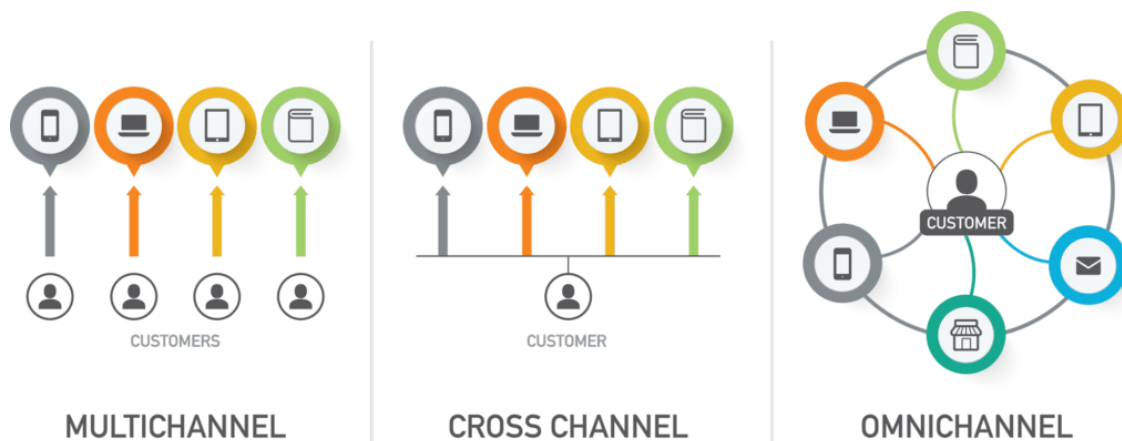
Figure 2.2 - Multiple-channel retailing strategies

Source: adapted from Next4biz (n.d.)

Mobile devices open new possibilities for retailers to integrate online and physical store offerings, creating competitive advantages through multi-channel, cross-channel or omnichannel customer experiences. The tendency is the transition from multi-channel to omnichannel (Lemon & Verhoef, 2016; Verhoef et al., 2015).

Multi-channel

Retailers offer one or more alternatives, but there is no interaction between channels (Beck & Rygl, 2015). This option is the least integrative for customers and retailers and was initially the

result of the attempt to enter e-commerce (Verhoef et al., 2015). "Customer cannot trigger channel interaction and/or the retailer does not control channel integration" (Beck & Rygl, 2015, p. 174-175).

Cross-channel

The cross-channel proposes a partial or complete channel integration, but not all channels are included (Beck & Rygl, 2015). Adopting this strategy is based on the synergy between channels where customers and retailers get the best out of each channel (Yrjölä et al., 2018). This can increase re-purchase intention (Chatterjee & Kumar, 2017).

Analysing this type of strategy, an example of interaction between offline and online can translate into ordering online, picking up in-store, ordering in-store and getting the product delivered, and returning online purchases in-store (Chatterjee, 2010).

Omnichannel

Omnichannel can be defined as "the set of activities involved in selling merchandise or services through all widespread channels, whereby the customer can trigger full channel interaction and/or the retailer controls full channel integration" (Beck & Rygl, 2015, p.175). This means that the retailer provides a seamless experience between channels and that the customer can receive benefits such as information visibility, cost savings, or convenience (Beck & Rygl, 2015; Piotrowicz & Cuthbertson, 2014; Verhoef et al., 2015).

During the retail shopping experience, omnichannel customers value and manifest control expressed through channel migration. By switching between channels for personal benefit, customers perceive value in getting the best deal and reduce purchase risk aspects (van Dijk et al., 2007).

In order to add value and create an omnichannel customer experience, all channels and media have to be considered as part of the strategy and, consequently, they have to perform synergetic management (Verhoef et al., 2015). "Because the channels are managed together, the perceived interaction is not with the channel, but with the brand" (Piotrowicz & Cuthbertson, 2014,p. 6).

The success of the channel integration strategy depends on the definition of purpose alignment with customer shopping motivations and product category. Retailers continue to try and fail to implement because they do not take these elements into account (Yrjölä et al., 2018).

The *showroom* and *webroom* effects are consequences of the channel migration performed by customers to get the best deal: Showrooming – Customers search for in physical stores the product but decide to purchase online; Webrooming – Customers browse for the product online, but the product is purchased in-store. (Fernández et al., 2018; Viejo-Fernández et al., 2020)

2.5.   Mobile devices in decision support systems and retailers technologies

The primary applications of mobile devices can be shortly described in two dimensions: video and audio. They can have voice conversations, play music and even have an intelligent personal assistant and knowledge navigator (e.g., Siri for Apple Inc.'s iOS). They can text, take and send photos and videos. Different mobile devices give the person multiple basic applications (Shankar et al., 2010). Three essential characteristics are listed in the literature: ultra-portability, location-sensitivity, and unreservedly (Shankar & Balasubramanian, 2009).

The unique features of the mobile device turn it into a cultural object, besides the technological gadget, as a cultural object takes part in practices and traditions of everyday life. They enhance personal and social experiences while protecting the user's privacy and security. The use frequency of mobile devices as a cultural object has led to mobile lifestyle, such as communicating with others, listening to music, searching for information, conducting transactions, managing daily schedules and socialising (Fuentes & Svingstedt, 2017; Shankar et al., 2010; Spaid & Flint, 2014).

The product information given in a purchase situation can influence purchase behaviour and increase the shopping value and this is the reason why the assistance support systems are now so important in bricks-in-mortar stores (Kowatsch & Mass, 2010).

A decision support system is applied in evaluating and selecting retail products, comparing and giving information, evaluating and comparing different proposals faster and accessing user and expert reviews before, during and after shopping; it can operate on the personal mobile

device of the customers (Heijden, 2005; Pantano & Naccarato, 2010). The most used shopping assistance systems are usually in the shopping trolleys and the customer's mobile devices (Shankar et al., 2011).

According to Yang (2010), mobile devices as a personal assistant for customers can optimise the shopping experience in a brick-and-mortar shop environment by:

- Customised interaction channel between retailers and customer;
- Delivering non-intrusive mobile marketing that relates to their interests, preferences, and priorities;
- Assisting customers in making smart purchasing decisions;
- Helping in many other typical situations such as payment.

The location sensitivity of mobile devices can be used to develop location-based services that provide functions based on where the customer is; it enables retailers to use mobile devices as a means to enter the customer's environment in-store at the point of purchase for marketing purposes (Högberg, Shams, & Wästlund, 2018).

New technological solutions can improve the customer experience, and retail stores can increase their competitiveness by noticing the value of incorporating technology in the in-store experience. New technologies enable exciting new experiences such as virtual reality, interactive games, and augmented reality (Inman & Nikolova, 2017; Pantano & Vannucci, 2019; Papagiannidis, Pantano, See-To, & Bourlakis, 2013; Savastano et al., 2019).

Here are some of the shopping assistance technology solutions for in-store shopping found in the literature:

- <u>Mobile navigation systems</u> can improve shopping efficiency by helping users reach any desired destination faster and be located inside or outside a brick-and-mortar shop (Groß, 2015) ;
- <u>Mobile tracking systems </u>record customer's movements, which gives retailers new information about consumer behaviour. This might be helpful to optimise the pathway in the points of sale by boosting impulse purchase (Groß, 2015);
- <u>Mobile in-store advertising</u>, which is often based on beacons in stores, broadcast advertising messages to nearby customers' smartphones. Such location-based, in-store advertising is often assumed to be more effective than traditional in-store

communication strategies, as customers might pay more attention to messages on their smartphones (Bues et al., 2017).

Table 2.2 summarises the available retailer's technologies that interact with customers.

Table 2.2 - Retailer's technologies

Augmented Reality	With technological glasses or a mobile app, images can be computer-generated, altering the reality one is currently perceiving. E.g., this allows customers to experiment with products without touching them in reality (Flavián et al., 2019; Rauschnabel et al., 2019;.Yang et al., 2020).
Artificial Intelligence	Intelligent computers with predetermined goals perceive the environment and take actions according to rules for processing and use information. Processing an extensive amount of customer-related information and taking actions that maximise the chance for a favourable outcome. Actions such as customisation of targeted marketing or predictive analysis about future purchases (Dhruv Grewal et al., 2020; Turner et al., 2020; Tyrväinen et al., 2020).
Avatar	It is a 3D model representation of the customer in a digital environment. This is possible through a scanning device in which a person's body gets scanned and subsequently becomes recreated as an avatar (Grewal et al., 2020; Puccinelli et al., 2009).
Big Data	The term used to describe unlimited data generated through the interaction between technology and the customer and between technology and the environment. The interaction leaves a digital trace of user-generated content that can indicate the reasons behind every action. Retailers can use this knowledge for targeted marketing, personalisation, and predictive analysis of future purchases (Bradlow et al., 2017; Dekimpe, 2020; Park, 2019).
Machine learning	It is about a computer's ability to learn and anticipate future behaviour resulting from identifying patterns in a data set. Based on this, the computer can make favourable decisions without being explicitly programmed to carry out specific counter-measures. Instead, the computer relies on a set of pre-programmed guidelines, and then it is the sum of all interactions that determine its underlying characteristics (Institute for Business Value, 2019; Shankar, 2018).

Radio-frequency identification (RFID)	This form of wireless communication between an RFID tag and a transceiver can identify and track a tag's movement across the store. This technology enables retailers to know what products customers pick up (Barann et al., 2020; Pantano & Timmermans, 2014).
Virtual Reality	It is a technology that allows an individual to be fully immersed in a virtual reality experience that simulates a real or imaginary environment. This is made possible through high technology that stimulate the senses. It allows to explore the assortment of different retailers at home (Meißner et al., 2020; Pantano & Servidio, 2012; Peukert et al., 2019).
3D-Printing	Manufacture of three-dimensional physical objects by joining or solidifying a wide variety of materials using a predetermined 3D model data file determines their physical appearance (Dholakia et al., 2010; Google Patents, n.d.).

Motivations, acceptance and use of technology

In order to understand the behaviour of those who use mobile devices to assist their shopping experiences, here are succinctly described behavioural motivations and technology acceptance theories (Spaid & Flint, 2014).

For several years now, technology acceptance has been studied to explain individual acceptance through models and theories. Technology Acceptance Theory (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT) are the most used and well known when studying the acceptance and use of technology. TAM is considered one of the most influential and used by researchers to describe the acceptance of a particular technology. Also, UTAUT is a combination of the previously mentioned models, making this theory more complete (Bues et al., 2017; de Kerviler et al., 2016; Saprikis et al., 2018). Table 2.3, briefly presents the theories and relates them to our topic.

Table 2.3 - Theories of behaviour motivation and acceptance and use of technology

Theory of Reasoned Action (TRA)	Developed by Fishbein and Ajzen (1975), the theory of reasoned action describes the intention of the behaviour is informed by the customer's attitudes towards that behaviour and a subjective norm. An attitude could be negative or positive, and a subjective norm is what the customers comprehend an important a person or group will approve or disapprove of a behaviour. The TRA helps to explore the attitudes shoppers have towards the use of mobile devices.
Theory of Planned Behaviour (TPB)	Ajzen (1991) created the planned behaviour theory to report the limitations of the TRA, where the customer does not have willpower over certain behaviours. The TPB add a behavioural intention and the actual behaviour.
Technology Acceptance Theory (TAM)	Based on the motivational, behavioural theories, the technology acceptance theory decides or adopts a new technology. It was developed by Davis (1989), and the two main features of the model are the perceived usefulness and perceived ease of use. The goal of this model is to identify determinants of technology adoption behaviour at an individual level.
Innovation Diffusion Theory (IDT)	Innovation Diffusion Theory proposes that individuals adopt new technology differently depending on how innovative they are. This theory helps us understand the stages of technology diffusion and the characteristics of the adopters. There are five characteristics of innovations (relative advantage, compatibility, complexity, trialability and observability) that influence the acceptance, and there are five categories based on the time when they accept the technology (Innovators, early adopters, early majority, late majority, and laggards). The life cycle of the ID follows a normal distribution of the population, and the categories fall in degrees of standard deviation. Our user of mobile devices is expected to be "innovator" and "early adopters" user (Rogers, 2003).
Unified Theory of Acceptance and Use of Technology (UTAUT)	The UTAUT model results from the unification of different perspectives on the user acceptance theories. Venkatesh et al. (2003) reviewed and summarised eight models, examined their similarities and variations and developed a Unified Theory of Acceptance and Use of Technology. UTAUT is one of the most recent theories of technology acceptance. It integrates adoption determinants across eight competing models. The

theory has been empirically validated and was found to have superior explanation power over the eight individual models. It is expected that the mobile devices adopters have perceived usefulness and perceived ease of use, and personal attitudes towards technology (Spaid & Flint, 2014).

An innovation that can provide customers with new enjoyable and useful elements during the shopping makes them more willing to purchase more, due to the fun provided in-store and, in turn, it increases loyalty (Pantano & Naccarato, 2010; Shankar & Balasubramanian, 2009).

2.6.   In-store shopping behaviour and mobile device usage

Customers use their mobile device in-store for shopping tasks (e.g. look for competitors' prices, shopping lists, coupons redemption, etc.) and for non-shopping tasks (e.g. Social media, entertainment, job tasks, etc.), generating different outcomes for retailers (Bellini & Aiolfi, 2017; Bellini & Aiolfi, 2019; Sciandra & Inman, 2014; Sciandra et al., 2019; Sciandra & Inman, 2015).

According to Bellini and Aiolfi (2017), mobile devices can assist customers in the pre-purchase and purchase decision stages, making them more prepared for the shopping tasks, thus reducing the perceived risk and making the purchase process faster.

The services developed by retailers mainly, allow a more efficient decision-making process (Pantano & Priporas, 2016; Spaid & Flint, 2014; Tyrväinen & Karjaluoto, 2019). This makes customers feel empowered and in control when they use their mobile devices for shopping assistance and enjoyment. Moreover, it makes them feel entertained due to the features of the mobile device that allow customers to customise their experience through online touch-points, redesigning the retail environment. For example, in a situation where the customer is alone, the mobile device can become an element of socialisation (Spaid & Flint, 2014) and can provide a connection with a person of trust, family, a friend or an expert (Rippé et al., 2017). Social media and mobile devices are also essential elements since they can increase in-store sales (Nakano & Kondo, 2018).

Some authors pointed the differences between types of tasks performed with mobile devices and their effects (Bellini & Aiolfi, 2017; Bellini & Aiolfi, 2019; Grewal et al., 2018; Sciandra & Inman, 2014; Sciandra et al., 2019; Sciandra & Inman, 2015): The outcomes are different and the results of the studies diverge. When used for non-shopping activities, the displays recall and in-store stimuli are negatively affected (Bellini & Aiolfi, 2017; Sciandra et al., 2019; Sciandra & Inman, 2015), but customers buy more and it is explained by the distraction factor. According to Grewal et al. (2018), the negative effects have a higher impact on elderly customers.

Customers buy more unplanned items, and the ads near the products have a more negligible effect (Bues et al., 2017), they also travel further and walk more and spend more time in-store (Hui et al., 2013). The multitask effects also impact negatively the accomplishment of shopping goals (Atalay et al., 2017).

On the other hand, the use of mobile devices for shopping tasks and supporting the decision-making process makes customers less prone to impulsive purchases and not effectively recall the marketing communication after shopping. Therefore, the decision-making process becomes more conscious (Bellini & Aiolfi, 2019). The role of salespeople also diminishes in influence on the decision-making process, since mobile devices allow customers to access a wide variety of information, including the opinion of experts and other customers (Rippé et al., 2017).

When looking for the different stages of the decision-making process (problem recognition, information search, alternatives evaluation, purchase decision, and post-purchase behaviour), the stage where mobile devices play an important role, according to Lemon and Verhoef (2016), Ewerhard et al., (2019) Holmes et al., (2014) and Rippé et al., (2017) is the information search. Customers preferably search online and buy offline (Webroomers).

It is almost certain that mobile devices affect the decision-making process. Grewal et al. (2018) state that overall, the effect for the retailers is positive.

Gender differences in mobile device use and shopping behaviour

Males and females use the Internet differently (Zhitomirsky-Geffet & Blau, 2016) and shop in-store for different motivations (Solomon, 2014). According to Faqih (2016), gender can play an essential role in individual behaviours and perceptions and it can influence technology

adoption and usage types. Therefore, there are differences between types of gender in the use of devices with Internet access in-store.

Analysing the use of mobile devices in-store and gender:

- Related to shopping activities, a study by Eriksson et al. (2018) including young students found significant differences between gender in use for different product categories. Young males use mobile devices more for high involvement products, mainly search for product and information about electronics, while young females ask for advice on fashion products more often than males;

- Related to non-shopping activities, females showed preferences for e.g., managing social media, calling and texting friends as well as multitasking. Therefore, females seem to value more social interaction with their mobile devices (Bhatnagar & Papatla, 2019; Kiba-Janiak, 2014; Pantano & Gandini, 2017).

Previous research studies have confirmed that customers of different genders have different preferences. Females use mobile devices more frequently for social purposes and they multitask with mobile devices (Bhatnagar & Papatla, 2019; Kiba-Janiak, 2014; Pantano & Gandini, 2017). They also have different preferences using mobile devices for decision support in different product categories (Eriksson et al., 2018). According to Eriksson et al., (2017), there also are different tendencies to showroom intention between gender.

Generation differences in mobile device use and shopping behaviour

A group with a similar age shares similar consumption patterns, social values, and attitudes (Bilgihan, 2016). Therefore, it is expected that members of the same generations demonstrate similar behaviours when using their mobile devices.

Although there is no consensus between the definition of the generations while analysing the youngest three generations that are most likely to purchases in-store, we adopted the following dates, also present in other studies (Dimock, 2019; Priporas et al., 2017; Zhitomirsky-Geffet & Blau, 2016):

- Generation X (Gen X - born between 1965 and 1980) grew up without information technologies and was exposed to mobile devices only when being adults;

- The customers born between 1981 and 1995 are the members of Generation Y (Gen Y), or most popularly known as Millennials. This generation experienced the advent of smartphones during their adolescence and has more technological savviness than the previous generation;

- The customers born between 1996 and 2005 are Generation Z members (Gen Z); they are "mobile native" and grew up with smartphones.

When looking at these generations from the perspective of adopting innovations (Rogers, 2003), generations Y and Z are expected to be the innovators and early adopters of these devices. They have more frequent usage than generation X.

The knowledge about the differences between generations, mainly the youngest ones, as well as the different uses of mobile devices in-store is scattered and still under study (Dorie & Loranger, 2020; Ewerhard et al.,2019; Li et al., 2019; Priporas et al., 2017; Sullivan & Hyun, 2016). Nevertheless, the relationship between age and mobile device use has already been shown:

- Elderly customers are more affected by the effect of distraction when using their mobile devices, spending more time in-store and looking at the shelves (Grewal et al., 2018);

- Younger customers do more mobile shopping than older customers (Marriott et al., 2017);

- Younger customers avoid interaction with salespeople and rely on the information they find on the Internet (Rippé et al., 2017);

- The showroom behaviour related to products with high involvement, such as electronics is more expected among young males (Dorie & Loranger, 2020; Eriksson et al., 2018);

- Ewerhard et al. (2019) mentioned that different generations are drawn to different channels in different decision-making stages.

- The younger generations, such as Gen Y and Z, are technology-savvy groups and use mobile devices frequently in retail settings (Priporas et al., 2017).

Therefore, we concluded that the use and effects of mobile devices can vary according to generation.

After presenting the theoretical background of our research, we conclude that the topics covered have been studied for a long time, but due to their relationship with technological evolution and rapid customer's adoption, it is a challenge to maintain them. The

multidimensional aspect of the shopping experience makes it difficult to maintain updated and be fully understood. Furthermore, the lack of studies from the retailer's perspective makes the knowledge more focused on the customer perspective.

Chapter 3 - Preliminary study 1 - The use of mobile devices in-store and the effect on shopping experience: A systematic literature review and research agenda

As we approached the topic of the use of mobile devices in-store and its effects on the shopping experience, the knowledge became scarce and dispersed. Therefore, we performed a systematic literature review that could better portray the phenomenon and guide future research. This systematic literature review is a preliminary study and corresponds to the article published in the International Journal of Consumer Studies.

Cavalinhos, S., Marques, S. H., & de Fátima Salgueiro, M. (2021). The use of mobile devices in-store and the effect on shopping experience: A systematic literature review and research agenda. *International Journal of Consumer Studies*. 2021;00:1–19. DOI: 10.1111/ijcs.12690

When studying a topic with increasing interest, the available literature can be dispersed. Carrying out a systematic literature review can tackle and extract meaningful information, as well as theoretical foundations (Webster & Watson, 2002). This first preliminary study is based on a systematic literature review that summarises existing literature, using a set of quality criteria and providing in-depth analysis. A hybrid review is applied, composed of a structured review followed by a Theory, Context and Methods (TCM) framework, adapted from previous research (Loureiro, Bilro, & Angelino, 2020; Paul, Parthasarathy, & Gupta, 2017).

The aim of this research is to provide an overview of the current knowledge about how the use of mobile devices in-store affects the shopping experience. Moreover, the study intends to

describe the most important findings, while also considering possible inconsistencies. In addition, our purpose is to identify research gaps and provide future research directions. Proposals for future research allow academics and retailers to have a different perspective on the subject. Furthermore, it also permits them to pursue a topic that is relevant for research and, in turn, contribute to the advancement of its investigation. In extend, we expect to address the doubts of retailers about the effects on the in-store shopping experience (Spaid, O'Neill, & Ow, 2019; van de Sanden, Willems, & Brengman, 2019).

Hence, the review of the existing literature on this particular topic intends to provide:

- A presentation of the most important streams and studies on the topic;
- An understanding of the effects of the use of mobile devices on the in-store shopping experience;
- Suggestions for future research.

Systematic literature reviews "identify and synthetise relevant literature to evaluate a specific research question, substantive domain, theoretical approach, or methodology and thereby provide readers with a state-of-art understanding of the research topic" (Palmatier, Houston, & Hulland, 2018, p.1). Depending on the purpose of the research, a systematic review can be of various types: Structured review based on the used theories, constructs and methods (Canabal & White, 2008; Kahiya, 2018; Marriott et al., 2017); Framework-based review (Paul & Benito, 2018; Paul & Rosado-Serrano, 2019); Bibliometric review (Ruggeri, Orsi, & Corsi, 2019) aiming for model or framework development (Paul & Mas, 2020); Hybrid narrative (Bilro & Loureiro, 2020) or hybrid with a bibliometric and structured review (Goyal & Kumar, 2020); Theory-based review (Hardeman et al., 2002); Method-based (Sorescu, Warren, & Ertekin, 2017); Meta-analytic review (Rana & Paul, 2020).

For the purpose of this research, we conduct a hybrid narrative review in order to structure the research agenda according to the TCCM framework (Theory, Context, Characteristics and Methods), similar to the procedure adopted by Paul et al. (2017), but focusing on theory, context, and methods (TCM) (Goyal & Kumar, 2020).

The first step was the definition of the topic, along with the objectives and research questions of the study. Following the recommendations of Palmatier et al. (2018), before starting the review, a Protocol (Appendix A) was designed with the steps of the process, as well as methods and criteria for the screening and evaluation of the papers. In order to ensure the

replicability of the study, it is presented below how the research was carried out, the paper's search definitions and screening process, the quality criteria selection, and the methods used for the analysis of information. Nevertheless, this methodology is vulnerable to validity threats, such as the difficulty to access all the papers, language bias, and the fact that data can be quickly outdated.

3.1. Defining the scope

Since the information about the use of mobile devices within the marketing area is dispersed (Groß, 2015), in order to reach our goal, it was necessary to define a scope for the literature review.

According to Marriott et al. (2017, p.569), mobile shopping can be defined as "being the online searching, browsing, comparing, and purchasing of goods and services by consumers through wireless handheld or mobile devices; in particular, smartphones and tablets". This implies using the mobile device to shop online or using it as part of the decision-making process (online or offline) (Tyrväinen & Karjaluoto, 2019). The latter, related to in-store, will be the focus of our research, and it will exclusively concentrate on the physical retail store. The usage of mobile devices or the intention of their use need to be performed by customers inside the store. Despite the cross-channel, multi-channel, or omnichannel environment of the studies, the findings have to contribute with knowledge about the use of mobile devices in-store and present direct or indirect effects on the customer's shopping experience.

3.2. Search and selection criteria

In order to access the best quality information, we defined a number of criteria to include only the papers that would most likely answer the research questions, aligned with the guidelines for search and selection criteria proposed by Paul and Criado (2020). As for the search method, we followed the guidelines proposed by Callahan (2014).

The search method was designed based on online databases, specifically Web of Science (WOS) and Scopus. These two databases were chosen to ensure further that the main editors were listed in the results. The search process for the review was conducted in May 2020 (May 25th for WOS and May 28th for Scopus).

Through previous research on terms that addressed mobile devices usage in-store, as well as possible effects on shopping experience, a pool of words and terms associated with the research topic was created, as presented in Table 3.1.

Table 3.1 - Pool of terms and synonymous driven from previous analysis of the literature

Key concepts	Mobile Devices	In-store	Shopping experience
Synonyms	Mobile Devices	In-store	Shopping experience
and other	Mobile	In store	Experience
Similar	Mobile internet	Brick-and-mortar	Shopping
Terminologies	devices	Brick and mortar	
	M-shopping	Offline	
	Mobile phone	Retail	
	Smartphone	Retail store	
		Physical	

Similar terms and synonyms associated with the topic were found and, in order to obtain a more comprehensive review, a search string was designed, which encompassed the largest number of terms relevant to the topic. The search was conducted using the same search string in both databases:

((Mobile OR "Mobile devices" OR "Mobile internet devices" OR "M-shopping" OR "Mobile phone" OR "Smartphone") AND ("In-store" OR "In store" OR "Brick-and-mortar" OR "Brick and mortar" OR Offline OR Physical) AND (Experience OR Shopping OR "Shopping experience"))

The sample unit is peer-reviewed academic journals articles, since the most relevant information can be found in this type of publications (Webster & Watson, 2002). The practitioner's literature was not considered in this search, as it is not possible to compare objectives and methodologies, and simultaneously use the same analytical constructs

(Athanasopoulou, 2009). Books, chapters, conference papers and documents such as notes and letters were excluded.

In the identification and screening step, the searches were restricted to the subsequent inclusion criteria: academic journals, peer-reviewed, full-text, written in English, published between 2007 and 2020, worldwide. While understanding that the use of mobile devices is a topic studied by several scientific areas, such as computer science or engineering, the search was restricted to "Business, management, and accounting" in Scopus and "Business, economics" in WOS.

The specific time frame was chosen due to the types of mobile devices under analysis. The only devices that were considered needed to be launched and adopted after the period of 2006-2007, with IOS, Android, Windows, and Blackberry systems that enable Apps and the use of 3G/4G Internet (Marriott et al., 2017). These mobile devices are more similar to what is known nowadays as smartphones, tablets, and wearables.

The first search by "Article title, Abstract, and Keywords" led to 2,493 results in WOS and 64,204 results in Scopus. After the identification and screening criteria, which is summarised in Table 3.2, the obtained results were 100 papers for WOS and 4,869 for Scopus.

Table 3.2 - Identification and screening criteria

	Inclusion	Exclusion
Document and Source type	Academic Journal Article	Others
Filter	Full-text; peer-reviewed papers	Others
Language	English	Others
Time frame	2007 – 2020	<2007
Subject areas	"Business, management and accounting" in Scopus. "Business", "Economics" and" Management" in Web of Science.	Others
Quality criteria	ABS 2018 list	Others

For quality criteria, only the journals listed and ranked in the Chartered Association of Business Schools (ABS, 2018) were included. ABS is recognised as being a guide for quality journals of international standards (Paul & Benito, 2018). All papers that were not published

by the journals listed in ABS were excluded, resulting in 69 papers for WOS and 2,907 papers for Scopus.

In the next step (eligibility), which addresses content validation, we used a set of inclusion and exclusion conditions, as presented in Table 3.3. After the title reading process, the results were reduced to 63 papers in WOS and 99 papers in Scopus. Subsequently, we merged the results and removed the duplicates, which resulted in 79 papers. After reading the abstracts, we excluded 12 papers, following the same criteria. This resulted in 37 papers and, at this stage, the scope and inclusion and exclusion criteria in the full-text reading were also considered.

After the analysis of the final set of papers obtained through the search in the databases, we used citation mining, including forward and backward search (Webster & Watson, 2002) in order to find more relevant studies that could also be appropriate for the quality criteria and that could not be found by keyword search. Only the papers that corresponded to all criteria and contained potential answers to the research questions where selected and included in the final assortment of eligible papers. This search added 9 papers, resulting in a final amount of 46 papers.

Table 3.3 - Inclusions and exclusions criteria in content analysis

Content Analysis	Inclusion	Exclusion
Settings	In-store, physical retail stores (Offline)	E-commerce, M-commerce (Online)
Mobile Device	Smartphone, Tablet or Wearable with IOS, Android, Windows and Blackberry systems that enable Apps and the use of Internet.	In-store technologies promoted by retailers (e.g. scanners, touchscreens)

Finally, all the papers answered the quality criteria and the scope of the topic, contributing to knowledge on the use of mobile devices in-store. For a better understanding of the methodological procedures and steps, the flow chart of the procedure is presented in Figure 3.1.
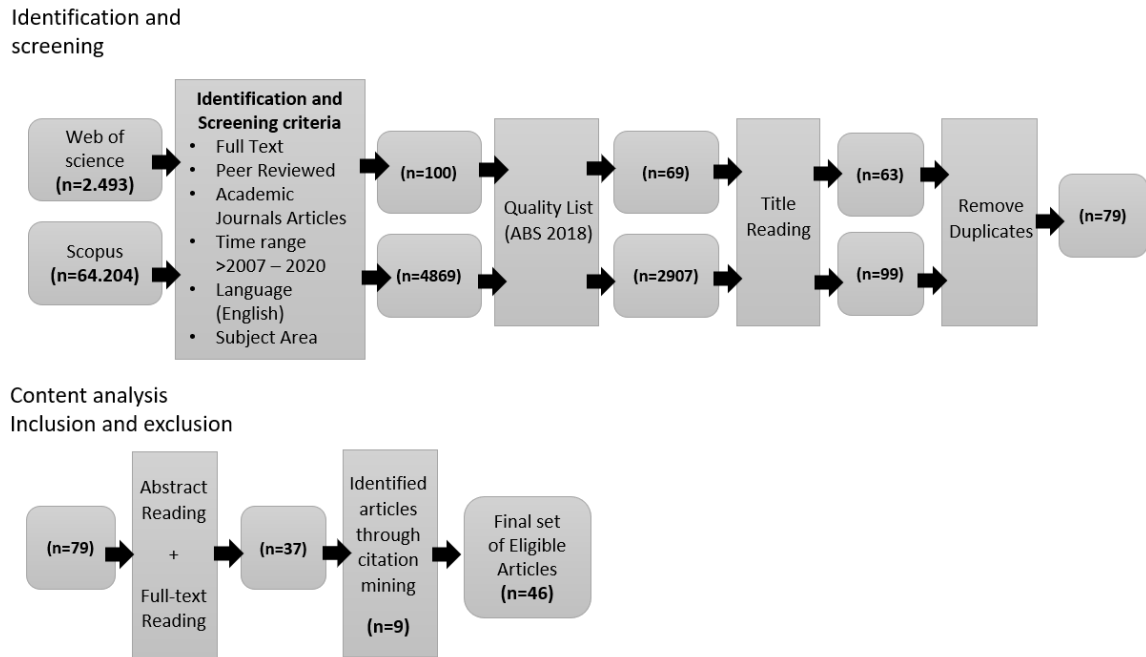
Figure 3.1 - Procedure and search outcome flow chart

Once the final set of papers that met all the quality criteria was defined, their analysis was carried out. Therefore, the main information of the papers was combined in a data extraction form on an Excel spreadsheet.

To conduct the data analysis, Palmatier et al. (2018) advocates a descriptive analysis as a useful way of starting, but also understanding trends and gaps on the topic. Aligned with the recommendation, we analysed how the number of papers is distributed, developing an overview of the topic and a state of the art. Furthermore, we deepened the understanding of the topic and articulated the findings.

3.3. Results

This section shows the results of the systematic literature review, reported through general descriptive statistics that map the research for academics interested in the topic. This review covers the papers published, citations, the period of publication, journal of publication, the origin of the authors, research methodologies, and finally a narrative content analysis including research stream cluster.

In the data extraction form, we summarised the data highlights from the final poll of papers, including the authorship, year of publication, the base theory of the study, settings, methodology approach, types of use of the mobile devices, main findings, and recommendations for future research (see Appendix B).

3.4.   Descriptive analysis

The results of the methodological approach were the identification of 46 papers, from 26 different journals that are presented in the Table 3.4. Firstly, we analysed the distribution by year of publication, then by journal, country of affiliation and finally the most cited papers.

Table 3.4 – The 26 journals where the 46 selected papers were published, by year.

Journals	2010	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Journal of Retailing and Consumer Services				2		1	2	2	1	2	**10**
Computers in Human Behavior					1	1	1			1	**4**
International Journal of Retail and Distribution Management				1	1				1		**3**
International Review of Retail, Distribution and Consumer Research									2		**2**
Journal of Business Research						1			1		**2**
Journal of Marketing			1					1			**2**
Journal of Marketing Research					2						**2**
Journal of the Academy of Marketing Science								1	1		**2**
Psychology and Marketing							2				**2**
Advances in Consumer Research					1						**1**
Business Horizons								1			**1**
Decision Support Systems							1				**1**
Economics & Sociology				1							**1**
European Journal of Marketing					1						**1**
International Journal of Electronic Commerce		1									**1**
International Journal of Logistics Management								1			**1**
International Journal of Operations and Production Management						1					**1**
Journal of Customer Behaviour	1										**1**
Journal of Interactive Marketing	1										**1**
Journal of Internet Commerce									1		**1**
Journal of Marketing Management									1		**1**
Journal of Marketing Theory and Practice				1							**1**
Journal of organizational computing and electronic commerce									1		**1**
Journal of Research in Interactive Marketing						1					**1**
Journal of Services Marketing									1		**1**
Service Business									1		**1**
Total	**2**	**1**	**1**	**5**	**6**	**5**	**6**	**6**	**11**	**3**	**46**

The first paper found in the time-range period (2007-2020) was published in 2010. However, most of the papers on the subject were only published after 2014. As it can be seen in Table 3.4, 2019 has been the most prolific in research addressing this issue, to date. Since the research was conducted in late May 2020, there is a likelihood that still by the end of 2020 there are published papers with information related to the discussed topic. In the journals listed in the ABS (2018), the Journal of Retailing and Consumer Services has the highest number of published papers (n=10), having been consistent since 2014 with one or two published papers per year.

The majority of the authors of the papers published on the topic are from the USA (n=48). However, if we analyse the total number by continent, the European studies reach the total number of 62 authors (Table 3.5), with Sweden, the UK, and Germany representing the highest amount. Consequently, we can observe that these findings are geographically constrained, and there are extremely few papers from developing countries.

Table 3.5 - Author's affiliation countries

Country	Number of Authors
USA	48
Sweden	17
UK	10
Germany	8
Finland	6
Japan	6
Taiwan	5
Australia	4
Belgium	4
France	4
New Zealand	4
Spain	4
Norway	3
Italy	2
Korea	2
China	1
Iceland	1
India	1
Netherlands	1
Peru	1
Poland	1
Qatar	1

We were unable to identify seminal papers on this topic, although as far as we could analyse it, the conceptual paper of Shankar et al. (2010) is the most cited paper and one of the first ones addressing the use of mobile devices in-store. The 5 most cited papers were published before 2016 and frequently cited by research published in 2018 and 2019 (e.g. Fong, Fang, & Luo, 2015; Groß, 2015; Shankar et al., 2010) (Table 3.6).

Table 3.6 - Top 10 most cited papers (out of the 46 selected papers)

Author's and year of publication	Number of citations
Shankar et al. (2010)	261
Fong et al. (2015)	194
Groβ (2015)	84
Danaher et al. (2015)	83
Kerviler et al. (2016)	81
Ström et al. (2014)	69
Pantano & Priporas (2016)	69
Holmes et al. (2014)	67
Gazley et al. (2015)	55

3.4.1. Research methods

The data set contained a predominance of quantitative studies; the application of experiments and surveys was clearly the most used (62%), while among qualitative approaches the methods were very disperse, yet, interviews accounted for 13% of them. In our final set, we could not find any scale development or any attempt to measure the effect of the use of mobile devices on the in-store shopping experience. Table 3.7 shows the studies by methodological approach and the corresponding papers. Figure 3.2 presents the weight of the methods in the final set.

Table 3.7 - Research methodologies

Approach	Design	Research Method	Number of articles	Papers
Theoretical	Qualitative	Conceptual	2	Shankar et al .(2010)
				Faulds et al. (2018)
		Literature Review	4	Banerjee & Longstreet, (2016)
				Groβ (2015)
				Ström et al. (2014)
				Tyrväinen & Karjaluoto (2019)
Empirical	Quantitative	Experiment	15	Bues et al. (2017)
				Danaher et al. (2015)
				Falk et al. (2016)
				Fong et al. (2015)
				Grewal et al. (2018)
				Högberg et al. (2018)
				Högberg et al. (2019)
				Hui et al. (2013)
				Karimi and Liu (2020)
				Li et al. (2017)
				Mills & Zamudio (2018)
				Rippé et al. (2017)
				Sciandra & Inman (2015)
				Sciandra, Inman & Stephen (2019)
				Shieh et al. (2019)
		Survey	14	Fagerstrømet al. (2020)
				Gazley et al. (2015)
				Hoehle et al. (2018)
				Holmes et al. (2014)
				Kang et al. (2015)
				Kerviler et al. (2016)
				Kiba-Janiak (2014)
				Kim et al. (2019)
				Nakano & Kondo (2018)
				Ono et al. (2012)
				Spaid et al. (2019)
		Database	1	Viejo-Fernández et al. (2020)
	Qualitative	Interviews	6	
		Focus groups	4	Aloysius et al. (2016)
				Fuentes & Svingstedt (2017)
				Houliez (2010)
				van de Sanden et al. (2019)
		Ethnography	1	Fuentes et al. (2017)
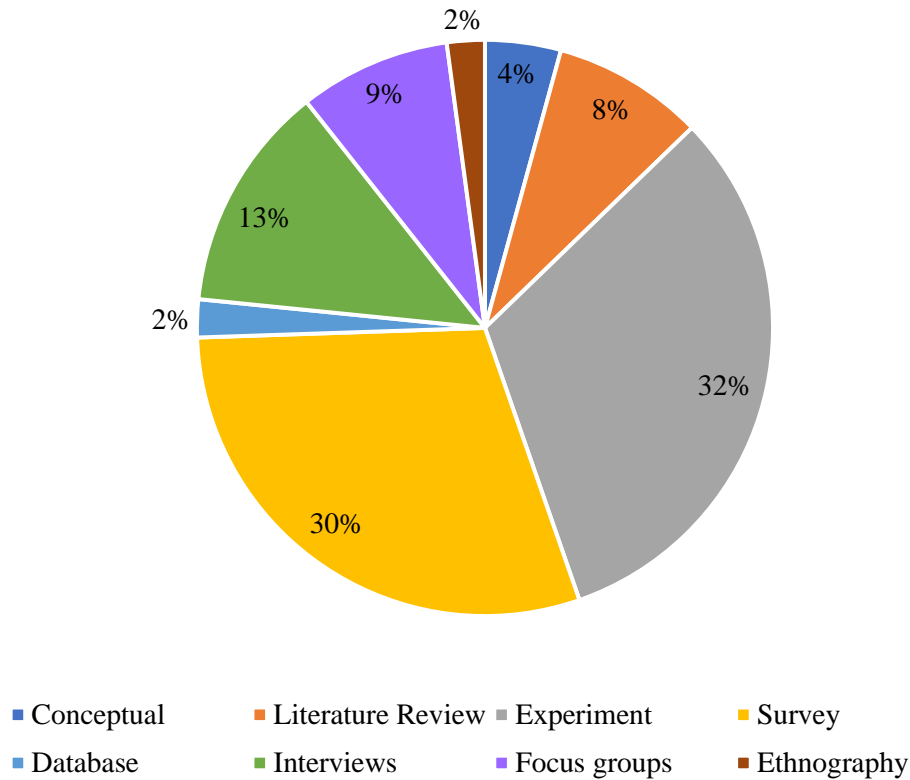
Figure 3.2 - Research methodologies: Distribution in the final set of 46 papers

3.4.2. Content Analysis

While analysing the final collection of 46 papers, following the content analysis, a pattern on the research streams emerged. We clustered three main streams in order to allow for a more structured view and understanding: Acceptance and adoption of mobile technology; Attitudes and reactions regarding mobile marketing; and Attitudes and behaviours towards the use of mobile device (activity focused). Other approaches could not fit any of the clusters for being more scattered (Faulds et al.,2018; Groß, 2015) (Figure 3.3).
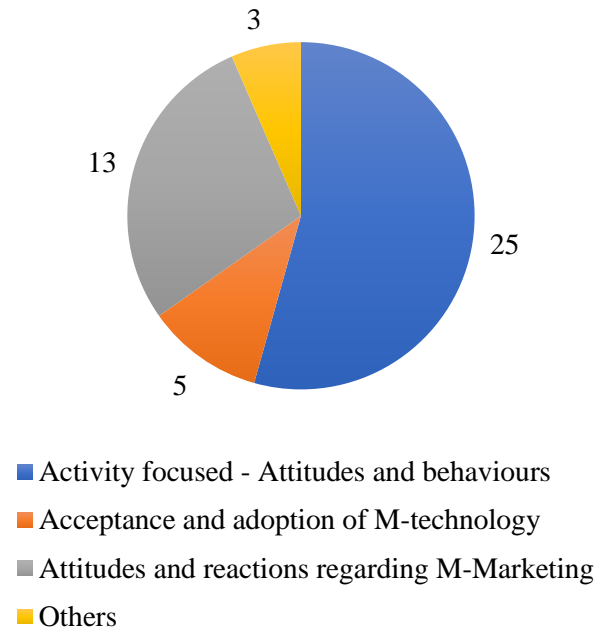
Figure 3.3 - Number of papers distributed by research streams cluster

Since our research was focused on the use of the mobile devices, it was expected that the theoretical approach presented in the final set of papers would be focused on the attitudes and behaviours of customers and their outcomes for retailers. Nevertheless, studies related to the acceptance and adoption of mobile technology or services on retail, as well as topics, such as the attitudes and reactions towards mobile marketing, emerged in the literature review and contributed to the objectives of our research. Therefore, the main findings are presented below and the papers are grouped by stream clusters, as it is shown in Table 3.8.

Table 3.8 - Papers distribution by research stream clusters

Research Domains	Papers
Attitudes and behaviours on the use of mobile device - activity focused	Banerjee & Longstreet (2016); Bellini & Aiolfi (2019); Bhatnagar & Papatla (2019); Ewerhard, Sisovsky & Johansson (2019); Fagerstrøm, Eriksson, & Sigurdsson (2020); Falk et al. (2016); Fuentes, Bäckström & Svingstedt (2017); Fuentes & Svingsted (2017); Grewal et al. (2018); Hoehle et al. (2018); Holmes, Byrne & Rowley (2014); Houliez (2010); Kiba-Janiak, (2014); Kim, Libaque-Saenz & Park (2019); Li et al. (2019); Nakano & Kondo (2018); Pantano & Gandini (2018); Pantano & Priporas (2016); Rippé et al. (2017); Saarijärvi, Mitronen & Yrjölä (2014); Sciandra, Inman, & Stephen (2019); Sciandra & Inman (2015); Spaid & Flint (2014); Spaid, O'Neill & Ow (2019); Viejo-Fernández, Sanzo-Pérez & Vázquez-Casielles (2019)
Attitudes and behaviours towards mobile Marketing	Bues et al. (2017); Danaher et al. (2015); Fong, Fang & Luo (2015); Gazley, Hunt & McLaren (2015); Högberg et al. (2019); Högberg, Shams, & Wästlund (2018); Hui et al. (2013); Kang, Mun & Johnson(2015); Mills & Zamudio (2018); Shankar et al. (2010); Shieh, Xu, & Ling (2019); Ström Vendel & Bredican (2014); van de Sanden, Willems & Brengman (2019)
Acceptance and adoption of mobile technology	Aloysius et al. (2016); Bailey et al. (2019); de Kerviler, Demoulin & Zidda, (2016); Karimi & Liu (2020);Tyrväinen & Karjaluoto (2019)
Others	Faulds et al. (2018); Groß (2015)

Attitudes and behaviours towards the use of mobile device - activity focused

This research stream aggregated all the studies that address changes and implications of customer's attitude and behaviour and the consequent retailers' outcomes when mobile devices are used. The impact on purchase, purchase intention, and sales are the main focus. They address specific types of use, such as mobile payment (Falk et al., 2016); Tasks related or non-related to shopping (Bellini & Aiolfi, 2019; Sciandra, Inman, & Stephen, 2019); and tasks for multipurpose that do not specify the usage (Banerjee & Longstreet, 2016; Fuentes et al., 2017).

Acceptance and adoption of mobile technology

The identified research studies intend to predict the acceptance and adoption of mobile devices services for in-store shopping purposes (e.g., m-payment and self-checkout) (Aloysius et al., 2016; Falk et al., 2016). Tyrväinen & Karjaluoto (2019), analysed the mobile adoption, with focus on the mobile device as a channel, yet incorporating some important insights about the usage in-store.

Attitudes and behaviours towards mobile marketing

Retailers usually use the customer´s proximity to the mobile devices in order to communicate and track the customer in-store, as much as possible. For instance, during the shopping trip, they use the possibility of tracking shopping carts and the advantages of loyalty card programmes. This way, they can provide the customers with an optimal route to the advertised product making them more tolerant to the *detour* in their shopping route and rising the redemption rates (Hui et al., 2013). This research stream studied the use of mobile coupons, mobile phone location-based advertising, and gamified shopping activities (Danaher et al., 2015; Gazley et al., 2015; Högberg et al., 2019; Högberg et al., 2018; Kang et al., 2015).

Other papers, not present in the final set (Blázquez, 2014; Marriott & Williams, 2018; Rodríguez-Torrico, Cabezud, & San-Martín, 2017; Wang, Malthouse & Krishnamurthi, 2015), were found on the screening stage. They address topics such as, mobile shopping and mobile marketing, however, there was no evidence of their use or intention to use in-store.

3.5.   Findings and discussion

After an overview of the main topics covered in each identified research stream, this section addresses the research questions and discusses the main findings.

3.5.1. The use of mobile devices in-store

The analysis begins with the reports of direct effects of the use of mobile devices in-store on the shopping experience. Some reports demonstrate positive (Högberg, Shams, & Wästlund, 2019), others neutral (Aloysius et al., 2016) and some even negative effects (de Kerviler, Demoulin, & Zidda, 2016) on such experience. In case of absence of a record of a direct effect, the analysis is done through the types of usage of mobile devices (Fuentes & Svingstedt, 2017; Pantano & Gandini, 2018), retailer outcome variables (Bellini & Aiolfi, 2019; Grewal et al., 2018), and effect on constructs and dimensions related to the shopping experience (Pantano & Priporas, 2016; Rippé et al., 2017).

The in-store shopping experience is a multidimensional construct that is enhanced when hedonic and/or utilitarian value is added to the experience (Nic S. Terblanche, 2018). The hedonic value and the customer hedonic motivations are most frequently mentioned and strongly related to enjoyable and entertaining experiences, which is usually linked with the affective dimension of the experience (Holbrook & Hirschman, 1982; Jones, Reynolds & Arnold, 2006).

Mobile device usage and retail outcomes

Enabled by the use of mobile devices and retailers' technologies, the in-store shopping experience is turning into an omnichannel experience, and it can be triggered by retailers or the customers (Bèzes, 2019). If it is the latter, retailers lose control and give agency to the customer that has more control over retail variables (Fuentes et al., 2017; Spaid & Flint, 2014).

The studies of Fuentes et al. (2017), Fuentes and Svingstedt (2017) and Spaid and Flint (2014) are focused on the practice of shopping, and the role that mobile devices play in the changing customer shopping behaviour and experience. Their findings point in the same direction and describe the utilitarian and hedonic motivations associated with the use of mobile devices. At the same time, the motivations encompass the positive effects on customers experience such as the empowerment and the perceived control brought by the mobile assistance, as well as the entertainment and enjoyment. More experienced users tend to explore the entertaining features, reshaping the retail environment (e.g., music, games, podcasts, etc.).

However, in addition to the positive effects reported in these studies, the customers also acknowledge negative effects, such as the difficulty of multitasking and overbuying.

The first divergencies are found when Fuentes et al. (2017), Grewal et al. (2018) Sciandra et al. (2019) and Sciandra and Inman (2015), all mentioned the use of mobile devices as source of distraction, yet with different outputs. Sciandra et al., (2019) and Sciandra and Inman (2015) mentioned that during non-shopping activities the use of mobile devices affects negatively display recall and increases unplanned purchases. However, when used for shopping activities, the customer buys less unplanned products. Grewal et al. (2018) suggests that the distraction caused by the use of mobile phone increases purchases, making customers spend more time in a store, deviate from their purchase path and spend more time searching for the shelves. The most significant finding is that the use of mobile devices does not affect the customer's level of satisfaction.

Fuentes et al. (2017), points out that the use of mobile devices can lead to distraction from the shopping goals and that it is a negative aspect. Bellini and Aiolfi (2019) also mentioned that the distraction caused by the use of mobile devices can also have an effect in the way customers are impacted by in-store stimuli, reducing its effect and decreasing the impulse buying. On a positive note, they show the utilitarian aspect of the out-of-store preparation and the assistance that mobile devices provide to the customers, resulting in a more conscious decision-making (Bellini & Aiolfi, 2019). Hui et al. (2013) and Grewal et al. (2018) hold a different opinion about the impact of the in-store stimuli. They state that the customers become more exposed to in-store stimuli, due to an increased distance travelled in-store when using their mobile device.

Specific types of mobile devices usage and their effects

According to the usage type and respective customer motivation, we can find different effects. One of the most researched mobile services (m-services) is the m-payment, which is payment made through a mobile device. Hedonic motivations are commonly associated with adoption of such service (Bailey et al., 2019; de Kerviler et al., 2016; Karimi & Liu, 2020), however, the main challenge is to overcome the perceived risk that this adoption can pose. Other m-services have a neutral effect, such as the mobile checkout, where there is no evidence of utilitarian or hedonic benefits (Aloysius et al., 2016; Hoehle et al., 2018). Customers report convenience as the most important benefit from using their mobile devices (de Kerviler et al., 2016).

Högberg, Shams and Wästlund, (2019) and Högberg et al. (2018) dedicated their research to gamified shopping activities through the use of mobile devices. Their findings show that gamification affects the hedonic value, which is the best predictor of satisfaction, provided that there is enough engagement with the game.

In regard to the service of mobile location-based advertising (LBA), the design of the promotion is critical in order to succeed. The most important factors are location, time, and personalisation, while the price is the least important (Bues et al., 2017; Shieh, Xu, & Ling, 2019). Gazley, Hunt, & McLaren (2015) state that location is associated to intrusiveness and thus, diminishes the effect of attitude on customisation. Affective involvement is more related to the intention to download the retailer app for LBA than cognitive involvement (Kang, Mun & Johnson, 2015). In the particular case of beacons for LBA, the hedonic component in the experience is fundamental to achieve success (van de Sanden et al., 2019).

Research studies that involve mobile coupons are mostly focused on the redemption rates and the most important features that promote the redemptions; such as time, location, type of product, and face value (Danaher et al., 2015; Fong et al., 2015; Hui et al., 2013; Mills & Zamudio, 2018). Meanwhile, no effects on shopping experience were reported.

The relationship and the role of the salesperson in the retail environment has also changed since customers began to rely more on the information from their mobile devices. The perceived control is driven by the access of all kinds of information required for the decision-making process, which reduces the need to interact with salespeople. Even while interacting with salespeople, customers use the mobile device as a support (Pantano & Gandini, 2017; Rippé et al., 2017; Spaid & Flint, 2014).

Lemon and Verhoef (2016) state that the role of mobile devices in the information search in-store is fundamental, and studies point out that the research and review are the most preferable stage (Ewerhard et al., 2019; Holmes et al., 2014; Rippé et al., 2017). The so-called webroomers (the ones who search online and purchase offline) search for information when they have high convenience, shopping enjoyment, and impulse buying orientations. They more frequently search for utilitarian goods rather than hedonic ones (E. Kim et al., 2019). The trust and satisfaction with the information found in the process can be transferred to the retailer (Spaid et al., 2019). The opposite customer's behaviour (search offline and buy online) often concerns physical retailers, since they are wary of the effects. Findings of Viejo-Fernández,

Sanzo-Pérez and Vázquez-Casielles (2020) show that customers (showroomers) who use their smartphones in-store are more likely to purchase products with a higher price.

Hedonic and Utilitarian related aspects

As mentioned previously, in addition to searching for information, many customers use their mobile devices for other non-shopping tasks, such as social media management, listening to music, playing games, managing personal finances, working or simply communicating with others. Women seem to use mobile devices more frequently to perform such activities, since they value more social relationships and multitasking (Bhatnagar & Papatla, 2019; Kiba-Janiak, 2014; Pantano & Gandini, 2017). Nakano and Kondo (2018), refer to the importance of social media and mobile devices as relevant elements to increase sales in physical retail stores.

Generally speaking, m-services developed by retailers contain a strong utilitarian component that enables customers to perform efficiently the shopping tasks associated with the customer's decision process, rather than enhance the shopping experience trough hedonic added value. They lead the customers to the sense of accomplishment, related to the reinforcement of purchase intention and repatronage intention. Moreover, the convenience, from a cognitive perspective, positively affects the experience (Pantano & Priporas, 2016; Spaid & Flint, 2014; Tyrväinen & Karjaluoto, 2019).

In the retail context, the previous experience with the online channel and stage of mobile adoption determine what is most important for the customer, in terms of their preference on utilitarian or hedonic benefits (Tyrväinen & Karjaluoto, 2019).

In-store mobile device usage effects

The effects of the use of mobile devices in-store can be analysed in a framework in which different types of use have different effects on customers, and consequently on the shopping experience (Figure 3.4). According to Babin et al. (1994), expected benefits can be divided into: task-oriented users seeking to be more efficient in their shopping experience (utilitarian benefits) and those seeking for more entertaining shopping experiences (hedonic benefits).

Shopping related mobile device usage

- Showrooming
- Webrooming
- Mobile coupons
- Shopping recommendation system
- Shopping Lists
- Mobile Location-based advertising
- Information search
- Review alternatives
- Purchase
- - - - - - - - - - - - - - - - - -
- Mobile checkout
- M-payment
- Gamified activities
- Contact friends/family

Non-shopping related mobile device usage

- Social management
- Gaming
- Music
- Read
- Manage personal finance
- Contact friends/family

Key effects of the use of mobile devices on customers

- Convenience
- Support
- Control
- Empowerment
- - - - - - - - - - - - - - - -
- Entertainment
- Enjoyment

Key effects of the use of mobile devices on shopping experience

- Utilitarian value
- - - - - - - - - - - -
- Hedonic value

Figure 3.4 - Conceptual framework for in-store mobile device usage effects

Summarising, customers use their mobile devices in-store for shopping tasks (e.g. look for competitors' prices, shopping lists, coupons redemption, etc.) and for non-shopping tasks (e.g. social media, entertainment, job tasks, etc.), generating different outcomes for retailers (Bellini and Aiolfi, 2019; Sciandra et al., 2019; Sciandra & Inman, 2015); specific types of usage (e.g. Gamified activities, m-payment, etc.) can affect customers in different ways (e.g. entertainment, convenience, control, etc.). In order to affect the in-store customer shopping experience in a positive way, retailers must add hedonic components to the use and interaction with the customer's mobile devices.

The use should be promoted and encouraged, since reports of negative effects highly exceed the positive ones. Noticeably, most of the mobile device usage that adds hedonic value is mainly driven by customers' initiative and not controlled by retailers. These findings cast an overview on the topic that can aid practitioners designing better touchpoints for the shopping experience, as well as academics in providing an understanding of the state-of-the-art, but also framing the main effects of the mobile device's usage in-store.

3.5.2. Future research agenda

Based on the findings of this systematic literature review (Appendix B), and using the TCM framework, the following research agenda presents the knowledge gaps and accordingly, suggests new directions regarding: theory development, context, and methodologies.

Theory: research directions

The study of this emerging topic could benefit from new approaches and different perspectives. Most of the findings that contribute to this review derive from the main topic of mobile shopping and omnichannel retail, and the literature related to it and in specific settings continue to be little-known. We encourage new research to design a theoretical framework concerning the impact of mobile devices on in-store shopping experience.

Further research can explore the role of mobile device in-store within concepts such as mobile payment, webrooming, showrooming, gamification, retailers technologies, mobile location-based advertisement, and other interactive mobile services where customers can co-create value for the shopping experience (Jiang et al., 2019; Li et al., 2019; Spaid & Flint, 2014; Ström et al., 2014; van de Sanden et al., 2019; Viejo-Fernández et al., 2020).

Acceptance and adoption of m-technology is still a subject under study, as technology and mobile services evolve. The interaction with retailers' technologies (artificial intelligence, virtual reality, and augmented reality) are developing technologies and it is fundamental to understand the determinants of interaction. Despite the extensive literature on the theory of Technology acceptance model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT), the introduction of other dimensions, such as the social and/or psychological risk, can be addressed in the perspective of TAM and the UTAUT (Spaid & Flint, 2014).

Grewal et al. (2018) and Sciandra et al. (2019), also underline the need to understand the differences between the effects of shopping-related tasks and non-related tasks while using mobile devices. This affects customer satisfaction, purchase intentions and also loyalty, which may differ depending on the type of use.

The social media, the electronic word-of-mouth and influencers are some examples of what can be shaping the customer's experience through the use of mobile devices. How can feedback

and comments through mobile devices shape the experience? And what is the impact of social media and online influencers on physical retailers? These questions can be found in the review and may be well addressed in future research.

Finally, the retailers' perspective should also be considered, since they implement the strategies and possess knowledge about the outcomes.

Contexts: research directions

Since the focus of this literature review is in-store, it is only natural that the retail environment was the main set for the studies whose majority was conducted in groceries stores (Bellini & Aiolfi, 2019; Grewal et al., 2018; Sciandra et al., 2019), but also in sports stores (Högberg et al., 2019), shopping malls, movie theatres (Fong, Fang, & Luo, 2015) and food retailers (Saarijärvi et al., 2014). Consequently, it reveals a lack of research in service settings, whose analysis could also be beneficial for physical stores, as pointed out in many studies (Bellini & Aiolfi, 2019; Grewal et al., 2018; Hui et al., 2013; Mills & Zamudio, 2018; Viejo-Fernández, Sanzo-Pérez, & Vázquez-Casielles, 2020).

Regarding diversity of settings, it is evidently necessary to study the attitude and behaviour towards various categories of products. Customers have individual preferences in using mobile devices to support their decision and purchase products belonging to different categories (A. Dorie & Loranger, 2020). This phenomenon can be explained by the level of involvement with the product. Customers are willing to spend more time searching for information, because they need assurance about their decision. They tend to try to minimise the lack of information and use complementary sources of information, such as their mobile devices (Rippé et al., 2017; Yurova et al., 2017). Therefore, it is important to conduct research within the context of different product categories (Bues et al., 2017; de Kerviler et al., 2016; Fagerstrøm et al., 2020; Gazley et al., 2015; Högberg et al., 2018; Holmes et al., 2014; Nakano & Kondo, 2018; Ono et al., 2012; Viejo-Fernández et al., 2020).

In addition to the in-store environment, the customers' perspective of the use of mobile devices must be considered. It embraces the omnichannel, either due to everyday life necessity or to the technological advances that promote their use. Thus, the next step in research must approach the identifications of touchpoints in-store and the context variables related to customers, such as time pressure, individual needs, experience, etc. (Bues et al., 2017; Hoehle et al., 2018; Viejo-Fernández et al., 2020; Ewerhard et al., 2019).

Finally, in this review, as described before, the majority of the studies derived from the European Union and North America. Focusing on the reality of the Western countries, it becomes challenging to obtain a full understanding and replicability of the study's results. Future research in other countries, cultures and/or other socio-economic circumstances must be addressed in order to develop country-specific strategies (Bailey et al., 2019; Banerjee & Longstreet, 2016; Bues et al., 2017; Fagerstrøm et al., 2020; Fuentes & Svingstedt, 2017; Holmes et al., 2014; Kiba-Janiak, 2014; Nakano & Kondo, 2018; Pantano & Gandini, 2017; Rippé et al., 2017; Shankar et al., 2010; Viejo-Fernández et al., 2020).

Methodology: research directions

According to the previous analysis, the majority of papers adopt a quantitative methodology design (Table 3.7), with numerous experiments (n=15) and surveys (n=14). Since this subject is relatively recent, it may beneficiate from exploratory qualitative studies, as they can contribute to and build on new conceptual models (Patton, 2004). Furthermore, the analysis over a long period of time can develop knowledge on the topic (Falk et al., 2016; Högberg et al., 2019), since it is directly correlated to a technological object and its use. Moreover, as the topic evolves and different effects might emerge through time, a longitudinal research can be useful.

Based on the review, issues with sample and data size were pointed out, such as the country of origin or samples restricted to young adults. Thus, the sample and data for future research should be heterogeneous in age, gender, and socioeconomic status, but sample sizes should be larger, improving future studies (Bailey et al., 2019; Fagerstrøm et al., 2020; Fuentes & Svingstedt, 2017; Ono et al., 2012; Pantano, Priporas, & Dennis, 2018).

The age of the participants can affect the outcomes of the research as it is seen in the Grewal et al. (2018) experiment, where the elderly were more affected by the distraction caused by the mobile devices. For future research, not only the age spectrum must be wider, but also analyses of the cohorts effect on the attitudes and behaviours should be conducted (Bailey et al., 2019).

In addition to the importance of creating a theoretical model that can explain the impact of mobile devices on the shopping experience, it is also essential to design instruments that can measure it. According to the research results, no such attempt has been made do date and appropriate scales could help to expand this field. Future research on attitudes and behaviours,

focused on consumer activities, requires measurement of their effects on the shopping experience. The studies by Fuentes et al., (2017) and Spaid and Flint (2014) address the effects using a qualitative approach, but they lack measurement.

Broad data analysis significantly allows for a deeper understanding of customer attitudes and behaviour, and aids retailers while creating strategies aligned with customers' preferences. However, in order to enable that, retailers and practitioners must share data with the academic community so that the information can be analysed under the same analytical constructs and in turn can improve the existing theory (Aloysius et al.,2016). Other methods, such as simulations and experiment designs should also be considered (Fagerstrøm et al., 2020; van de Sanden et al., 2019).

One of the main goals of this study was to identify research gaps and provide future research directions. The following research questions (RQ) emerged from the literature review:

RQ1: What is the impact of the use of mobile devices on each specific dimension of the in-store shopping experience?

RQ2: How can the impact of the use of mobile devices on the in-store shopping experience be measured?

RQ3: Which are the determinants for interaction with retailers' technologies (e.g., artificial intelligence, virtual reality, and augmented reality) when using the customer's mobile device?

RQ4: Which activities, shopping-related and non-shopping related, can affect the customer's shopping experience?

RQ5: What is the impact of social media and online influencers on physical retailers?

3.6. Study conclusions and insights

This study covered the most relevant scientific production on the use of mobile devices in-store since the popularisation of smartphones. By developing a search method based on several quality criteria, we summarised the most valuable findings that contribute to a better understanding of the herein discussed topic. This hybrid review allowed to carry out a historical survey of the development of the knowledge on the topic, but also its trends. It proved to be an

emerging and specific theme, where much remains to be done. This research frames the existing knowledge and offers new research directions, while it also provides retailers with the information necessary to enhance the shopping experience for their customers that use mobile devices in-store.

As this matter is part of our daily routine, we may not give due importance and properly explore the potential. Mobile devices can be used for enhancing the customer experience and can lead to satisfaction and retailer's benefit. However, it is necessary for the retailers to know more about the best practices to create this experience and increase the return of their investment.

In summary, we identified the following conclusions on the effects of mobile devices usage in-store, discussed in the previous section:

- The use of mobile devices in-store is mainly the consequence of utilitarian motivations, such as convenience, the need to be more efficient, and in control of the shopping process. Despite retailers' exploration of these motivations and development of m-services that meet utilitarian customers' needs, it was verified that the hedonic value is what can enhance the shopping experience and bring satisfaction to customers;

- Promoting the use of mobile devices in-store can in fact increase purchase intention and effective sales, whether due to distraction caused by the device leading to more impulse purchases or the greater distance travelled within the store, exposing customers to more stimuli. Yet, there is still a lack of empirical studies on this area. Additionally, other important retailers' outcomes need to be addressed, and also the antecedents and outcomes of the shopping experience from the customer perspective.

As far as the authors are aware, is the first to attempt a systematic literature review on this focal phenomenon. Due to being a specific and emerging subject, one of the limitations of our study is a small number of papers. The time interval was also short due to the type of devices chosen. Despite the number of studies on smartphones, tablets, and wearables being scarce, it is important to better understand the use of these devices that are part of our daily routine and are indispensable in our lives. As the analysis of the number of published studies indicates, the number of publications tends to increase. The information proved to be scattered and possibly there are more studies in different areas that could add to knowledge to the topic. Finally, this

study is a starting point for those who are interested in the topic, whether they are academics or practitioners. The proposed research agenda can be useful to guide new research studies and expand knowledge on the subject.

After a concise literature review, we conclude that the topics covered have been studied for a long time, but due to their relationship with technological evolution and rapid customer's adoption, it is challenging to be up to date. The multidimensional aspect of the shopping experience makes it difficult to understand it fully and measure, and the lack of studies on the retailer's perspective makes the knowledge more focused on the customer perspective.

Chapter 4 – Preliminary study 2 - The retailer's perspective on the use of mobile devices in-store: an exploratory qualitative research

In this chapter, we present a preliminary qualitative study that allows us to approach the topic from the perspective of retailers and make contributions to the development of the theoretical model.

The systematic literature review showed the main conclusions on the effects of the use of mobile devices in-store, but also disclosed the lack of studies, from the retailer's perspective on the phenomenon. In order to suppress the absence of information and improve the knowledge from the retailer's perspective, the exploratory qualitative study was conducted with representatives of the retail segment under study.

4.1.   Research background

At this particular moment, when the physical retail store, through the introduction of new technologies, faces changing conditions and consequently new customer behaviour, it is essential to assess how retailers use aspects of the store environment to enhance the shopping experience, especially the experience of their customers that use mobile devices in-store (Savastano et al., 2019b). Retailers are encouraged to redefine the role of physical stores and the in-store shopping experience, promoting the use of technology to integrate channels and engage customers (Blázquez, 2014).

With the mobile and social media revolution the retail environment is evolving and integrating these touchpoints into hybrid online-offline retail environments (Verhoef et al., 2015). Besides mobile devices, new in-store technologies are also available: interactive touch screens, virtual mirrors/dressing rooms, augmented reality, auto-scanners, digital signage, smart kiosks, and dynamic menus. In addition, it is possible to create virtual stores that can be located anywhere and which allow customers to shop through their mobile devices (Savastano et al., 2019).

Despite the changes in the retail environment, little research was found on this particular topic considering the retailers' perspective (Bäckström & Johansson, 2017). This is why this

exploratory study is conducted, leading to a better understanding and more precise picture of the electronic retailers regarding their perspective on the use of mobile devices in-store but also their strategies to enhance the shopping experience. This study aims to obtain more insights into the retailer's perspective and in order to guide it, we developed the following two research questions:

*S2*RQ1 - What are the retailers' perceptions and knowledge about the customers' consumer behaviour using mobile devices in-store?

*S2*RQ2 - What strategies do retailers' have in order to manage their store environment to provide a better shopping experience in-store?

The exploratory qualitative study involved in-deep interviews with marketing managers and store managers from Fnac, Media Markt, Rádio Popular, and Worten, which are the leading electronic stores in Portugal.

The results are expected to allow us identify and characterise retailers' perceptions, indicating a path for future studies while by generating new ideas for constructs and hypotheses, in order to gain inputs to the quantitative study design.

The study is organised as follows: the subsequent section describes the method used for data collection and how the analysis was conducted. Afterwards, we show the results, as well as a discussion of the main findings and present the conclusions.

4.2. Methodology of the qualitative research

In order to analyse the use of mobile devices from the in-store retailer's perspective, this exploratory research uses an inductive perspective (usually associated with theory generation), and therefore the data analysis does not use a previous theoretical model (Gephart, 2004; Harrison & Reilly, 2011). According to Tadajewski (2006), this approach is suited for the development of marketing theory, and in fact the inductive perspective can aid in the identification and understanding of customers' use of mobile devices from the retailer's perspective. Simultaneously, it can also help us shape the theoretical framework to be tested in

the quantitative study. This approach is consistent with Miles and Huberman (1994) approach, in how the exploratory interviews must precede quantitative instruments.

To collect the primary data, in-deep interviews were used, the following sections describe the entire process.

4.2.1. The in-deep interviews

In order to conduct the in-deep interviews, we chose the semi-structured, which allows adaptation of the conversation to extract the most relevant information (Malhotra, 2010).

The interview was divided into four parts, with questions that allowed to approach the issue thoroughly. In the first section, for the development of the research work, the researcher introduced the subject, highlighting the relevance of the interview's contribution being part of the exploratory study. The second section deals with the interviewee's perspective on the changes in customers behaviour in-store, the challenges faced by retailers, and how they provide a better shopping experience in-store. In the third section, the focus is on the use of mobile devices in-store. The interviewees reflected on customer behaviour while using mobile devices, the changes that occurred, what remained the same, but also the challenges and opportunities of this phenomenon. The last section concerns the present and future strategies to seize the opportunities and cope with the challenges. The researcher could take the liberty of changing the order of the questions and encourage respondents to elaborate their responses.

In summary, we asked if electronic retailers are aware of this new phenomenon, and if they possess the right strategies to approach the new customer behaviour in their stores, while also inquiring about their opinion on the impact of these strategies on customer experience and retailer performance.

The interview script was revised by a professor and a researcher from ISCTE-IUL to assess if the questions were appropriate and easy to understand (see the script in Appendix C).

4.2.2. Sample

For this study, it was essential to choose participants who had experience in the retail area and knowledge about their companies' strategies and policies. Therefore, the sampling process followed a "convenience" sample process (Malhotra, 2010).

We contacted the leading electronic stores in Portugal - Fnac, Media Markt, Rádio Popular, and Worten, and conducted 11 interviews in total.

The interviewees were chosen due to their experience in the retail area and willingness to share their experience and knowledge. The participation of store managers was fundamental, due to their proximity to the customers and responsibility for strategies implementation in the store environment and management of its variables.

The requests to participate in the study were made through LinkedIn, e-mail and visits to the stores. All the requests included an interview request letter attached (Appendix D). To be at ease while sharing the information and fulfil a request of some of the interviewees' anonymity was kept. Table 4.1 shows the interview number and the job title of the interviewee.

Table 4.1 - Interviewees and job title

#Interviewee	Job title
1	E-commerce director
2	Store manager
3	Category manager
4	Store manager
5	Store manager
6	Marketing manager
7	Store manager
8	Store manager
9	Store manager
10	Marketing manager
11	Store manager

4.2.3. Data collection

All the interviews were conducted in person, inside the store or at the company's offices. The interviews proceeded as semi-structured conversations; the interviewees were free to discuss what they believed was the appropriate matter without having to follow the script. The average time of the interviews was between 60 to 90 minutes and they were carried out during the summer of 2019. 8 of 11 were audio-recorded with permission and transcribed verbatim for analysis. Besides using a recording device (smartphone), the researcher's observations and notes were taken in a memo log. The interviews and recordings were all done in Portuguese.

The data saturation point was reached in the 11th interview, where data collected were no longer enriching the previously collected information. Therefore, the search for participants and interview scheduling ceased.

4.2.4. Data analysis

We used content analysis to identify patterns, themes, and concepts that emerged from the data analysis conversations. This technique is appropriate for small and convenience samples (Bardin, 2003; Guerra, 2006). Additionally, the content analysis applies to a wide range of phenomena and has the analytical flexibility needed (Duriau et al., 2007).

The data coding followed the recommended procedures for the inductive approach described by Thomas (2006), generating themes or categories most relevant to the research and describing the most important themes.

After the transcription of the interviews, the researcher coded the text manually. The choice of specific content analysis software was excluded, since the relatively small number of interviews did not justify it. Using an Excel spreadsheet, the codes were transformed into keywords and divided into themes. Along the process, several codes were omitted in order to create a better understanding of the phenomenon. The illustrative quotes from participants were translated from Portuguese into English.

4.3. Content analysis results

In this section, the significant aspects driven by the interviews are introduced. To present and organise the information collected, we used the narrative to link each theme and create meaning (Pratt, 2009). In order to allow better visualisation of the summarised results of the content analysis, the following table was created (Table 4.2):

Table 4.2 - Main findings of the content analysis

Themes	Keywords	Main outputs from the retailer's perspective	Interview quotes examples
Customer behaviour	Price Search; Stock Search; Opinion Search; Social media; Control demanding	• Customers use the smartphone to compare prices and search for the best deal, look for stock availability and ask for advice; • Customers take pictures and manage social media; • Customers want an efficient shopping process; • To retailers, customer service and interaction with the employees are the most important dimension in the experience; • Customers are more in control of their decisions and less susceptible to external stimuli.	"(…) mainly they check prices and stock information, but also ask for opinions from family and friends" *Interviewee 7*; "(…) they want to know if there is stock available" *Interviewee 1*; "Customers are now more demanding with everything. They want the best products, immediately available, without queues and the best customer service. We need to know more and be experts about what we sell (…)" *Interviewee 2*; "(…) customers knowledge is becoming bigger, every day, through the use of smartphones" *Interviewee 2*; "They can do their shopping without assistance (…)" *Interviewee 5*; "Sometimes the marketing signs are overwhelming and make a lot of noise, it is easier sometimes to know what they want using the smartphone" *Interviewee 2*; "People want the best deal and search on the internet, then they go to the store, see the products and buy online or in another store. Many times, they came to us asking to make the same price or lower" *Interviewee 9*.

Themes	Keywords	Main outputs from the retailer's perspective	Interview quotes examples
Challenges	Showrooming; GDPR law[1]; Checkout queues; Customer service: Innovation.	- Customers are more difficult to approach; - Customers are suspicious of the salesperson's opinion and trust the smartphone; - It is challenging to develop and/or implement and maintain strategies regarding new technologies. The cost and the risk are very high, and it is not easy to measure the return of the investment; - Customers use stores to see the products but buy online; - Retailers fear breaking the GDPR law with the use of mobile devices in-store and the protection of their customers; - Retailers fear competition spying and try to contain the use of smartphones in-store. - The retailers follow trends and let the customer set the trends, keeping up with them as fast as possible and before the competition.	"Customers consult less and less the salespeople; their opinion and help are becoming less relevant" *Interviewee 5*; "[customers] don't want to wait in queues, (…) but it is really difficult to manage" *Interviewee 4*; "They want to have an employee immediately for customer service" *Interviewee 3*; "Officially you can't take pictures and film inside the store" *Interviewee 6*; "We do have a strategy, but the customer is faster than us with new technologies." *Interviewee 4*; "(...)We run after the customer. Sometimes we offer new things but they can't see the usefulness of the service and it's pointless" *Interviewee 2*; "The market is small and our customers can change habits very fast and want more and more efficiency in the service" *Interviewee 6*.

[1] General Data Protection Regulation - Regulation (EU) 2016/679 (Jornal Oficial L 119/2016', n.d.)

Themes	Keywords	Main outputs from the retailer's perspective	Interview quotes examples
Opportunities	Store environment; Specialised staff; Purchase assistance.	• Customers complaining that using the information on their smartphones is easier to help and faster to solve the problems; • Constant commitment to improve the store environment; • Staff training in order to provide better customer service; • The salespeople have access to technology to help and be more efficient in customer service.	"(…) it is much easier to help when they have the information of what they want or know what the problem is if they have a smartphone (…)" *Interviewee 2* "(…) We are always looking for improvements in the store environment and regularly we make renovations" *Interviewee 1* "We now have more specialised staff (…)" *Interviewee 11*;
Retailers strategies	APP; Loyalty program; M-payment; Barcode scan; Particular queue.	• Enable mobile payment; • Use mobile devices to manage queues and have special queues just for mobile payments; • Use mobile devices for access loyalty programmes; • Use mobile devices for barcode scanning and access extra product information;	"(…) the goal is to achieve loyalty, that's why we have the APP (…) send them to the online store. It doesn't matter where they shop, but it is important they come back"; "They can use the APP to scan the bar code and access the information" *Interviewee 1*;

4.4.   Study main findings, discussion and conclusions

Following the emergent themes of the content analysis, the main outputs from the retailer's perspective about the use of mobile devices in-store and how they manage their store environments to provide a better shopping experience can be summarised in these main categories:

- Customer behaviour – description of the changes in customer behaviour and on the customer decision-making process with the use of mobile devices;
- Challenges – situations and behaviours that are a challenge to overcome and turn into retailer's favour;
- Opportunities – situations and positive aspects planned by retailers that can improve the customer experience;
- Retailer's strategy - present and future services where customers can interact using mobile devices.

The most interesting aspect, shared throughout all the interviews, was the interviewee's acknowledgement that they had never thought rationally or systematised about the phenomenon they were discussing. In other words, customers using their smartphone in-store seem to do it naturally, and managers never considered that this behaviour could be seen as a threat or an opportunity for the shopping experience.

We encountered some differences between the answers from the store managers and the other interviewees whose jobs involve a more strategic developing task. Store managers had a different approach to the phenomenon due to the operational component of their jobs and the main differences were related to the most crucial aspect of the shopping experience in the retail environment. Store managers said that customer service was the most relevant element; in turn, other interviewees stated the quality/price relationship or the physical store environment as the key element. Despite the different approaches and vocabulary, we could track the answer patterns and reach the saturation point at the 11th interview. Also, the interviewees used the word "smartphone" since it is the most frequently used mobile device. For the purpose of this study, we chose to place the term "mobile device" in the results or use both, e.g., when quoting or referring to specific aspects.

According to retailers, customers mainly use their mobile devices to search for information or social media management. The search for a better price was pointed out as a menace to lose the customer to the online channel or to the retailer next door. The showroom behaviour is seen as an expected behaviour, and all the interviewees mentioned the strategy to meet the competition price. Furthermore, if customers request it, the retailers drop the price to the competitor's price point, since these are the company policies. However, as the price margins are small, the retailers always fear this behaviour from customers.

Furthermore, apart from searching for a better price, customers seek product information and compare its performance and other characteristics. They ask for opinions among experts, relatives, or friends. During this process, they make calls, send text messages, and/or pictures of the products. Sometimes customers already know what they want and just look for product availability; the web room effect does not seem to concern retailers.

With all the information customers have within their reach, the control over the shopping variables shifts and the importance of salespeople is progressively diminishing, to the point where they are mistrusted and avoided. On the one hand, interviewees say that they do not have enough staff in-store, and customers become dissatisfied if they are not immediately attended. However, on the other hand, customers need less and less salespeople to assist them in the shopping process. This perception may come from the problem with payment queues and the dissatisfaction they bring to customers. To solve this issue, some solutions were already implemented based on the utilities of mobile devices, such as the special queues for mobile checkout and mobile payment.

Mobile devices are also marked as useful in managing customers' complaints; it is easier to solve problems when the customers bring all the information needed in the smartphone. The interaction with salespeople and requesting assistance by using the smartphone is becoming more frequent, even among elderly people who are less familiar with the use of mobile devices.

Interviewees gave examples of elderly people searching for presents for their relatives with the product information on their smartphones so that the salesperson could help them.

Social media management in-store is something that retailers accept, but the use of camera in-store is officially prohibited for two main reasons: (1) the spying from the competition; (2) the European GDPR law, which protects the customer personal data and image. This contradiction is unclear for retailers and customers; such behaviours are often discouraged in-

store, but retailers acknowledge the importance of customers' comfort and the fact that it is positive for brand engagement.

The development and implementation of strategies that enable mobile devices are not marked as a priority, and many failures were mentioned. For example, the Pokémon Go phenomenon brought people to the stores to experience AR game in-store, but customers that went to stores at that time do not increase their purchases. From the interviewees' point of view, the most important are the sales and the experience aspect was overlooked. Furthermore, the investment in technology is seen as something hard to measure the return of investment. The interviewees acknowledge that technology investment seems to be too risky, that sales and margin sales are the most important and it is where they pay most attention.

Due to the market's small dimension and the pressures caused by the prices, the strategies follow the customer trends and they are not subject to innovation. Waiting to see what the competition does and only then acting to follow the trends is a common practice. This occurs in many aspects, such as the changes in the checkouts, marketing campaigns, merchandise variety, etc. Interviewees mentioned that they do not have the power to set trends and are afraid of being quickly copied by the competition, mainly by international companies with more economic power. Therefore, they continue to believe that customer service is a competitive advantage. Interviewee 5 pointed out that companies cannot have tech experts while offering a low income, and consequently they bet on service and attention. The physical environment was also mentioned as something that brings people to the store to experience novelty and make customers spend more time in-store.

We encounter the notion of multidimensionality of the shopping experience through retailers descriptions and the need to manage their variables to provide a better customer experience (Verhoef et al., 2009). Nevertheless, only two were frequently mentioned: physical environment and social experience (mainly with employees). Therefore, retailers work strategically on these dimensions to enhance customers' in-store experiences. Our results are aligned with Bäckström & Johansson (2017) findings that show that the retailers usually emphasise the importance of prioritising more traditional values ahead of cutting-edge technology.

In summary, this exploratory qualitative study allowed us to access essential information in order to proceed with the research. The main contributions are the following:

- Electronic retailers describe customers behaviour in similar ways to what we found in the literature (Fuentes & Svingstedt, 2017). The perspective on the effects is the main difference. Customers perceive mobile devices in-store more positively because they allow for a more efficient shopping experience. The interviewed retailers focused on the disadvantages of the mobile devices use, even when they show opportunities to enhance the experience and facilitate customer service;

- Retailers see the use of mobile devices in-store as a natural behaviour but never rationally questioned - with a strategic view to improve their experience or increase some competitive advantage. Most of them point the financial risk as the main reason for not investing in technological innovation and M-Marketing.

Our study's findings adjusted the conceptual framework with their valuable inputs about the communications problems between salespeople and customers and the importance of the customer's perceived control in the shopping experience.

Chapter 5 – Theoretical model and research hypotheses

This chapter presents the research hypotheses and the relationship between constructs developed from the theory and the previous preliminary studies results (Chapter 3 - systematic literature review and Chapter 4 - exploratory qualitative study).

Following the purpose of this research – development of an integrated model that analyses the influence of mobile devices usage on the in-store shopping experience, and consequently in customer behaviour – in this chapter, we proceed the proposed theoretical model.

5.1. Contributions of the preliminary studies to the proposed theoretical model

As mentioned previously, there is no consensus on measuring the in-store shopping experience, and much less on the impact of mobile devices usage. Therefore, the first attempt is based on models that have already been tested and grounded on previous studies with an adaptation to the phenomenon described in this study.

The systematic literature review (preliminary study 1) provided an overview of what is currently known about the effect of the use of mobile devices in-store on the shopping experience. It contributed to a better understanding of this focal phenomenon by analysing the different types of use and the value added to the shopping experience. It was verified that the hedonic value could enhance the shopping experience and lead to customers satisfaction. We also found that the study of the antecedents and consequences of the shopping experience from the customer's perspective is still underdeveloped.

From the retailers' perspective (preliminary study 2), customers use mobile devices in-store because they allow a more efficient shopping experience, emphasising the control that mobile devices give to customers on the management of retail variables.

5.2. Research hypotheses

According to Terblanche (2018), the customer's experience phase considered in this research refers to the in-store interaction phase in the in-store environment. Also, it is important to understand that the use of mobile devices can be related or non-related to shopping tasks. Sciandra, Inman, and Stephen (2019) refer that almost half of mobile device usage is non-related to shopping tasks. Therefore, the current study encompasses both types and does not discriminate use in the in-store environment. It is intended to present the primary constructs of the in-store shopping experience and how customers' perception is affected by the use of mobile devices.

The proposed model structure and its relations are based on previous theories that focus on studying the environmental parameters and their effect when some environmental stimulus was offered to elicit emotions and produce behavioural intentions. The stimulus-organism-response (SOR) framework by Mehrabian and Russell (1974) has been extensively used to study the relationship between the retailing environment and customer shopping behaviour (Eroglu et al., 2001; Pantano & Viassone, 2015).

Therefore, we propose the following framework: Customers that use their mobile devices in-store perceive the in-store shopping experience dimensions in a specific way due to the effects of the usage. Subsequently, the customer's evaluation of the experience (customer satisfaction) is influenced by the mobile device usage effects and consequently the shopping behaviour intention. Figure 5.1, illustrates the expected relationships between the dimensions.
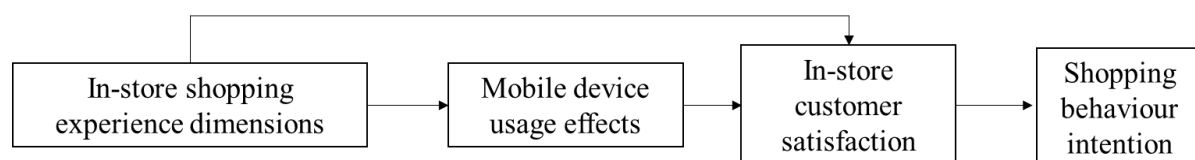
Figure 5.1 – Proposed relationships between the model dimensions

5.2.1. In-store experiential dimensions perception

Cognitive experience

The shopping process enables acquisition of knowledge and creative thinking (Arnold & Reynolds, 2003). This process is part of the in-store cognitive experience of the whole shopping experience (Bustamante & Rubio, 2017). The mobile device can be a source of information, where the customer can explore information related or non-related to the shopping task (Spaid & Flint, 2014), which, in turn stimulates the customer's cognitive experience. However, the mobile shopping activities performed in-store mainly concern the acquisition of information that is not available in-store (Fuentes et al., 2017).

Being able to consult the financial status in real-time while shopping, facilitates the purchase of a product and provides a sense of comfort and control that comes with the acquisition of relevant information (Rezabakhsh et al., 2006). As Holmes et al. (2014) claim, mobile devices are used more frequently when customers have a higher level of involvement and risk with the product purchase. The mobile device can give the customer additional information that aids in the decision-making process, reducing the perceived risk. They give the customer a sense of empowerment by assisting them through the decision-making process (Spaid & Flint, 2014).

Burns and Neisner (2006) refer to cognitive evaluation as more important than emotional reaction in explaining customer satisfaction. Therefore, the following research hypotheses are formulated:

H1a: The cognitive experience positively influences the perceived control.

H1b: The cognitive experience positively influences customer satisfaction.

Affective experience

Bustamante and Rubio (2017) say that emotions are the affective experience components, and as part of the in-store shopping experience, affective experience influences the customer's behaviour and consequently the retailer's outcomes. The use of mobile devices generally increases the feelings of happiness and wellbeing (Brasel & Gips 2014); they provide hedonic experiences that affect the customer (Spaid & Flint, 2014).

Customers use their mobile devices for entertainment activities such as playing games, managing the social networks, listening to music, etc., making the task of shopping more pleasurable (Fuentes et al., 2017). The interactivity with the information provided by the mobile device positively affects the overall pleasure of the shopping experience (Ballantine & Fortin, 2009). Also, emotions such as joy and entertainment can positively influence the in-store customer shopping experience (Bustamante & Rubio, 2017; Hart et al., 2007). Therefore, the following research hypotheses are formulated:

H2a: The affective experience positively influences the perceived enjoyment.

H2b: The affective experience positively influences customer satisfaction.

Social experience - other customers and employees

Fuentes et al. (2017) refer to the store as a social scape, where physical retail stores are designed to enable social interaction. Gentile et al. (2007) and Schmitt (1999) named social experience as the interaction between customers and employees and/or other customers. The interaction between customers and other customers and employees influences customer satisfaction (Bitner et al., 1992).

Pantano and Gandini (2017) say that social interaction in and of itself is an important dimension but not determinant for the experience. Nevertheless, there is proposed a significance of the use of the mobile device in the social dimension. Given the effects of mobile device usage, a different perception of customers and employees is expected.

As customers are able to provide information to other customers through mobile devices, they may experience the feeling of being helpful and consequently have an agreeable social interaction. When customers experience being supportive, it can contribute to a higher satisfaction lever (López-López et al., 2014). Therefore, the following research hypotheses are formulated:

H3a: The experience with other customers positively influences the perceived enjoyment.

H3b: The experience with other customers positively influences customer satisfaction.

Rippé et al. (2017) say that employees can positively affect the customers' experience that incorporates mobile devices but with an adaptative selling approach instead of "pushing the sale" behaviour. That behaviour separates the customers from the employees and makes them turn to their mobile device for advice and information. Customers can distrust the information

given by the displays and the employees and they prefer to obtain the information from their devices (Spaid & Flint, 2014). They also avoid interaction with store employees often opting for finding things on their own rather than asking store employees (Fuentes & Svingstedt, 2017).

Marques et al. (2013) recognised that employee assistance was the second most important factor when customers rated their satisfaction. However, in this case, the avoidance behaviour while using mobile devices may negatively influence the experience with employees and overall evaluation.

The retailers interviewed in the previous study stated that the shift of control from employees to customers regarding information, product availability, features and price reduces the employee's influence and creates a negative relationship where customers deliberately avoid them. Hence, the following research hypotheses:

H4a: The experience with employees negatively influences the perceived control.

H4b: The experience with employees negatively influences customer satisfaction.

Physical experience

As described in previous studies, mobile devices provide the customers with agency in the retail setting as they engage in conversations, chat on their mobile device or move differently around the store (Fuentes et al., 2017). The distraction caused by using a mobile phone increases the time spent in-store, deviating customer from their purchase path and making them spend more time looking at the shelves (Grewal et al., 2018). This leads them to being more exposed to the environmental aspects of the store, e.g., check-out counters, display shelves, promotional displays, etc.

The physical store experience involves the five senses and evokes physical and emotional responses (Terblanche, 2018), which is a dimension that has already been extensively studied and whose different stimuli, such as colour, music, lighting, scents, sounds and crowding have been analysed (Bonfanti et al., 2020). One of the most important aspects is the customer's comfort because it can influence utilitarian and hedonic value - playing both an emotional and functional role (Ainsworth & Foster, 2017). Thus, the environment can be said to provoke physiological responses in the individual, influencing customer satisfaction (Bustamante &

Rubio, 2017). Marques et al. (2013) also refer to the importance of layout and design in the store environment, as it creates opportunities for customers to explore more while having a relationship with satisfaction.

Customers use their mobile devices to reconfigure the retailscape, for example, listen to music or podcasts while shopping and by choosing their music, they can make the shopping task more enjoyable. In addition, mobile devices connect the in-store consumer with a fantasy world, bringing an adventurous and gaming aspect to the shopping activities (Fuentes et al., 2017). A memorable event, reported by the interviewees in the previous study, was an immersive game, which used AR and enabled customers to play in-store and bring fun and entertainment to the physical environment.

Customers can also search for product information rather than read the marketing material available in-store, gaining control over information search and evaluate alternative stages (Fuentes & Svingstedt, 2017; Spaid & Flint, 2014).

In sum, having control over physical variables, such as music or marketing material, and simultaneously spending more time in-store by wandering, looking at the shelves and being influenced by other store stimuli, customers' experience is going to be positively influenced. The following hypotheses are formulated:

H5a: The physical experience positively influences the perceived control.

H5b: The physical experience positively influences the perceived enjoyment.

H5c: The physical experience positively influences customer satisfaction.

5.2.2. Mobile device usage effects

Perceived control

Perceived control is a crucial component of the relationship between customers and technology. Collier and Sherrell (2010, p.492) suggest that in a mobile device for self-service context, the "perceived control refers to the ability to dictate the pace of the transaction, the nature of the information flow, and the level of interactivity".

Spaid and Flint (2014, p.84) state that "navigating the retail environment is an exercise in the negotiation of power between the consumer and the retailer", however, the desire for control may vary between customers because it can be more important to some than to others (Rippé et al., 2016). The utilitarian value to access external information during the purchase decision seems to build confidence and gives customers empowerment over the marketing materials and employees (Spaid & Flint, 2014).

Rippé et al. (2017) claim that the more customers use their mobile device, the more they experience perceived control, increasing feelings of control, which has been found to be a mediator in other studies involving omni-channel and multi-channel customers (Lala & Chakraborty, 2015).

Perceived control is considered as the organism (SOR theory) in the present research because it focuses on customers' perceptions of control over their shopping experience when using their mobile devices. The construct of perceived control (in other words) was mentioned several times in interviews with retailers. Few studies refer to the perceived control in the framework of shopping experience since it mainly represents the hedonic experiences associated with the enhancement of the experience. However, Jones, Reynolds, and Arnold (2006) state that both, hedonic and utilitarian experiences impact the added value to the experience, so we postulate that both effects will be positive.

The results of the systematic literature review point to the importance of the hedonic dimension on the use and effects of mobile devices in-store. We believe that the balance between the two dimensions will enhance the shopping experience, making the customers satisfied and willing to return. Consequently, the following research hypothesis is formulated:

H6: The perceived control positively influences customer satisfaction.

The perceived enjoyment

The way customers use their mobile devices can affect retailers outcomes. Sciandra, Inman, and Stephen (2019) state that non-shopping related activities are more prone to negatively impact the shopping activities and consequently the retailer outcome (less purchases). Regarding the customer experience, these activities can result in more enjoyment.

Enjoyment by itself has been reported as motivation for the preference of shopping in a retail environment than on the Internet (Hart et al., 2007). The use of mobile devices also brings enjoyment and entertainment as the features of the mobile devices allow customers to personalise their experience through online touchpoints and redesign the retail environment. More experienced users tend to explore the entertaining features, reshaping the retail environment (e.g., music, games, podcasts, etc.) (Fuentes & Svingstedt, 2017). The following research hypothesis is formulated:

H7: The perceived enjoyment positively influences customer satisfaction.

5.2.3. Customer Satisfaction

Previous research suggests that the consumers' shopping experience is the most significant determinant of consumer satisfaction (Lemon & Verhoef, 2016; Terblanche, 2018). Customer satisfaction refers to evaluating the in-store experience in the retail environment as a sort of affective response towards the shopping experience (Bustamante & Rubio, 2017; Hart et al., 2007; Marques et al., 2013; Terblanche, 2018).

Grewal et al.,(2018) tested if the use of mobile devices could increase or decrease satisfaction, and their results show no negative effects on satisfaction despite the distraction caused by the use of the device while shopping. Despite these influences, consumers who use their mobile devices in stores report no differences in their satisfaction levels, suggesting that retailers can safely encourage in-store mobile phone use without risking a decline in customer satisfaction. Customer satisfaction results from past experience and increases behavioural intentions (Roy et al., 2019).

5.2.4. Shopping behaviour intentions

Repatronage intention

Jones et al. (2006) define repatronage intention as the possibility to return to the store in the future and customer satisfaction as its significant predictor. Terblanche (2018) confirms that

and says customer satisfaction increases the likelihood of returning to the store in the future. Therefore, behavioural intention is the ultimate shopping outcome measurement in this study.

The literature has explored numerous antecedents to repatronage intentions in order to identify direct and indirect effects, concluding that satisfaction is the strongest variable influencing repatronage intention (Arnold & Reynolds, 2003; Hart et al., 2007; Spaid et al., 2019).

The measurement of repatronage probability ensures behavioural expectations, which are more important than behavioural intentions. Therefore, to improve the accuracy when predicting the future behaviour of customers, the items to measure repatronage intentions used in this research represent both intentions and probability measures, as in the study by Terblanche (2018).

The following research hypothesis is formulated:

H8: Customer satisfaction has a positive influence on repatronage intention.

5.2.5. Moderation effects

Two socio-demographic characteristics are introduced in this study as possible moderators in the relationship between in-store shopping experience dimensions and mobile device usage effects and behavioural intentions: gender and generation.

As presented previously (Chapter 2), customers of different genders have different preferences, whether related to shopping motivations or uses of mobile devices (Faqih, 2016). Females use mobile devices more frequently while performing non-shopping tasks (Bhatnagar & Papatla, 2019; Kiba-Janiak, 2014; Pantano & Gandini, 2017), but they also use mobile devices for decision support in different categories when compared to males (Eriksson et al., 2018).

The relationship between age and use has already been shown, proving that the use of mobile devices is different among generations. Therefore, there is expected a moderator effect of socio-demographic characteristics and formulated the following research hypotheses:

H9: Gender plays a moderating role in the relationship between in-store shopping experience dimensions and mobile device usage effects and behavioural intentions.

H10: Generation plays a moderating role in the relationship between in-store shopping experience dimensions and mobile device usage effects and behavioural intentions.

5.3. Proposed theoretical model

Based on the literature review and the results of the preliminary studies, the following proposed theoretical model and research hypotheses are presented (Figure 5.2 and Table 5.1).
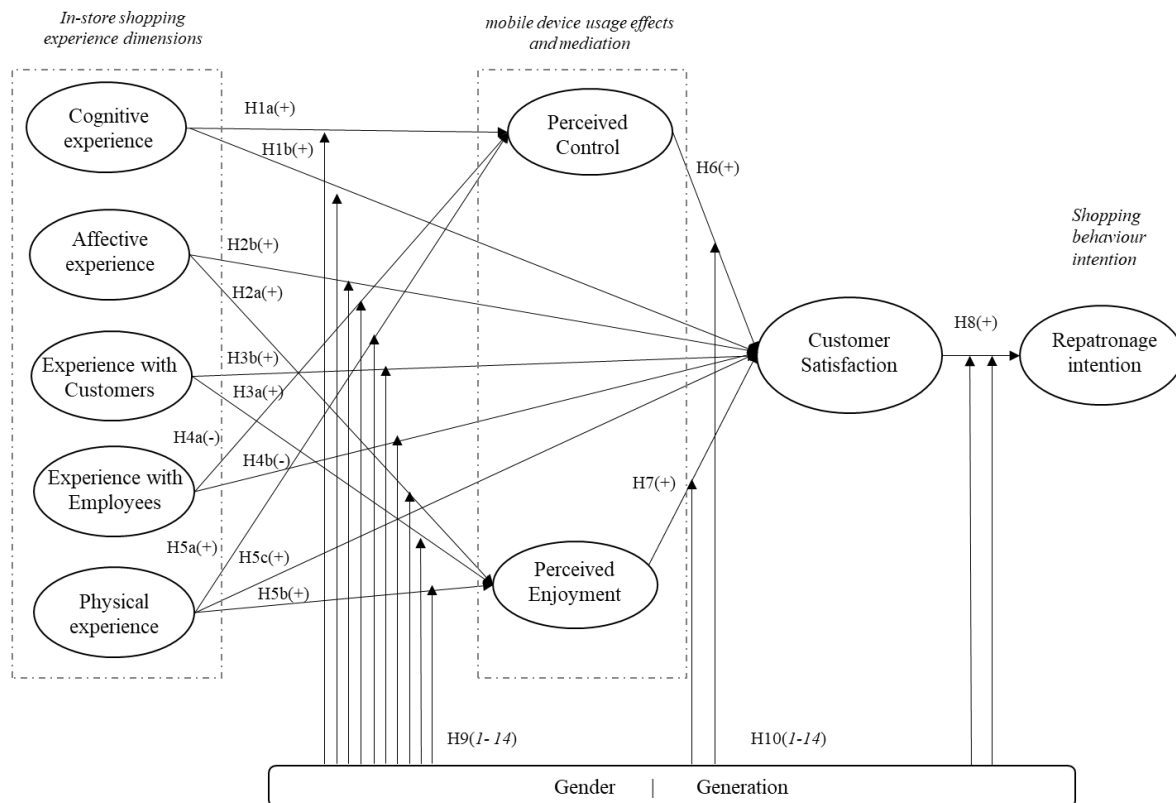
Figure 5.2 - Proposed theoretical model and research hypotheses

Table 5.1 - Definition of the independent and dependent variables in the hypothetical-deductive model

Independent variables	Mediator variables	Moderator variables	Dependent variables
Cognitive Experience	Perceived Control	Gender	Customer satisfaction
Affective Experience	Perceived Enjoyment	Generation (X, Y and Z)	Repatronage Intention
Experience with other customers			
Experience with employees			
Physical experience			

In order to give a global view of the causality relationships proposed in the model, Table 5.2 presents a summary of all the hypotheses formulated.

Table 5.2 - Hypotheses summary table

H1a: The cognitive experience positively influences the perceived control.

H1b: The cognitive experience positively influences customer satisfaction.

H2a: The affective experience positively influences the perceived enjoyment.

H2b: The affective experience positively influences customer satisfaction.

H3a: The experience with other customers positively influences the perceived enjoyment.

H3b: The experience with other customers positively influences customer satisfaction.

H4a: The experience with employees negatively influences the perceived control.

H4b: The experience with employees negatively influences customer satisfaction.

H5a: The physical experience positively influences the perceived control.

H5b: The physical experience positively influences the perceived enjoyment.

H5c: The physical experience positively influences customer satisfaction.

H6: The perceived control positively influences customer satisfaction.

H7: The perceived enjoyment positively influences customer satisfaction.

H8: Customer satisfaction has a positive influence on repatronage intention.

H9(*1-14*): Gender plays a moderating role in each relationship between in-store shopping experience dimensions and mobile device usage effects and behavioural intentions.

H10(*1-14*): Generation plays a moderating role in each relationship between in-store shopping experience dimensions and mobile device usage effects and behavioural intentions.

In brief, after presenting the arguments behind the hypotheses that provide the structure of the model, we proceeded to design the quantitative study that aims to test it.

This proposal introduces innovation to the way we approach the in-store shopping experience and the effects of mobile devices. Until now, their implication on customer satisfaction and repatronage intention has never been tested.

In the next chapter, the methodology describes the steps to operationalise the constructs in the proposed theoretical model, as well as the methods to collect data and conduct statistical data analysis.

Chapter 6 – Quantitative research methodology

Following the presentation of the proposed theoretical model in Chapter 5, in the present chapter, we will describe how we pursue the research questions and summarise the methodological procedures of the research.

The use of the quantitative method to validate the model and test the research hypotheses is aligned with a post-positivist paradigm that follows a hypothetic-deductive process (Park et al., 2020; Young & Ryan, 2020). Thus, we moved from theory to empirical research. In order to understand reality and to represent it, we operationalised the concepts using indicators.

Quantitative empirical research allows to measure and analyse the primary data collected for the study purpose. Therefore, quantitative data collection was based on a written survey (Questionnaire). Following the data collection description, we present the statistical data analysis procedures, namely descriptive statistics and some multivariate data analysis techniques.

Constructs were measured using Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM), a combination of factor analysis and multiple regression analysis, was used to validate the proposed model and test the research hypotheses (Kline, 2011).

6.1. Scales and measurements

To collect the primary data a questionnaire was designed. Before reaching the final questionnaire, two pre-tests were carried out, which are going to be presented afterwards.

The questionnaire proposed for this study, whose final version is presented in Appendix E, was structured with closed questions. Since the questionnaire was applied in Portuguese, some modifications were made during the translation of the items.

The final questionnaire's layout followed a logical sequence, minimising the response fatigue, dividing the socio-demographic aspects into two parts and had a total of 16 questions. The five sections of the questionnaire were divided as follows:

Part I – Socio-demographic: Age and Gender (2 questions).

Part II – Mobile usage frequency types of usage (5 questions) - In this section, the main goal was to analyse the frequency and usage types of mobile devices. This could bring knowledge on customer behaviour in-store compared with previous literature results (e.g. Bellini & Aiolfi, 2019; Eriksson, Rosenbröijer, & Fagerstrøm, 2017; Eriksson et al., 2018; Grewal et al., 2018; Sciandra et al., 2019). Therefore, a 7-point Likert-type scale ("1 – Never" to "7 – Very frequently") was used to measure the mobile usage frequency types of usage and in what product categories.

Part III – In-store shopping experience when using mobile devices – Part one (4 questions) - Using five questions and twenty items, we assess the perception of the dimensions of the in-store customer experience when using their mobile device and also the effects on customers, with a 7-point Likert-type scale ("1 – Completely Disagree" to "7 – Completely Agree").

Part IV – In-store shopping experience when using mobile devices - Part two (2 questions) - The "Customer Satisfaction" and "Repatronage Intention" were also measured with a 7-point Likert-type scale ("1– Completely Disagree" to "7 – Completely Agree"), with six items. Besides the model constructs, we included two other constructs – "Purchase Intention" and "Showroom Intention" using four items and the same scale for measurement. We intend to broaden the analysis to other constructs found in the literature and extend the knowledge on customer behaviour in-store (Eriksson et al., 2018; Fernández, Pérez, & Vázquez-Casielles, 2018; Viejo-Fernández et al., 2020).

Part V – Socio-demographic: Education, Income, and Occupation (3 questions).

For the creation of the questionnaire it was necessary to carry out the operationalisation (from concepts to indicators) of the model's constructs. According to Hair et al.(2014), construct, latent variable, and item/indicator can be defined as:

Construct – a theoretical concept that cannot be measured directly, but only in an approximate way through one or more indicators;

Latent variable – Operationalisation of a construct. It is a variable that cannot be measured directly but through one or more indicators;

Item or Indicator – Observable variable used as a measure of a latent variable.

The measurement items adopted were previously developed and validated from existing instruments found in the literature review, in order to maximise the instrument's validity. The in-store shopping experience dimensions were mainly adapted from Bustamante & Rubio (2017) and Terblanche (2018), which developed measurement scales for the in-store shopping experience. In addition, the constructs "Perceived enjoyment" and "Perceived control" were derived from literature on the effects of technologies on consumer behaviour in-store (Collier & Sherrell, 2010; Roy et al., 2017; Rippé et al., 2017; Zhang et al., 2018).

All items were measured using a 7-point Likert-type, anchored by 1– Completely Disagree to 7 – Completely Agree scale using the same scale-number in as the original instruments so that the content validity would not be affected. Table 6.1 presents all the constructs in the model, the correspondingly measurement items, and the original scale source on a backwards translation from Portuguese into English.

Table 6.1 – Constructs and corresponding measurement items

Construct	Item	Measurement Items/Question (7-point scale anchored by 1 – Completely Disagree and 7 – Completely Agree)	Source
Cognitive Experience		*While I'm at the store using my mobile device, the store environment, its products and services:*	Bustamante & Rubio (2017)
	COG1	Teach me interesting things	
	COG2	Awaken my curiosity	
	COG3	Bring interesting ideas to mind	
Affective Experience		*While I'm at the store using my mobile device, the store environment, its products and services, make me:*	Bustamante & Rubio (2017)
	AFF1	In a good mood	
	AFF2	Happy	
			Terblanche (2018)
	AFF3	Have an exciting experience	
Social Experience *Experience with customers*		*While I'm at the store using my mobile device:*	
	SOC1	I interact with other store customers	
	SOC2	I advise customers who ask for my opinion on the store's products/services	Bustamante & Rubio (2017)
Experience with employees	SOC3	I do not interact with store employees	
	SOC4	I do not share my opinions with store employees	
Physical Experience		*While I'm at the store using my mobile device, I perceive the store environment as:*	Terblanche (2018)
	PHY1	Having an attractive product and promotion displays	
	PHY2	Having an attractive décor	
			Bustamante & Rubio (2017)
	PHY3	Its comfortable	
Perceived control		*While I'm at the store using my mobile device:*	
	PC1	I feel in control when interacting with store employees	Rippé et al. (2017)
	PC2	I have more control over my purchasing decisions	
	PC3	I feel in control during the purchase process	Collier & Sherrel (2010)
	PC4	I can freely choose the products and/or services	Zang et al. (2018)
Perceived enjoyment		*While I'm at the store using my mobile device:*	
	PE1	I have fun interacting with my mobile device	Roy et al. (2017)
	PE2	Use mobile devices provides me with a lot of enjoyment	
	PE3	I enjoy using my mobile device	
Customers Satisfaction	SAT1	I am very satisfied with the products and/or services provided by this store	Terblanche (2018)
	SAT2	The experience I had at this store was satisfactory	
	SAT3	This store does a good job with the satisfaction of my needs	
Repatronage Intention	RI1	I consider this store as my first choice to shop	Terblanche (2018)
	RI2	I am likely to buy at this store again in the future	
	RI3	I am likely to visit this store again in the future	

6.2. Sample design and data collection

6.2.1. Pre-testing

After creation of the questionnaire, it was given to two other professors and two researchers to assess the design, the content, and variables coding. In addition, two of the store's managers interviewed for in the preliminary study 2 gave their opinion on the approach to reality in-store. In order to reach customers similar to our sample, we designed an online survey as a pre-test through which we tried to increase content and face validity. The pre-test method was adopted in the initial phase of questionnaire development, and it took place during autumn 2019. Content validity refers to the degree of relevance and representativeness of the scales' elements concerning constructs under study (Creswell & Creswell, 2017). The scales used had already been validated in the literature, which guarantees its content validity. Face validity results from assessing the adequacy of the items on the scales for measuring the constructs under analysis.

First Pre-test

The questionnaire for the first pre-test had 21 questions, and all the socio-demographic questions were presented in the first part. We used a convenience sample of 200 participants, that responded to an online questionnaire via Facebook and e-mail.

After data analysis, we understood that there was a high rate of participants over 50 years old, with little representation of other age groups. In addition, 38.5% of the respondents were not users of mobile devices in-store and they did not proceed with the questionnaire. We also interviewed some respondents about the ease of understanding the questions. As a result, two questions were dropped and limited the age of the respondents to 45 years. Also, the order of the questions changed to avoid respondent fatigue, separating the socio-demographic questions into two parts.

Second Pre-test

The second pre-test had a convenience sample of 198 online respondents and the questionnaire had 19 questions. The online survey was shared via Facebook and e-mail.

The results showed a high dropout rate of respondents (30.56%), and consequently the number of questions was reduced to the final 16 questions. We excluded all non-essential questions and improved the layout using images of electronic store environments.

With the second pre-test, we assessed the dimensionality of the scales using the method of extracting the principal components. After the data analysis and interviewing some of the respondents, we concluded that some of the items were not understandable and had to be removed, reducing certain items to measure in some constructs (e.g., experience with employees). The respondents' difficulty in recalling the experiences influenced the answers and they did not have in mind the store setting mistaken by online store. As a result, we changed the application settings and the questionnaire's administration changed from an online survey to a face-to-face interview, conducted by the researcher when customers would leave the stores.

The three main takeaways from the pre-tests were (1) the age restriction to the youngest generation that report the use of mobile device in-store, unlike older generations, (2) the application of the questionnaire needed to be done in-store after the shopping experience in order to collect a much more vivid memory and feelings, and (3) the reduction of items to measure two constructs that were not understandable for the respondents.

6.2.2. Final sample

The universe refers to the complete set of elements on which the investigation will focus and from which it is necessary to obtain information. In order to collect such information, it would be necessary to undertake a census. Since this is impossible, using part of the universe is the only option. In other words, focusing on the target population, consisting of the total set of elements under study, where it is possible to infer results. However, even the target population is difficult to enquiry. In this particular case, we would have to approach all customers in Lisbon's metropolitan area over the age of 16 who use their mobile device during the store visit in a consumer electronics store. To reach a representative number of this population, the surveyed population, is formed by a set of elements that, in practice, are available and accessible for the sampling process (Fowler, 2009).

Given the specific characteristics of the needed respondents and the interview place, the sampling process had to be a convenience sample. The sample was selected according to the availability and accessibility of the elements that constitute the sample; this makes it a

nonprobability sample (or convenience sample). Respondents are chosen based on their convenience and availability (Babbie, 2010).

Instead of stratifying the sample through the sociodemographic characteristics of customers of consumer electronics stores (data that we were unable to access), we analysed the sociodemographic characterisation of the inhabitants of the metropolitan area of Lisbon, who access the Internet from their mobile devices outside home and work (Table 6.3). Based on this data, we tried to fill gender quotas and limit participation to the age groups with heavy mobile device usage outside home and work. Due to time restrictions and analysis resources, we tried to improve the success rate of responses that met what we intended to measure. To try to make the sample representative, the surveys were carried out in several stores of different retailer brands, in different areas of the Lisbon metropolitan area, on different days of the week and at different times of the day. Additionally, we ensured to have a gender distribution similar to the target population and similar across age groups (Table 6.2). The respondents' age starts at 16 years because we found it essential to include heavy technology users. The inclusion and exclusion criteria for the participants are presented at Table 6.4.

Table 6.2 - Population of the metropolitan area of Lisbon in 2019

2018	N	%
M	1 331 103	46.76
F	1 515 229	53.24
Total	2 846 332	

Source: adapted from INE, I.P., Estimativas anuais da população residente, 2019.

Table 6.3 - Mobile device users to access the Internet out of home and office

	%
Total users of mobile devices to access the Internet out of home and office	76.3
Gender	
Male	77.3
Female	72.8
Age	
16 to 24 years	99.7
25 to 34 years	98.5
35 to 44 years	94.0
45 to 54 years	76.9
55 to 64 years	56.4
65 to 74 years	32.6
Education level	
Basic Education	57.7
Secondary Education	96.8
Higher Education	98.9

Source: adapted from INE/Inquérito à Utilização de Tecnologias da Informação e da Comunicação pelas Famílias, 2017

Table 6.4 - Inclusion and exclusion criteria for respondents

	Inclusion	**Exclusion**
Age	16 to 45 years	<16 years and >45 years
Setting	Consumer electronics stores (brick-and-mortar)	Other stores categories
Geographic location	The metropolitan area of Lisbon	Other locations

The minimum sample size required for a statistical depends on various factors, such as the desired degree of precision, the statistical power required, the researcher's ability to gain access to the study subjects, etc. In this case, because we have a non-probabilistic sample and the analysis was on multiple relationships of dependent and independent variables using SEM, we

calculated the ratio between the surveyed subjects and the number of items, following Kline's recommendations (2011). As a result, the sample size exceeds 200 valid responses respecting the terms of a sample size to a number of parameters estimated (Crockett, 2012; Kline, 2011).

6.2.3. Data collection

The survey was applied by the researcher individually and in person at the store's exit. The data collection was performed during winter 2019/20 in consumer electronics retailers stores (Box Auchan, Fnac, Media Market, Radio Popular and Worten) in 12 different store locations in Lisbon's metropolitan area - Portugal (stores map - Appendix F). The collection was done in different counties of Lisbon's metropolitan area, on different weekdays and at different times of the days, during the store's operating period. We used Qualtrics for the survey online using a tablet with a mobile Internet connection.

To be a valid participant, the customer had to recall the use of their mobile device in-store. The age of the participants varied between 16 and 45 years old. The participants' age and the use of mobile devices in-store were a selection criterion. The survey, included 393 participants, but only 309 used a mobile device in-store (21.4% said they do not use mobile devices in-store), excluding the participants who did not complete all answers. The final sample included 301 valid participants.

6.3. Methods for statistical data analysis

After the data collection, the data analysis was carried out. We searched for inaccuracies, cleaned the answers with missing values and variables were coded. The outputs that constituted the analysis of the results took the form of tables and graphs. The IBM Statistical Package for Social Sciences (SPSS® 26.0) was used to generate descriptive and inferential statistics, and Analysis of Moments Structure (AMOS® 26.0) software was used to conduct the confirmatory factor analysis and the structural equation modeling.

The data analysis was conducted in two parts. The first one was dedicated to characterising the sample and analysing customers' behaviour using mobile devices in-store. The second one consisted of validating the model as a whole, and testing the research hypotheses individually.

We started the analysis with demographic characterisation of the sample using descriptive statistics (frequency, means, and standard deviations). When analysing mobile devices in-store, particularly the types of use, the frequency of use, and decision-making support, we also looked for differences between gender and generations. To assess the differences between gender, we used a parametric T-Test, for studying differences between generations, we used one-way ANOVA. A significance level of 0.05 was considered. Therefore, gender and generation were the independent variables, and the types of use of mobile devices, consumer electronics categories, showrooming behaviour intention, and purchase intention were the dependent variables of interest. To find significant differences between the generation groups, we performed ANOVAs post-hoc tests (Tukey HSD).

In the second part of the analysis, we used multivariate analysis techniques, such as reliability analysis, factor analysis, and structural equation modeling, in order to validate the proposed measurement and structural models.

According to Hair et al. (2014), the advantages of using structural equation models are the possibility of simultaneously including latent variables and manifest variables in a model and the simultaneous analysis of a set of interrelationships between the variables. However, there are some limitations: "It cannot be used to prove that a model is correct and it cannot compensate for a poorly designed study. In addition, even a well-fitting SEM model can have problematic lower-order components and omit important variables" (Tomarken & Waller, 2005, p. 56).

According to Crockett (2012) and Kline (2011) a SEM analysis needs to following essential steps:

Specification – The model's specification consists of the theoretical model's formal design that tests the research questions and reflects the assumptions made through the review of the literature on the subject.

Estimation – In the estimation phase, we will have to obtain estimates of the model parameters that reproduce the data observed in the sample under analysis as best as possible.

Testing – This phase of assessing the model's quality is intended to assess how well the proposed theoretical model can reproduce the correlational structure of the variables manifested in the sample under study, given the collected sample.

Modification – Supposedly the model does not have an excellent fit to the data. In this case, the model is re-specified, using theory trimming or adding new parameters to improve the theoretical model's fit to the data.

SEM presents a set of assumptions that must be validated. The violation of these assumptions can lead to biased results regarding model adjustment statistics, but also the significance of the parameters and, consequently, erroneous decisions and conclusions. The assumptions of the technique are:

- Multivariate normality;
- Independence of observations;
- Absence of multicollinearity;
- No outliers;
- Linearity;
- Homoscedastic.

Multivariate normality of the distribution of the observed variables in the model is often assessed by the Skewness (Sk) and kurtosis (Ku). This technique is relatively resistant to not very severe violations of normality. According to Kline (2011), bias values not exceeding 3 and flattening, no more than 10, do not impede the use of this technique.

Different independent variables should not be strongly correlated. The presence of multicollinearity can lead to negative variance estimates. Multicollinearity was assessed using the Variance Inflation Factor (VIF) that measures the variable's correlation with all others in the model (VIF value must be lower than 10). Bivariate multicollinearity can also be measured using the correlation matrix, considering that two variables are redundant if the value of the absolute value of its correlation coefficient exceeds 0.90 (Hair et al., 2014).

The presence of outliers can inflate or reduce the covariance between variables, and this influence can be translated into the estimates of means, standard deviations, and covariance. The diagnosis of outliers was made using descriptive analysis and examining boxplots. We have also calculated the Mahalanobis distance and analysed if any observation should be removed from the sample (Byrne, 2010).

After verifying the assumptions' fulfilment, a first attempt to reduce the dimensionality of the data was using principal component's analysis for all items to identify sets of indicators related to each other, forming unique and not correlated dimensions (Hair et al., 2014). In order to assess the appropriateness of the observed correlation structure, the following criteria were used:

- Bartlett's sphericity test examines if the correlation matrix is an identity matrix, which means no correlation between the variables. In order to reject the null hypothesis, the level of significance of the test must be less than or equal to that adopted by the researcher (sig. <0.05);

- The Kaiser-Meyer-Olkin (KMO) sampling adequacy measure compares the simple correlations with the partial correlations observed between the variables ranging from 0 to 1. The minimum value acceptable for the KMO is 0.50, although they are considered meritorious values equal to or greater than 0.80. Therefore, variables with lower KMO values of 0.50 should be eliminated from the analysis.

For the retention of the factors, we applied two criteria together, following the indications proposed by Hair et al. (2014):

- Kaiser criterion, according to which only those factors are retained whose values themselves are greater than 1;

- The explained variance proportion criterion consists of reaching a certain accumulated percentage of the variance explained by successive factors. Within the scope of a work inserted in the Marketing area, it is considered as satisfactory that a minimum value of 60% is reached for the % of variance explained. The orthogonal Varimax rotation was used to facilitate the interpretation of the extracted factors.

Subsequently, an assessment of the factor weights was carried out, closely following Hair et al. (2014). According to these authors, loadings of at least 0.50 are considered to have practical significance, although values equal to or greater than 0.70 are considered meritorious. Communalities represents the proportion of variance of each variable explained by the extracted factors. According to Hair et al. (2014), communalities should have values of at least 0.50. Otherwise, the elimination of the corresponding variable should be considered.

We proceed with the item analysis for reliability, assessing the degree of consistency between multiple variable measurements. The most widely used reliability measure is internal

consistency, which refers to the degree of correlation between items that form the same construct. Cronbach's alpha (Cronbach, 1951) is one of the most used measures of consistency, being defined as the square of the correlation between the scale scores and the underlying factor that the scale is intended to measure. The value of 0.70 is accepted as the lower limit of adequate internal consistency (Appendix G) (Hair et al., 2014).

Construct reliability was assessed using composite reliability (CR), capturing the degree to which items behave similarly in relation to a common construct. Hair et al. (2014) considers values above 0.70 as satisfactory.

A measurement instrument is valid if the differences in the scores obtained between objects reflect the real differences between individuals in the characteristic intended to be measured. An instrument is valid if it measures what it is supposed to measure and it usually requires the existence of internal consistency between items in the domain (Churchill, 1979). Construct validity is determined through two types of validity: convergent and discriminant. Convergent validity aims to assess whether all items used the same construct to measure, whereas discriminant validity aims to assess whether items used different constructs to measure. Thus, if the items are strongly correlated with each other, they must define the same construct.

On the other hand, if the items are weakly correlated, they supposedly measure different constructs. The convergent validity can be evaluated through the average variance extracted (AVE). If the AVE is greater than 0.5, then the variance due to the measurement error is less than the variance captured by the construct, and therefore it can be concluded that the measurement instrument has convergent validity. If the AVE is greater than the square of the correlations between latent variables, then it can be concluded that the instrument or measurement model has discriminant validity (Fornell & Larcker, 1981).

Model estimation corresponds to obtaining model parameter estimates (factor weights, structural coefficients), reproducing the sample's data under analysis in the best possible way, given the proposed model.

For the purpose of model estimation several fitting functions are available (e.g., OLS - ordinary least squares, GLS -generalised least squares, ML - maximum likelihood). ML is the most widely used type of estimation, followed by GLS. ML and GLS assume multivariate normality of dependent variables and, unlike OLS, are full information techniques, meaning

that they estimate all model parameters simultaneously to produce a full estimation model (Byrne, 2010). In the current study maximum likelihood estimation was used.

Once the model is estimated, it is then necessary to assess the quality, which corresponds to the verification of the adequacy of the model to the data observed or to the reality we intend to study. There are several adjustment measures, each having advantages and disadvantages, and thus, it is advisable to evaluate the model not by a single measure but by a set of measures (Model fit indices in Appendix H).

Sometimes the quality of the adjustment, assessed by the various adjustment indeces, concludes that the adjusted model is not appropriate for explaining the relational structure of the variables under study. However, this does not mean that the model is entirely wrong and often with a small number of changes, namely the elimination of non-significant pathways and/or the correlation of measurement errors, among others, it allows to obtain a model with better characteristics (Kline, 2011). The theoretical model's adjustment to the data obtained indicates the refutation or not of the hypotheses raised, therefore fundamental to the analysis of the adjustment indeces obtained.

To assess if there was a moderating effect from a sociodemographic variable, we performed a multigroup analysis. The analysis was performed using the robust maximum likelihood estimation method and the fully standardised solutions were analysed.

The following chapter presents and discusses the results of the statistical analyses conducted.

Chapter 7 – Quantitative research results and discussion

In the present quantitative research, a descriptive analysis of the model's constructs, the validation of the scales and the model, and the research hypotheses test are carried out.

The quantitative analysis started with a socio-demographic sample characterisation. To address the concern about the loss of control and the showroom effect, we investigated the customers' behaviours when using their mobile devices in-store and examined the differences between males and females and among three generations (Gen X, Gen Y, and Gen Z).

Confirmatory Factorial Analysis (CFA) was used to validate the measurement scales of the constructs, previously adopted in the literature. The proposed theoretical model and the formulated research hypotheses were tested and validated using structural equation modeling (SEM).

This chapter reports the results of the analysis and ends with a discussion of the main findings.

7.1. Socio-demographic sample characterisation

From the customer's respondents to the questionnaire, we obtained 301 valid participants. The sample was divided between 164 females (54.5%) and 137 males (45.5%). To assess the differences among generations, the age groups were divided as follows: Gen X (35 to 45 years old), Gen Y (25 to 34 years old) and Gen Z (16 to 24 years old). The most represented age group was Gen Y with 38.9%, followed by Gen X with 32.6% and then Gen Z with 28.6%. Most respondents have higher education (66%) and are salaried workers (72.7%). As far as monthly income level is concerned, 39.9% earn between 1,001€ and 2,000€, followed by 34.2% that earn 580€ to 1,000€. 18.9% of the respondents earn the same or less than the minimum wage (mostly students – 17.9%), and only 6.6% earn more than 2,000€. The sample characterisation is summarised in Table 7.1.

Table 7.1 - Socio-demographic characterisation of the sample

		N	%
Gender	Male	137	45.5
	Female	164	54.5
Generation	16 to 24 years (Gen Z)	86	28.6
	25 to 34 years (Gen Y)	114	38.9
	35 to 45 years (Gen X)	98	32.6
Education	Basic Education	6	12
	Secondary Education	94	31.2
	Higher Education	200	66.4
Individual income level	< 580€	57	18.9
	580€ - 1,000€	103	34.2
	1,001€ - 2,000€	120	39.9
	> 2,001€	20	6.6
	missing	1	0.3
Current Occupation	Salaried worker	218	72.7
	Self-employed worker	12	4
	Unemployed	6	2
	Student	53	17.6
	Other	10	3.3
	missing	2	0.7

7.2. Different uses of mobile devices in-store

This analysis aimed to investigate the role of mobile devices in the in-store decision-making process and, at the same time, also verify demographic characteristics related to the way customers use their mobile devices, namely the differences between gender and generations (X, Y, and Z) in mobile devices usage preferences in-store.

Previous research confirmed that customers of different genders have different preferences. For example, females use mobile devices more frequently for social purposes and multitask with mobile devices (Bhatnagar & Papatla, 2019; Kiba-Janiak, 2014; Pantano & Gandini, 2017), but they also have different preferences in using mobile devices for decision support in different product categories (Eriksson et al., 2018). According to Eriksson et al. (2017), there are different tendencies to showroom intention between genders.

Previous experience, proficiency and habit can play a role in the frequency of use and types of use (Tyrväinen & Karjaluoto, 2019), which makes it potentially an interesting topic to analyse from the perspective of gender and generation differences. As mentioned before, showrooming behaviour is a topic that deserves further investigation, since despite concerning the retailers, it is understudied (Balakrishnan et al.,2014).

To be aligned with the developed theory about the use of mobile devices in-store, we decided to reduce the number of variables of the types of mobile device usage in-store and the number of categories where the use of mobile devices supported the decision-making (Bellini & Aiolfi, 2017; Bellini & Aiolfi, 2019; Sciandra & Inman, 2014; Sciandra et al., 2019; Sciandra & Inman, 2015). We also created the variable "showroom intention" based on the work of Viejo-Fernández et al. (2020).

For this purpose, we used principal component analysis. From six items used to assess the use of the mobile device in different types of tasks, three new dimensions were obtained as types of mobile device use: "Shopping Related"," Non-Shopping Related – Hedonic" and "Non-Shopping Related – Utilitarian" (see principal component analysis results in Appendix I).

Concerning the categories of products, the 5 initial items were reduced into three new variables: "Home Appliances", "Technologies", and "Entertainment and Culture" (see principal component analysis results in Appendix J). The "Showroom intention" results in the reduction of the "Purchase same store (online)" and "Purchase in another store (online)" (see principal component analysis results in Appendix K). New derived variables were computed, and mean differences by gender and generation were tested using T-Test and ANOVAs with a Tukey HSD post hoc test (see results in Appendix L). Then we analysed the results by type of usage, support in the decision-making process, as well as purchase and showroom intention.

7.2.1. Frequency and types of mobile device usage in-store

Regarding the analysis of the descriptive results, the frequency of mobile device use in-store shows a higher mean for males (5.04) and Gen Y (5.09), all with a mean above 4.00. The middle point of the Likert scale (1= Never to 7= Very Frequently) means that respondents often use their mobile devices in the store (Table 7.2).

Table 7.2 - Frequency means of mobile device usage in-store by gender and generation (1= Never to 7= Very Frequently)

		N	Mean	SD
Gender	Male	137	5.04	1.613
	Female	164	4.55	1.666
	Total	301	4.78	1.657
Generation	Gen Z	86	4.66	1.635
	Gen Y	117	5.09	1.617
	Gen X	98	4.51	1.682
	Total	301	4.78	1.657

The frequency of mobile device usage has different mean levels for different types of tasks. The use of mobile devices to "Find information about products/services" and "Socialising with friends and family" had the highest mean frequency levels with 4.66 and 4.83, respectively. All the other tasks ("Entertainment", "Professional Tasks"," Manage Purchase", and "Manage personal Finances") had lower means (less than 4), meaning that the respondents have a lower-frequency use for these tasks in-store (see Appendix M).

Based on the assumption that differences exist between gender and generations in the preference for their mobile device use in-store, we performed a T-test and ANOVA to assess the mean differences by gender and generation.

The results of the T-test show that only in the general frequency of use (sig.= 0.01) and regarding the use to "Find information about products/services" (sig. =0.03), there were significant differences between males and females (sig. <0.05), with higher mean levels for men. The other items about different tasks performed with the mobile device did not reveal significant differences in the means (see Appendix M).

The ANOVA results provide considerable differences in most variables among generations. The different tasks performed with mobile devices in-store only when used to "Manage shopping" had no significant values (sig. = 0.106), meaning no differences between generations. The other items scored notable differences between generations. Gen Z scores were higher for "Mobile device use for entertainment" and "Socialising with family and friends". Gen Y has a higher frequency for mobile device usage and specific types of use, scores higher in "find

information about products/services" and "manage personal finances". More frequently than younger generations, the older generation (Gen X) uses mobile devices for professional tasks (see Appendix N).

After reducing the types of mobile device usage into three categories of tasks, only "Shopping Related" tasks presented differences between gender, with men having a higher usage frequency mean (Table 7.3).

Table 7.3 - Gender differences within mobile device usage types and between categories with T-test

Dependent Variable	Gender	Mean	SD	Std. Error Mean	t / df	Sig.
Shopping Related Tasks	Male	**4.32**	1.632	.139	2.110/299	.036
	Female	3.92	1.640	.128		
Non-Shopping Related Tasks - Utilitarian	Male	3.61	1.707	.146	.016/299	.987
	Female	3.61	1.828	.143		
Non-Shopping Related Tasks - Hedonic	Male	4.03	1.778	.152	.260/299	.795
	Female	3.98	1.595	.125		

Among generations, there are significant differences in the way they use their mobile devices ("shopping-related" sig. = 0.002; "Non-Shopping Related – Utilitarian" sig. =0.039; "Non-Shopping Related – Hedonic" sig.=0.000). When looking at the results of the Tukey HSD post hoc (probability of type I error at 5%) (Appendix J), we can observe significant differences in the Gen Y and Gen X for "shopping-related" tasks. Regarding "non-shopping related – utilitarian", Gen Y has considerable differences with higher mean levels, while for "non-shopping related -hedonic", Gen X and Gen Z had substantial differences between means (Table 7.4).

Table 7.4 - Generation differences within mobile device usage types and between categories with ANOVA

Dependent Variable	Gender	Mean	SD	Std. Error Mean	df	F	Sig.
Shopping-related						6.256	.002
	Gen Z	3.86	1.603	.173	2		
	Gen Y	**4.51**	1.556	.144	2		
	Gen X	3.82	1.703	.172	2		
Non-Shopping Related - Utilitarian						3.274	.039
	Gen Z	3.27	1.797	.194	2		
	Gen Y	**3.90**	1.705	.158	2		
	Gen X	3.57	1.786	.180	2		
Non-Shopping Related - Hedonic						9.296	.000
	Gen Z	**4.61**	1.539	.166	2		
	Gen Y	3.90	1.560	.144	2		
	Gen X	3.59	1.793	.181	2		

7.2.2. The mobile device usage in the decision-making process

The use of mobile devices as a decision-support tool in consumer electronic stores has different average levels of frequency for different categories: "Smartphones and mobile phones" have higher mean scores with 4.87, followed by "Electronics and computers" with 4.68. "Home appliances" and "Tv, video, home cinema" had similar frequency levels with 4.05 and 4.06 respectively. Only the "Entertainment and culture" category had the mean scores below 4 (3.83), meaning that respondents use their mobile devices less when choosing products/ services for entertainment or cultural purposes while seeking help in the decision-process when dealing with more sophisticated technology products, such as smartphones.

Regarding the use of the mobile device for support in the decision-making, the differences between gender are significant in the category of "Electronic and computers" (sig.=0.00), "Smartphones and mobile phones" (sig.=0.00) and for "Tv, video, and home cinema" (sig.=0.00). In the other categories, "Home appliances" (Sig.= 0.40) and "Entertainment and culture" (sig.=0.33) did not score significant differences. Where notable differences were

registered, the highest frequency mean of use records belonged to the male participants (see Appendix O).

The ANOVA results provide significant differences in only two variables among generations. For the use of the mobile device as support in the decision-making, the differences among generations were considerable for "Entertainment and culture" (sig.=0.016) and "Home appliances" (sig.=0.004) (see Appendix P).

When analysing the mean differences in the use of the mobile device to support decision-making in "Entertainment and culture" is not significantly different between gender (sig. = 0,404), but in "Home Appliances" and "Consumer Electronics", the use of the mobile device is higher in the male participants, reaching the mean of 5.33 in the "Consumer Electronics" category for males (sig.=0.000) (Table 7.5).

Table 7.5 - Gender differences within mobile device usage for purchase decision support by categories type with T-test

Dependent Variable	Gender	Mean	SD	Std. Error Mean	t / df	Sig.
Home Appliances	Male	**4.21**	1.599	.137	2.511/298	.013
	Female	3.72	1.800	.141		
Consumer electronics	Male	**5.33**	1.516	.130	5.327/299	.000
	Female	4.31	1.809	.141		
Entertainment and culture	Male	4.15	1.977	.169	.836/299	.404
	Female	3.96	1.950	.152		

The frequency of mobile device use for decision-making support in different categories is different among generations (Table 7.6). Despite the results of $p= 0.052$ for the category "Consumer Electronics", the post hoc test shows significant differences between Gen X and Gen Y (sig. 0.042) (see Appendix L).

Table 7.6 - Generation differences within mobile device usage for purchase decision support by categories type with ANOVA

Dependent Variable	Gender	Mean	SD	Std. Error Mean	df	F	Sig.
Home Appliances						3.101	.046
	Gen Z	3.56	1.701	.183	2		
	Gen Y	**4.15**	1.745	.161	2		
	Gen X	4.03	1.689	.171	2		
Consumer electronics						2.989	.052
	Gen Z	4.74	1.788	.193	2		
	Gen Y	**5.06**	1.560	.144	2		
	Gen X	4.47	1.904	.192	2		
Entertainment and culture						4.177	.016
	Gen Z	**4.10**	2.024	.218	2		
	Gen Y	4.38	1.799	.166	2		
	Gen X	3.61	2.029	.205	2		

7.2.3. The purchase intention and showroom intention

By analysing the respondents' purchase intention that used their mobile device in-store, we intended to observe some possible showroom intention or intention to buy in another store (online and offline). The results showed that both genders have the same mean for purchase intention in-store (with high levels of 5.46). The scores for the purchase intention are higher than for the other choices. The probability of buying in another physical store (4.42) is higher than buying online in the same store (4.14) or even higher than in another store online (3.81).

The preferences for intention purchase of the respondents by gender only had significant differences in "purchase in another store (physical)" (sig.=0.02) and in "purchase in another store (online)" (sig.=0.00). Also, in this section, male participants had higher mean scores (see Appendix Q).

Regarding the differences within Purchase Intention, the only substantial difference was in "Purchase in another store (online)" (sig.=0.028), where the GenY had a higher score, which means a higher predisposition to showroom intention in this generation (see Appendix R).

Concluding, the T-test analysis for gender has significant differences in the Showroom intention (Sig. = 0.005). Again, male participants scored higher and thus, they are more likely to expose this behaviour (Table 7.7).

Table 7.7 – T-Test for gender differences within showroom intention

Dependent Variable	Gender	Mean	SD	Std. Error Mean	t / df	Sig.
Showroom intention	Male	**4.41**	1.421	.121	3.096/297	.002
	Female	3.88	1.497	.117		

Among generations, the ANOVAs tests reveal significant differences (Table 7.8). At least one or two of the group generations have different means of frequency of use or probability of showroom intention. There are notable differences between generations (sig. = 0.002; sig. =0.039; sig.=0.000). In the "showroom intention" between generations, Gen Y has a considerable difference (p =0.05) compared with others.

Table 7.8 – ANOVA for generations differences within tasks performed with the mobile device, product categories, and showroom intention.

Dependent Variable	Gender	Mean	SD	Std. Error Mean	df	F	Sig.
Showroom intention						3.168	.044
	Gen Z	3.99	1.510	.162	2		
	Gen Y	**4.39**	1.496	.139	2		
	Gen X	3.92	1.412	.142	2		

Figure 7.1 summarises the results of the analysis of customer's behaviours when using their mobile devices in-store and examines the average usage differences between males and females and among three generations (Gen X, Gen Y, and Gen Z).
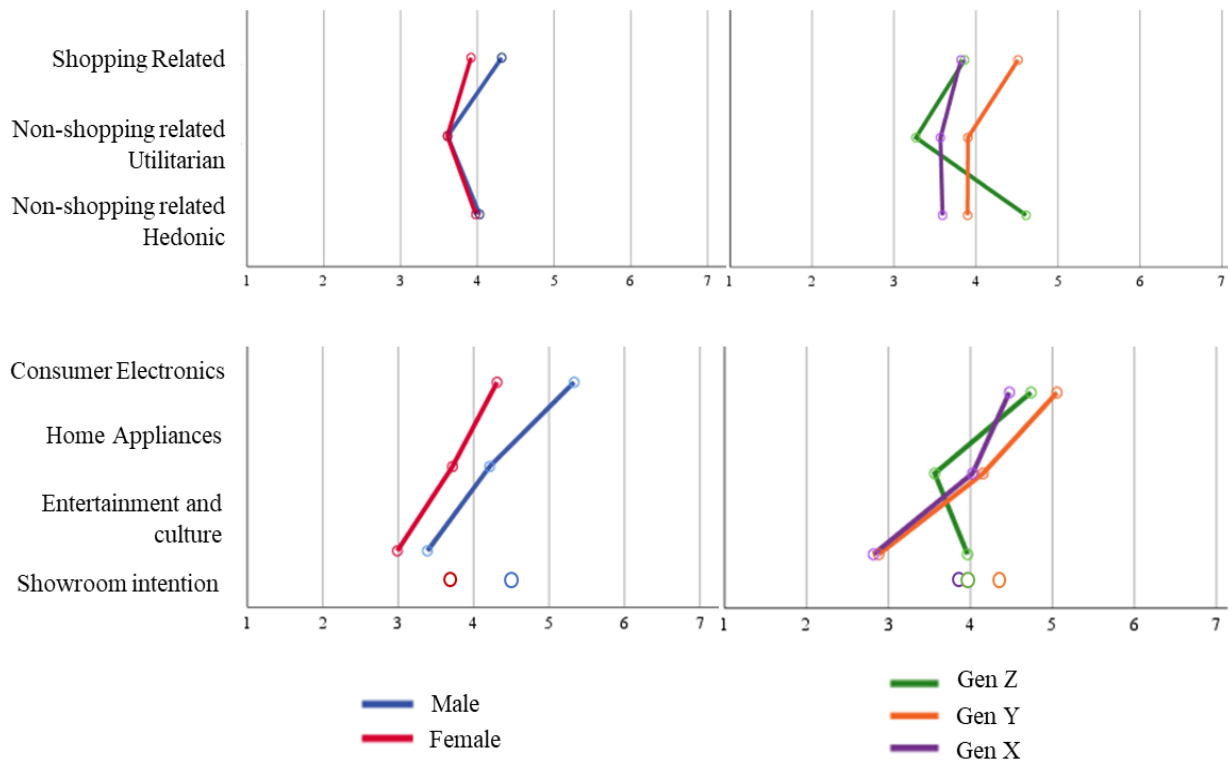
Figure 7.1 - Summary of the analysis of differences found between gender and generations in mobile devices average frequency usage in-store

In brief, the results show differences in behaviour, either between genders or between generations, which shows that the use given to mobile devices in-store can vary according to gender and age. Only in non-shopping related tasks, there was no record of differences in gender preferences.

7.3.   Descriptive analysis of the items used to measure model dimensions

This section intends to demonstrate the importance of each item for the respondents and understand how customers perceive the items.

First, a descriptive analysis of the items was carried out, where the answers vary between 1 - Completely disagree to 7 - Completely agree. Both mean and standard deviations were computed for all items and the represented constructs previously mentioned. They were also computed accordingly and the maximum and minimum values for each item were presented.

Although it is a scale adapted from previous studies, we assessed the dimensionality of the scale with the method of extracting the principal components (Appendix S). The quality of factor analysis depends on the correlation between the variables, which were evaluated using the Bartlett sphericity test and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy. Bartlett's test of sphericity had a significance level of 0.000, and the KMO scored 0.881, which means that it allows for the continuation of factor analysis.

7.3.1. Quantifying the in-store experiential dimensions perception

The Cognitive Experience was measured with three items (COG1, COG2, and COG3) (see table 7.10 for a detailed explanation of all the items) with a Cronbach's α of 0.85. The item COG3 has a higher average and is the only one above the scale middle point. The other items score near point 4, with 3.97 (COG1) and 3.69 (COG2). This shows the agreement of respondents in the perception of the impact of mobile devices on their Cognitive Experience. In the Affective Experience dimension, the measurement was done with three items (AFF1, AFF2, and AFF3) with a Cronbach's α of 0.90. The respondent's perception of this dimension is similar to the previous one and only item AFF1 has a mean above the middle point with 4.11 with the others near 4 (AFF2 – 3.97 and AFF3 – 3.53). Overall, respondents admit that the use of mobile devices in-store makes them "in a good mood".

The social dimension of the shopping experience was deliberately divided into two dimensions because the expected effects of the use of mobile devices were different, so the dimension of the Experience with other Customers was measured with two items (SOC1 and SOC2) with a Cronbach's α of 0.86 and the Experience with Employees was measured with other two items (SOC3N and SOC4N) with a Cronbach's α of 0.84. The respondents, however, demonstrate disagreement with the measured items, with a mean of 2.17 (SOC1) and 2.50 (SOC2), which implies that when respondents use their mobile devices, they do not recognise that they approach other customers. In the Experience with Employees, the items were presented in a reverse way so the respondents could agree or disagree on the negative relationship between the use of the mobile device and the Experience with Employees. Both items score means show agreement with the negative effects – SOC3N with 4.03 and SOC4N with 4.11.

The dimension of the Physical Experience was measured with three items (PHY1, PHY2, and PHY3), with a Cronbach's α of 0.91. This dimension is the one that has the higher mean score and all items are above 4. The item PHY1 regarding the perception of product and promotion attractiveness has a higher mean. Table 7.9. present the mean and standard deviations for all items, by construct. Figure 7.2 illustrates the distribution of the responses (%) of all items of the Shopping Experience dimensions.

Table 7.9 - Descriptive statistics for the in-store experiential dimensions constructs (scale from "1 – Completely Disagree" to "7 – Completely Agree")

Construct	Item	Mean	SD
Cognitive Experience			
Teach me interesting things	COG 1	3.97	1.691
Awaken my curiosity	COG 2	3.69	1.695
Bring interesting ideas to mind	COG 3	4.00	1.632
Affective Experience			
In a good mood	AFF1	4.11	1.618
Happy	AFF2	3.97	1.638
Have an exciting experience	AFF3	3.53	1.678
Experience with Customers			
Interact with other store customers	SOC1	2.17	1.527
I advise customers who ask for my opinion on the store's products/services	SOC2	2.50	1.762
Experience with Employees			
I do not interact with store employees	SOC3N	4.03	2.008
I do not share my opinions with store employees	SOC4N	4.11	2.096
Physical Experience			
It has an attractive product and promotion displays	PHY1	4.33	1.617
It has an attractive décor	PHY2	4.20	1.726
It is comfortable	PHY3	4.22	1.718
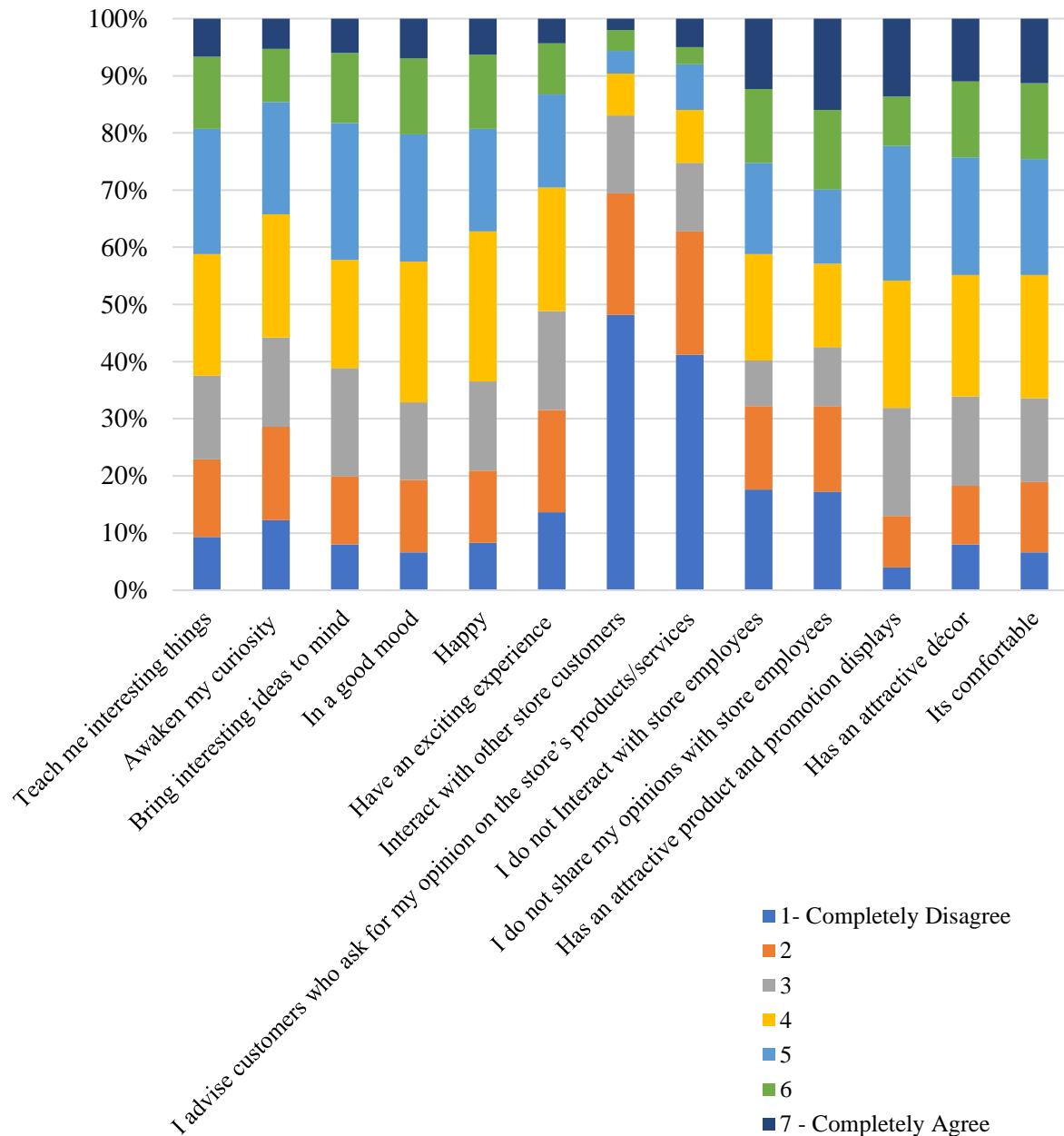
Figure 7.2 – Shopping experience dimensions by item – Distribution of the responses (%)

7.3.2. Quantifying the mobile device usage effects and customer satisfaction

The effects of using the mobile device in-store are analysed through two constructs: Perceived Control and Perceived Enjoyment. The Perceived Control construct was measured with four items (PC1, PC2, PC3, and PC4) with a Cronbach's α of 0.90. All items had mean scores close to 5 and the agreement of the respondents with all items is strong. The PC1 item related to the

feeling of control when interacting with store employees has the higher score means. However, the construct with overall high scores was Perceived Enjoyment. It was measured with three items (PE1, PE2, and PE3) with a Cronbach's α of 0.89. Respondents strongly agree with the item PE2 "Using mobile devices provides me with a lot of enjoyment", showing the perceptiveness of positive feelings associated with the use of mobile devices and the hedonic aspects of it.

The Customer Satisfaction construct was measured with three items (SAT1, SAT2, and SAT3), with a Cronbach's α of 0.92. The item SAT1 is related to customer satisfaction with the products and/or services of the store and had the lowest mean score (3,88). In turn, the respondents agree more with the item SAT2 and SAT3, especially the item SAT2 "The experience I had at this store was satisfactory".

Table 7.10 presents the mean and standard deviations for all items by construct. Figure 7.3 illustrates the distribution of the responses (%) of all items of the mobile device usage effects constructs.

Table 7.10 - Descriptive statistics for mobile device usage effects and customer satisfaction (scale from "1 – Completely Disagree" to "7 – Completely Agree")

Construct	Item	Mean	SD
Perceived Control			
I feel in control when interacting with store employees	PC1	5.00	1.712
I have more control over my purchasing decisions	PC2	4.84	1.314
I feel in control during the purchase process	PC3	4.92	1.274
I can freely choose the products and/or services	PC4	4.93	1.284
Perceived Enjoyment			
I have fun interacting with my mobile device	PE1	4.54	1.694
Use mobile devices provides me with a lot of enjoyment	PE2	5.62	1.427
I enjoy using my mobile device	PE3	5.58	1.380
Customer Satisfaction			
I am very satisfied with the products and/or services provided by this store	SAT1	3.88	1.954
The experience I had at this store was satisfactory	SAT2	4.92	1.834
This store does a good job with the satisfaction of my needs	SAT3	4.90	1.892
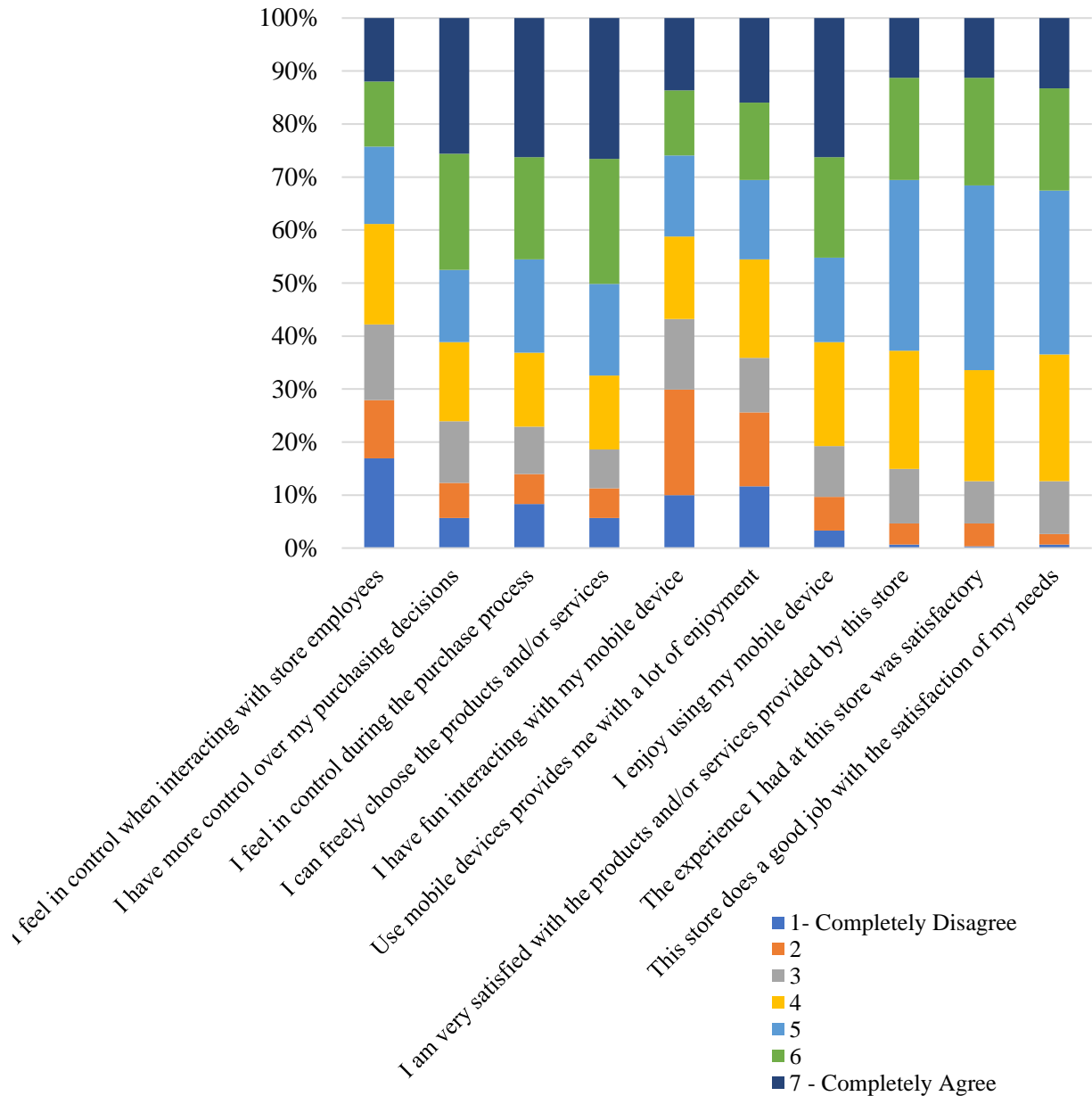
Figure 7.3 – Mobile device usage effects constructs by item – Distribution of the responses (%)

7.3.3. Quantifying the shopping behaviour intentions

The customer shopping behaviour intentions are represented with the construct of Repatronage Intention that was measured with three items (RI1, RI2, and RI3), with a Cronbach's α of 0.83. Generally, respondents perceived this construct positively and agreed with the items, to a greater degree with the item RI1 "I consider this store as my first choice to shop" (mean = 5.09).

Table 7.11 presents the mean and standard deviations for all items of the construct. Figure 7.4 illustrates the distribution of the responses (%) for all the items of the Repatronage Intention.

Table 7.11 - Descriptive statistics for shopping behaviour intentions (scale from "1 – Completely Disagree" to "7 – Completely Agree")

Construct	Item	Mean	SD
Repatronage Intention			
I consider this store as my first choice to shop	RI1	5.09	1.774
I am likely to buy at this store again in the future	RI2	3.98	1.926
I am likely to visit this store again in the future	RI3	4.19	1.963
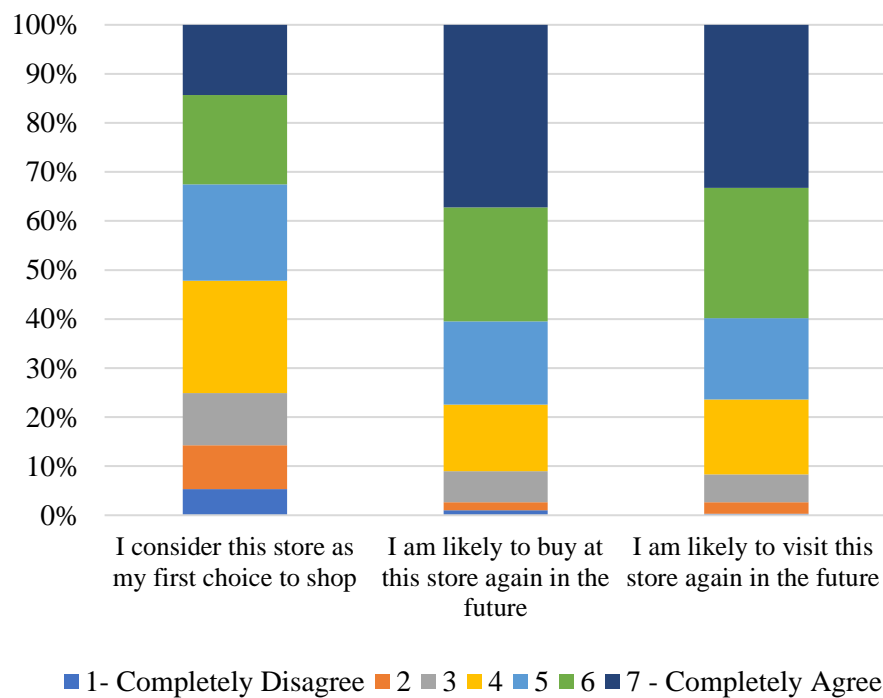
Figure 7.4 – Repatronage Intention– Distribution of the responses (%)

7.4. Confirmatory factor analysis - measurement model validation

Before evaluating the measurement model, a set of assumptions must be validated to proceed with the analysis.

Multivariate outliers were identified through the Mahalanobis distance (D^2). According to the results, although 17 observations had a significance value below 0.05, there is no justification for removing those observations (Appendix T). Moreover, there is no multivariate multicollinearity, because the VIF indicators are greater than 0.10 and less than 10, as proposed by Kline (1998) (Appendix U). None of the exogenous variables reported SK above 3 or KU values above 10 (Kline, 2011), meaning no suggestion of violation of normality. Initially, normality was measured using the tests Shapiro-Wilks (S-W) and Kolmogorov-Smirnov with Lilliefors correction (KS), as proposed by Hair et al. (2014) (Table 7.13).

Internal consistency was checked through Cronbach's alphas, which were calculated for all items and constructs. This statistical measure aims to provide a numerical value for an internal consistency of data collection, measuring how effectively all items form the same construct. Cronbach's alpha can assume any value between 0 and 1, but the higher the alpha's value, the greater the reliability. A score below 0.5, the value is not acceptable; between 0.50 and 0.79 is acceptable; between 0.8 and 0.89 means that it has good consistency and a score equal to 0.90 or higher means that it is excellent.

Afterwards, confirmatory factor analysis (CFA) was then used and constructs in the model that were validated for reliability, convergence, and discriminant validity. According to the recommendations of Hair et al. (2014), first, the measurement models for each construct were obtained separately (Appendix V) and then 3 separate models were considered. Finally, a measurement model with all the 9 constructs and corresponding 25 indicators was taken into account (Appendix Y). The Maximum Likelihood estimation method was used. Key results follow, showing the consistency of the obtained estimates.

Measurement model of the in-store experiential dimensions

The measurement model of the in-store experiential dimensions has 5 constructs (Cognitive Experience, Affective Experience, Experience with Customers, Experience with Employees, and Physical Experience) and 13 measurement items. From the measurement model analysis,

the initial results are presented in Appendix W, which presents the path diagram of the model, with the estimated factor loading in a standardised solution.

A good model-data fit was obtained. However, the item SOCN3 scored a low loading and SOCN4 a non-admissible loading. Note that in the pre-test phase, the measurement items of the Experience with Customers and Experience with Employees constructs had already been reduced to two items due to issues related to respondents' poor understanding, and therefore they were eliminated. In this case of poor or high loading, it was decided that the measurement would be made using a single item (SOC3N) and a new measurement model was obtained (see Figure 7.5).

The modified model had a good model-data fit [$X^2(45)= 108.404$ ($\rho=0.000$); $X^2/df= 2.409$, CFI= 0.972, TLI= 0.959, RMSEA= 0.069]. All the estimated factor loadings were above 0.7 (Figure 7.5).
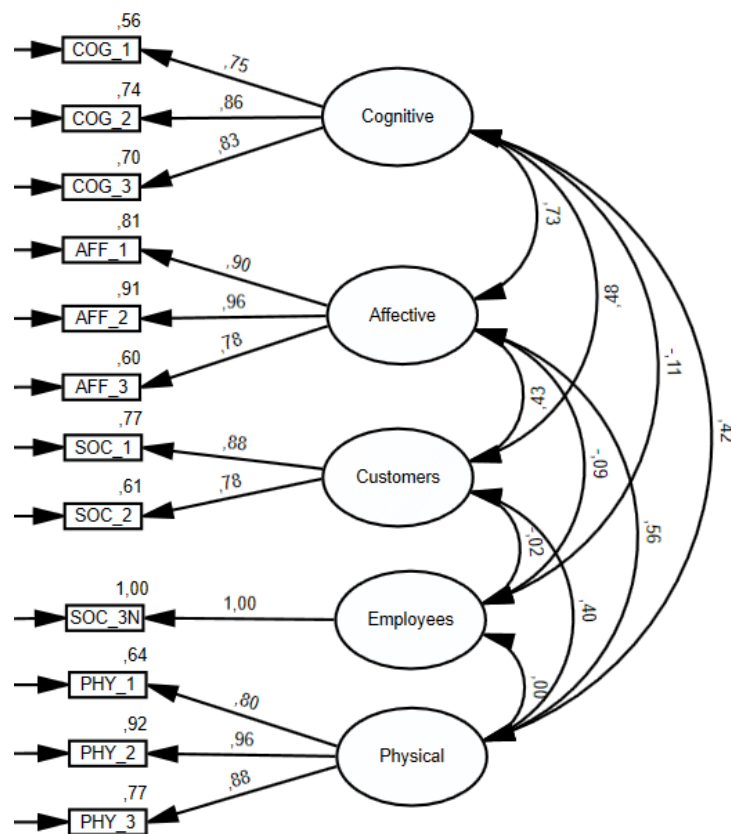
Figure 7.5 – Final measurement model of the in-store experiential dimensions

In order to access whether a 5 dimensional model should be preferred to a single factor model with one construct measured with the 12 items, a single model factor was tested

(Appendix X). It allows us to conclude that the Single Factor Model does not represent the in-store experiential dimensions with poor measurements as the CFI= 0.003, TLI= -0.191 and RMSEA = 0.37.

We concluded that the model presented in Figure 7.5 should have been chosen to proceed with the analysis.

Measurement model of the mobile device usage effects

The measurement model of the mobile device usage effects constructs (Perceived Enjoyment and Perceived Control) is measured with 7 items. Figure 7.6 presents the path diagram of the model, with the estimated factor loading in a standardised solution and also the model fit measures. The correlation between Perceived Enjoyment and Perceived Control is 0.435 below 0.70.
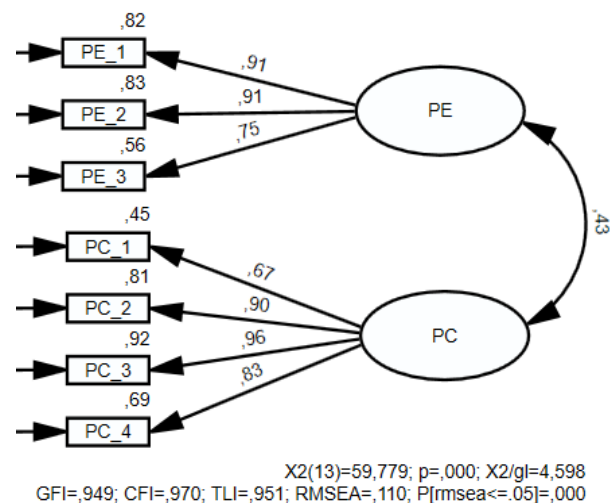
Figure 7.6 - Measurement model of the mobile device usage effects

Measurement model of customer satisfaction and shopping behaviour intentions

The measurement model of the shopping behaviour intentions (Customer Satisfaction and Repatronage Intention) is measured with 6 items.

Figure 7.7 presents the path diagram of the model, with the estimated factor loading in a standardised solution and the model fit measures. Only the RI1 item had a loading below 0.70.

However, we can accept loadings with a score above 0.60, such as in this case. The correlation between Customer Satisfaction and Repatronage intentions is 0.74, slightly above 0.70.
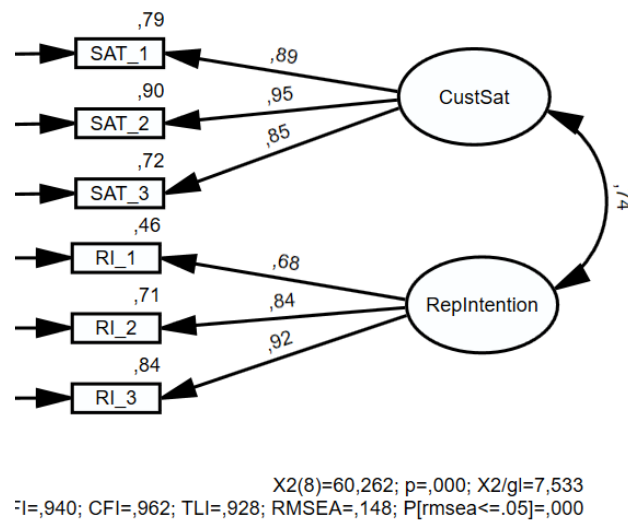
Figure 7.7 - Measurement model of customer satisfaction and the shopping behaviour intentions

Measurement model

Finally, a measurement model with 9 constructs measured with 24 items was considered and assessed. Appendix Y represents the path diagram of the latent variables measurement model, in a standardised solution of the factor loadings.

All of the items had an acceptable factor loading value, with the PC1 item with the lowest value (0.68), very close to the recommended value of 0.70 (Hair et al., 2014).

All constructs were validated for their reliability, convergent validity, and discriminant validity. As presented in Table 7.12 and Table 7.13 all items and constructs exhibit reliability, as can be proved by the standardised loadings and CR values. The measures scored adequate convergent validity as the average variance of manifest variables extracted by constructs (AVE) was at least 0.81 (Cognitive), showing that more variance was explained than unexplained in the items in each construct (Bagozzi & Yi, 1988).

Table 7.12 - Factor Correlation Matrix - square root of AVE on the diagonal

	Cognitive	Affective	Customers	Employees	Physical	Perceived Enjoyment	Perceived Control	Customer Satisfaction	Repatronage Intention
Cognitive	**0.81**								
Affective	0.73	**0.88**							
Customers	0.49	0.43	**0.83**						
Employees	-0.11	-0.09	-0.02	**1.00**					
Physical	0.42	0.57	0.40	-0.01	**0.88**				
Perceived Enjoyment	0.43	0.58	0.34	-0.14	0.53	**0.86**			
Perceived Control	0.32	0.38	0.21	-0.15	0.39	0.44	**0.85**		
Customer Satisfaction	0.38	0.49	0.33	-0.08	0.58	0.51	0.48	**0.90**	
Repatronage Intention	0.17	0.33	0.12	-0.14	0.34	0.38	0.48	0.74	**0.82**

Table 7.13 – Results from confirmatory factor analysis – Overall measurement model

Items	Standardised factor Loading	Variance explained	Skewness	Kurtosis
Cognitive experience (AVE=0.66; CR=0.85; Cronbach's α=0.85)				
COG 1	0.749	0.56	-0.104	-0.850
COG 2	0.858	0.736	0.059	-0.873
COG 3	0.833	0.693	-0.101	-0.778
Affective experience (AVE=0.78; CR=0.91; Cronbach's α=0.90)				
AFF1	0.897	0.805	-0.150	-0.696
AFF2	0.958	0.918	-0.057	-0.722
AFF3	0.777	0.604	0.173	-0.844
Experience w/ Customers (AVE=0.68; CR=0.81; Cronbach's α=0.86)				
SOC1	0.866	0.751	1.413	1.323
SOC2	0.786	0.618	1.102	0.218
Experience w/ Employees				
SOC3N	1	1	0.016	-1.237
Physical experience (AVE=0.78; CR=0.95; Cronbach's α=0.91)				
PHY1	0.803	0.644	0.003	-0.667
PHY2	0.943	0.889	-0.135	-0.804
PHY3	0.891	0.794	-0.104	-0.842
Perceived Control (AVE=0.72; CR=0.91; Cronbach's α=0.90)				
PC1	0.675	0.456	0.018	-1.124
PC2	0.905	0.819	-0.565	-0.770
PC3	0.955	0.912	-0.642	-0.649
PC4	0.835	0.698	-0.781	-0.322
Perceived Enjoyment (AVE=0.74; CR=0.90; Cronbach's α=0.89)				
PE1	0.915	0.837	0.092	-1.200
PE2	0.904	0.818	-0.123	-1.167
PE3	0.745	0.555	-0.511	-0.672
Customer Satisfaction (AVE=0.81; CR=0.95; Cronbach's α=0.92)				
SAT1	0.890	0.792	-0.286	-0.229
SAT2	0.949	0.900	-0.350	-0.101
SAT3	0.849	0.721	-0.199	-0.277
Repatronage Intention (AVE=0.67; CR=0.93; Cronbach's α=0.83)				
RI1	0.686	0.470	-0.328	-0.692
RI2	0.854	0.729	-0.892	0.116
RI3	0.902	0.814	-0.780	-0.172

A good model-data fit was obtained [$X^2(240)$= 500.740 (ρ=0.000); X^2/df= 2.086, CFI= 0.953, TLI= 0.942, RMSEA= 0.060]. CFI and TLI have fulfilled the recommended criteria as a very good fit, whereas the RMSEA value was indicative of an acceptable fit. Appendix Z summarises the main measures for evaluating the Goodness-of-Fit, Model-Data and the values of the proposed model. In brief, the measurement model presented a good fit to the data and the required criteria for good psychometric properties.

7.5.   Structural model validation

After the measurement model was validated, to evaluate the structural model, the dependency relationships between the constructs under study, the structural standardised coefficients estimated were analysed and respective p-values, as well as the coefficient of determination (R^2) of the structural equations.

Recall the theoretical model and the research hypotheses were presented in chapter 5, in section 5.3. The path diagram of the overall proposed model is presented in Figure 7.8, with the structural standardised coefficients estimated (β) and corresponding p-values (* $p < 0.01$; **$p < 0.05$), as well as the coefficients of determination (R^2) of the structural equations. The coefficients of determination R^2 associated with the main structural equations of this model present an acceptable proportion of the explained variation, as indicated. 0.21 for the Perceived Control construct, 0.40 for the Perceived Enjoyment construct, 0.44 for the Customer Satisfaction construct and 0.54 for the Repatronage Intention construct.

As it can be seen in the path diagram, most structural relationships are significant. Regarding the relationships presented in the model and beginning the analysis with the influence of the in-store shopping experience dimensions, the Cognitive Experience has a positive effect on the Perceived Control (β= 0.19, ρ <0.05), but it is not significant regarding Customer Satisfaction. The Affective Experience does not have a significant effect on Customers Satisfaction, however, the effects on Perceived Enjoyment are positive (β= 0.33, ρ <0.01). The Experience with Customers does not have a significant effect. The Experience with Employees does not have a significant relationship with Customers Satisfaction, however, the effects on Perceived Control are significantly negative (β= 0.13, ρ <0.05). The standardised weights have a sign compatible with the meaning of the relationships between independent and dependent variables proposed under the research model. The Physical Experience has a

significant positive influence on Perceived Control (β= 0.32, ρ <0.01), Perceived Enjoyment (β= 0.29, ρ <0.01) and Customer Satisfaction (β= 0.33, ρ <0.01).

The constructs related to the effects of the mobile device usage in-store present in the model (PE and PC) are both positively affecting Customer Satisfaction (PE β= 0.16, ρ <0.05 and PC β= 0.25, ρ <0.01). The Repatronage Intentions is positively influenced by Customer Satisfaction (β= 0.74, ρ <0.01).
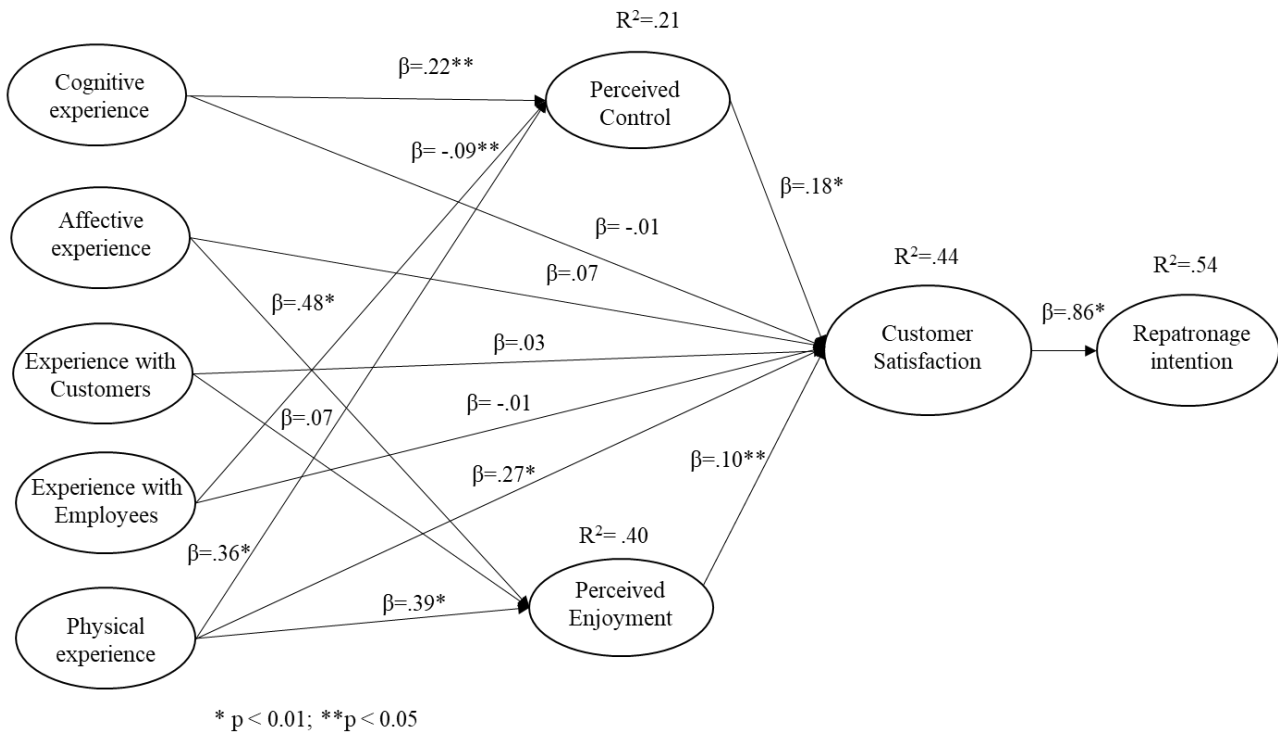
Figure 7.8 – Structural model - standardised coefficients with respective p-values and coefficient of determination

Compared to the measurement model, the structural model presents measures of fit that are slightly less satisfactory, but still, an acceptable model-data fit was obtained. Table 7.14 summarises the values of the Goodness-of-fit measures of the structural model.

Table 7.14 - Goodness-of-fit measures of the structural model

Metrics	Value
X^2 (p-value)	0.000
GFI	0.876
RMSEA	0.063
RMR / SRMR	0.225
NFI	0.907
CFI	0.947
TLI	0.937
RFI	0.889
AGFI	0.840
PNFI	0.762
PGFI	0.679
X^2/df	2.176
AIC	670.740

7.6. Validation of structural relationships and research hypotheses testing

The structural equation models allow the estimation not only of the direct effects already analysed but also of indirect and total effects between latent variables. These provide a broader perspective of the research model, not just because they can reinforce the validity of the formulated hypotheses, but also because they evidence the indirect relationships between latent variables that go beyond those established in the hypotheses.

In the theoretical model, two constructs with a mediating role were proposed, Perceived Control and Perceived Enjoyment. To estimate the hypothesised relationships (direct, indirect, and total effects) a bias-corrected bootstrap procedure with 1000 samples, equal in size to 95% of the actual sample, was adopted in order to produce more accurate confidence limits for the indirect effects (Bollen & Stine, 1990; MacKinnon et al., 2010). Table 7.15 summarises the direct, indirect, and total effects estimated among latent variables.

Table 7.15 - Results of the hypotheses tests to validate the direct effects and the mediation effects

Independent	Effects	Dependent – Customer Satisfaction	
	Direct (β_{YM}) Indirect (β_{MX} x β_{YM})	Standardised coefficient	p-values
Cognitive	Total effects	0.037	0.833
	Direct without mediator	0.008	0.925
	Direct with mediator	-0.01	0.909
	Indirect via PC	0.047	0.047**
Affective	Total effects	0.159	0.08
	Direct without mediator	0.204	0.022 **
	Direct with mediator	0.097	0.281
	Indirect via PE	0.063	0.037**
Customers	Total effects	0.05	0.492
	Direct without mediator	0.047	0.481
	Direct with mediator	0.042	0.503
	Indirect via PE	0.008	0.295
Employees	Total effects	-0.052	0.443
	Direct without mediator	-0.067	0.174
	Direct with mediator	-0.02	0.665
	Indirect via PC	-0.032	0.019**
Physical	Total effects	0.456	*
	Direct without mediator	0.435	*
	Direct with mediator	0.331	*
	Indirect via PC and PE	0.125	*
Perceived Control	Total effects	0.25	*
	Direct	0.255	*
	With dimensions	0.25	*
Perceived Enjoyment	Total effects	0.159	0.039**
	Direct	0.227	*
	With dimensions	0.159	0.014**

* $p < 0.01$; **$p < 0.05$

The analysis of the direct effects of each dimension of the in-store shopping experience showed that only two direct effects on customer satisfaction are significant (Affective and Physical Experience). As hypothesised in H1a, the Cognitive experience when using mobile devices has a significantly positive effect on PC, however, the Cognitive experience only has a positive effect on Customer Satisfaction when introducing the mediator PC, resulting in "partially" accepting H1b.

The Affective experience in the absence of the mediator PE has a significant effect on Customer Satisfaction. When introducing the mediator PE, the direct effect loses significance and the Effective experience directly and positively affects PE and positively influences Customers Satisfaction through PE. All things considered, H2a is "partially" supported and H2b is supported.

The hypotheses involving the Experience with customers (H3a and H3b) have not been supported. Considering the Experience with Employees, PC exerts a mediation effect on Customer Satisfaction, so the H4a is supported and H4b is "partially" supported. H5, H6, and H7 were also supported since there are a significantly positive direct and indirect effects of the Physical Experience on Customer Satisfaction, with PC and PE as mediating constructs. The Physical Experience has a stronger direct effect on Customer satisfaction than mediated effects.

PC and PE have presented significant effects on Customer Satisfaction, and therefore, H6 and H7 are supported. Customer Satisfaction has a positive influence on Repatronage Intention, supporting H8, and this relationship is the strongest in the model.

Table 7.16 summarises the results of the hypotheses test described above.

Table 7.16 – Testing results of the hypotheses

Hypotheses to test	Decision
H1a: The cognitive experience positively influences the perceived control.	**Supported**
H1b: The cognitive experience positively influences customer satisfaction.	**"Partially" Supported***
H2a: The affective experience positively influences the perceived enjoyment.	**Supported**
H2b: The affective experience positively influences customer satisfaction.	**"Partially" Supported***
H3a: The experience with other customers positively influences the perceived enjoyment.	Not supported
H3b: The experience with other customers positively influences customer satisfaction.	Not supported
H4a: The experience with employees negatively influences the perceived control.	**Supported**
H4b: The experience with employees negatively influences customer satisfaction.	**"Partially" Supported***
H5a: The physical experience positively influences the perceived control.	**Supported**
H5b: The physical experience positively influences the perceived enjoyment.	**Supported**
H5c: The physical experience positively influences customer satisfaction.	**Supported**
H6: The perceived control positively influences customer satisfaction.	**Supported**
H7: The perceived enjoyment positively influences customer satisfaction.	**Supported**
H8: Customer satisfaction has a positive influence on repatronage intention.	**Supported**

*Although the direct effect is non-significant, there is a significant indirect effect.

7.7.   Multigroup analysis - moderation effects

According to what was hypothesised in the theoretical model (chapter 5, hypothesis 9 and 10), the analysis of preferences for the use of mobile devices in-store proved to be different between genders and generations, which leads us to perform an analysis seeking whether there are differences between gender and among generations in the relationships of the model under analysis. Therefore, we used the multigroup analysis approach to assess whether, in this context, in particular, it is possible to identify differences between some groups.

The significance of the structural coefficients was assessed with a z-test produced by AMOS. Based on the results of the Z tests, we will highlight the structural relationships whose coefficients are significantly different between groups.

7.7.1.   The moderating effect of gender

Considering the two gender groups with no equality restrictions between the two groups, a $\chi 2$ statistic value of 921.485 with 504 degrees of freedom and $\rho<0.05$ is obtained. When restrictions on the equality of model parameters are imposed, the value of $\chi 2$ statistic is 961.697 with 534 degrees of freedom and $\rho<0.05$.

Table 7.17 presents the model comparisons and with a $\rho> 0.05$ not statistically significant. The results show that there are no significant differences between males and females. However, the analysis of the standardised estimates and z-scores presents a significant difference in the relationship between Physical experience and Perceived Control, meaning this relationship is stronger for female customers (Table 7.18).

Table 7.17 – Model comparisons

Model	DF	CMIN	P
Structural weights	30	40.212	.101

Table 7.18 - Standardized estimates of structural relationship by gender (unconstrained)

			Male		Female		
			Estimate	**P-value**	**Estimate**	**P-value**	**z-score**
PC	<---	Cognitive	0.133	0.182	0.216	0.013	0.836
PC	<---	Employees	-0.254	0.003**	-0.062	0.38	1.262
PC	<---	Physical	0.166	0.09	0.381	*	**2.18****
PE	<---	Affective	0.303	0.002	0.488	*	1.343
PE	<---	Customers	0.059	0.544	0.013	0.874	-0.359
PE	<---	Physical	0.35	*	0.25	0.003	-0.785
SAT	<---	Physical	0.375	*	0.309	*	0.251
SAT	<---	Employees	-0.058	0.459	0.01	0.863	0.613
SAT	<---	Affective	-0.056	0.658	0.238	0.062	1.77***
SAT	<---	Cognitive	0.083	0.493	-0.075	0.52	-0.934
SAT	<---	Customers	0.053	0.595	0.001	0.992	-0.339
SAT	<---	PC	0.21	0.014	0.259	*	0.54
SAT	<---	PE	0.167	0.103	0.132	0.126	0.088

* p < 0.01; **p < 0.05; ***p< 0.10

Gender plays a moderating role in the relationship between in-store shopping experience dimensions Physical Experience and mobile device usage effects of Perceived Control. The hypothesis is not fully rejected because there is evidence of significant moderation of the relationship by gender.

7.7.2. The moderating effect of generation

For the effect of moderation between generations (X, Y, and Z), we analysed three groups and compared two by two. The groups with no equality restrictions between the three present a $\chi2$ statistic value of 1212.531 with 756 degrees of freedom and $\rho<0.05$. When restrictions on the equality of structural relations are imposed, the value of $\chi2$ statistic is 1273.709 with 816 degrees of freedom and $\rho<0.05$.

Table 7.19 presents the model comparisons and with a $\rho> 0.05$, suggesting a non-significant moderating effect of generations on the model as a whole. Nevertheless, the analysis of the standardised estimates of structural relationships scored significant differences: Gen X (the older generation) and Gen Z (the younger generation) have significant differences in the effects of Physical Experience in Customer Satisfaction. For Gen Z this dimension is not positively significant with Customer Satisfaction. Also, between these two generations, Gen Z

scored a higher estimate for the relationship between the Experience with Customers and Customer Satisfaction even if it is not significant, the difference between the two is (Table 7.20).

Table 7.19 - Model comparisons - Chi-square test

Model	DF	CMIN	P
Structural weights	60	61.178	.433

Table 7.20 - Standardised estimates of structural relationship by generation (unconstrained – Gen X; Gen Y)

			Gen X		Gen Y		
			Estimate	**P-value**	**Estimate**	**P-value**	**z-score**
PC	<---	Cognitive	0.297	0.01	0.025	0.815	-1.6
PC	<---	Employees	-0.179	0.049	-0.043	0.619	1.114
PC	<---	Physical	0.245	0.026	0.426	*	1.594
PE	<---	Affective	0.275	0.023	0.344	0.002	0.642
PE	<---	Customers	0.187	0.103	0.01	0.921	-1.035
PE	<---	Physical	0.286	0.019	0.337	0.002	1.049
SAT	<---	Physical	0.512	*	0.272	0.03	-0.993
SAT	<---	Employees	-0.043	0.554	0.003	0.973	0.44
SAT	<---	Affective	-0.042	0.8	0.064	0.635	0.485
SAT	<---	Cognitive	0.101	0.521	0.003	0.981	-0.471
SAT	<---	Customers	-0.143	0.12	0.119	0.262	1.866***
SAT	<---	PC	0.252	0.002	0.254	0.008	-0.085
SAT	<---	PE	0.236	0.016	0.102	0.353	-1.158

* p < 0.01; **p < 0.05; ***p< 0.10

Table 7.21 - Standardised estimates of structural relationship by generation (unconstrained – Gen X; Gen Z)

| | | | Gen X | | Gen Z | | |
			Estimate	P-value	Estimate	P-value	z-score
PC	<---	Cognitive	0.297	0.01	0.212	0.084	-0.508
PC	<---	Employees	-0.179	0.049	-0.107	0.311	0.535
PC	<---	Physical	0.245	0.026	0.339	0.004	0.656
PE	<---	Affective	0.275	0.023	0.479	*	1.344
PE	<---	Customers	0.187	0.103	0.095	0.394	-0.424
PE	<---	Physical	0.286	0.019	0.208	0.073	-0.2
SAT	<---	Physical	0.512	*	0.162	0.258	**-2.284**
SAT	<---	Employees	-0.043	0.554	-0.012	0.901	0.312
SAT	<---	Affective	-0.042	0.8	0.402	0.045	1.552
SAT	<---	Cognitive	0.101	0.521	-0.404	0.105	-1.677***
SAT	<---	Customers	-0.143	0.12	0.329	0.098	**2.193**
SAT	<---	PC	0.252	0.002	0.247	0.025	-0.388
SAT	<---	PE	0.236	0.016	0.138	0.264	-1.025

* p < 0.01; **p < 0.05; ***p< 0.10

Table 7.22 - Standardised estimates of structural relationship by generation (unconstrained – Gen Z; GenY)

| | | | Gen Z | | Gen Y | | |
			Estimate	P-value	Estimate	P-value	z-score
PC	<---	Cognitive	0.212	0.084	0.025	0.815	1.061
PC	<---	Employees	-0.107	0.311	-0.043	0.619	-0.478
PC	<---	Physical	0.339	0.004	0.426	*	-0.963
PE	<---	Affective	0.479	*	0.344	0.002	0.71
PE	<---	Customers	0.095	0.394	0.01	0.921	0.554
PE	<---	Physical	0.208	0.073	0.337	0.002	-1.169
SAT	<---	Physical	0.162	0.258	0.272	0.03	-0.964
SAT	<---	Employees	-0.012	0.901	0.003	0.973	-0.114
SAT	<---	Affective	0.402	0.045	0.064	0.635	1.282
SAT	<---	Cognitive	-0.404	0.105	0.003	0.981	-1.368
SAT	<---	Customers	0.329	0.098	0.119	0.262	0.809
SAT	<---	PC	0.247	0.025	0.254	0.008	-0.29
SAT	<---	PE	0.138	0.264	0.102	0.353	0.136
RI	<---	SAT	0.706	*	0.74	*	0.159

* p < 0.01; **p < 0.05; ***p< 0.10

Despite the small sample size in each group, there seems to be evidence supporting the fact that generation plays a moderating role in the relationship between in-store shopping experience dimensions Physical Experience, Experience with Customers and Customer Satisfaction. The hypothesis cannot be fully rejected because there is evidence of significant moderation of the relationship by generation.

7.8. Main findings and discussion of the quantitative research

The previous sections describe the results obtained in the empirical study. In this section, we will proceed with the discussion, confronting results with the literature that supported the formulation of the research hypotheses and the results obtained.

The discussion is carried out according to the types of analysis performed, starting with the differences on the use of mobile devices in-store and then analysis of the results of the theoretical model and the hypotheses under test.

7.8.1. Gender and generations preferences of the use of mobile devices in-store

Following the research question (RQ1), the results show significant differences between gender and among generations when using their mobile devices for different tasks and when using them for decision-making support in various categories. The frequency of use of mobile devices in-store is above the mean level of the scale, which implies a recurrent behaviour that cannot be overlooked. Significant higher levels of frequency use are reported by males and by members of the Gen Y group. These results align with previous research, presenting the two groups as the main users of mobile devices in consumer electronics stores (Eriksson et al., 2018; Marriott et al., 2017).

Concerning gender differences, and when analysing tasks separately, males show significantly higher scores in finding information about the products or services on a mobile device, with no differences in performing other tasks. This is also true when we divide the tasks into "shopping tasks" and "non-shopping tasks", meaning that males use their devices more to

assist the shopping process. If we look closer at the results of the differences between gender when using their mobile devices for decision-making, males show higher scores in all product categories. However, more sophisticated and technically complex products, such as smartphones, show the highest frequency.

From all different types of tasks that were analysed, the information search and the socialisation tasks are the most important, which could mean that males seek information and people online. By avoiding contact with salespeople, they look for opinions and companies online (Rippé et al.,2017).

In relation to gender and purchase intention we found no differences, but males score a higher probability level when examining the showroom behaviour intention. This can be related not only to the search for the best deal (Schneider & Zielke, 2020), but also to the intention to minimise the perceived risk of purchasing a product with high involvement by visualising the products physically (Ewerhard et al., 2019).

In sum, by using mobile devices more frequently to perform tasks related to shopping, we assume that males have more intention to manage them efficiently and consequently are less affected by in-store marketing stimuli and less predispose to impulse purchases (Bellini & Aiolfi, 2017; Grewal et al., 2018; Sciandra et al., 2019).

Regarding differences among generations, we found some that were significant. Starting with the general frequency use, we found Gen Y having higher values. When analysing types of tasks, it is possible to see that for "shopping tasks" and "non-shopping tasks – utilitarian", Gen Y also have higher frequency use, but in "non-shopping tasks – hedonic" the Gen Z use their mobile devices more frequently. Although Gen Z results showed lower results than Gen Y in frequency use, they specifically use mobile devices for "Entertainment" and "Socialising with family and friends", indicating the importance of the internet for socialisation (Hall et al., 2017). Because they are younger and have less income due to still being students, it is possible that the shopping management can be done by the parents or someone responsible for household purchases. Priporas et al. (2017, p. 378) mentioned that "generation Z customers are heavy online shoppers of apps and customised applications", but according to our results when Gen Z customers visit a store, they have the intention to purchase in-store.

Even though Gen X generation represents lower levels of mobile device usage, it does not mean that they are not influenced by it. In this case, proficiency in using technology can play

an essential role in the frequency and types of use (Tyrväinen & Karjaluoto, 2019). When looking at the differences among generations in the use of mobile devices for decision-making support, Gen Y is the one which shows higher frequency in all categories. These results align with previous research (Dorie & Loranger, 2020) and highlight avoidance towards salespeople, but show trust in the information on their mobile devices.

The difference in showroom behaviour intention is significant for Gen Y (above 4 points). According to Hall et al. (2017), this behaviour is expected among the youngest generations, especially in Gen Y. Although Gen Z showed the lowest level (below 4 points) in the showrooming behaviour intention and the highest (mean of 5.55) for the purchase intention in-store, this could mean a more loyal generation. However, the showroom is a complex phenomenon and as Schneider and Zielke (2020) claim, many factors can influence it and there are many types of groups of showroomers. The purchase intention is high in every generation and gender. Even if they use their mobile, they use it to assist the decision-making process, highlighting the mobile device's complementary role to an in-store purchase.

Another perspective on the data can show that the use of mobile devices in-store is less relevant for entertainment activities, especially for females and for Gen X. This is a piece of important information since the results of the systematic literature review demonstrated that hedonic activities are the ones that can contribute most for a better shopping experience.

7.8.2. The effects of mobile devices usage on the in-store shopping experience and customer behaviour

With regard to the proposed research model, the measurement model showed an adequate global fit, but also unidimensionality, reliability, and construct validity of the scales. In the second phase, the structural model was verified. The results pointed to an adequate global model-data fit and the validation of most of the formulated hypotheses, which allows us to conclude the partial validation of the research model. The results of each hypothesis will be discussed following the reasoning of the research questions.

Assuming that customers use their mobile devices in-store, their perception of the dimensions of the shopping experience changes. The descriptive analyses of the shopping experience dimensions showed that respondents agreed that some dimensions have higher

influence than others. After the model validation, this statement was confirmed in the relationships between customers satisfaction and the effects of using the devices.

Through analysis of the results, we see that their perception is generally positive, except the experience with other customers, which is a result that departed from what we initially hypothesized. The negative experience with employees when customers use their mobile devices obtained above-average agreement and afterwards showed significant in the model under study. Respondents agree that the effects of using the devices are present and therefore, their effects as mediators and an aspect of customer satisfaction were later verified.

Furthermore, analysing the hypotheses under study and the structure of the model, only four of the fourteen relationships presented were not supported by the data. We assume that the model is not a presentation of reality and therefore, it is limited to the sample. Nevertheless, it stills allows us to draw conclusions about it.

Hypothesis H1a and H1b proposed a positive effect from cognitive experience and perceived control on customer satisfaction. The data reveal that customers' mobile device cognitively stimulates them in the store environment, increasing their sense of perceived control and, in turn, the feeling of satisfaction, with no direct relationship between cognitive experience and customer satisfaction. Instead, they are the feelings of control of the information received that increase satisfaction (Fuentes et al., 2017; Spaid & Flint, 2014). Thus, H1a is supported, but H1b can only be supported partially, as the dimension of the cognitive experience affects customer satisfaction. However, it is mediated by the perceived control transmitted by the use of the device. This link had not yet been demonstrated in the literature, but had already addressed control effects (Rezabakhsh et al., 2006; Rippé et al., 2017). Moreover, this relationship is in line with the reports of the interviewed retailers, although they did not report the satisfaction effects shown here.

Hypothesis H2a and H2b presented the affective experience as positively influencing perceived enjoyment and customer satisfaction, respectively. Hence, both hypotheses came to be confirmed. However, the relationship between affective experience and customer satisfaction weakens with the presence of the mediator. As both refer to positive feelings related to the use of the mobile device, perceived enjoyment loses strength when analysing the effects of dimensions. In this case its strongest relationship is the direct relationship with satisfaction, since the use of the device itself is already proven to be satisfactory, as also stated by Brasel

and Gips (2014). Nonetheless, the association of positive feelings with using the mobile device inside the store is proven (Ballantine & Fortin, 2009).

The role of the social dimensions of the shopping experience when the customer uses their mobile device was tested here in order to verify whether its impact would be positive in the case of contact with other customers and negative in the case of employees. It is concluded that H3a and H3b were rejected, as customers who use their mobile devices do not look for interaction with other customers. The theoretical framework points to a positive influence on sharing information with other customers (López-López et al., 2014). Nevertheless, it may be the case that socialisation is done online, or the customer is too busy with their device to be predisposed to the experience of socialisation. Thus, these hypotheses need further investigation, as the literature found does not seem to be sufficient to support or prove otherwise.

The retailers interviewed indicated that customers avoided employees, preferring information from mobile devices to employees, who often confronted them with information collected online. The aim was to show that this experience would have a negative impact on customer satisfaction. If employees can be an element of satisfaction, the lack of contact or avoidance behaviours could have the opposite effect. The results of hypotheses H4a and H4b show no direct relationship between the experience with employees using the mobile device and customer satisfaction, but the mediating effect of perceived control shows a significant relationship with customer satisfaction. As this influence is negative, it could mean that when customers use their mobile device in the experience with employees, their perceived control and satisfaction decrease. All things considered and in accordance with the recommendations of Rippé et al. (2017), employees should adopt an adaptive selling approach with these customers instead of a "pushing the sale" behaviour as this affects the evaluation of the shopping experience.

According to the results of hypotheses H5a, H5b, and H5c, when customers use their mobile devices in-store, the perception of the dimension directly affects their satisfaction, but it is also moderated by the effects that the use of the devices causes. The manipulation of variables usually controlled exclusively by the retailer (physical stimuli) becomes also controlled by the customers. The effect of physical experience on customer satisfaction alone is significant, but the overall effects increase when moderating variables are included. Perceived Enjoyment and Control enhance the total relationship with customer satisfaction. As we stated

after the conclusion of the preliminary study of the systematic review of the literature, and as it is evident in the perception of the experience of this dimension, the interaction between mobile devices and in-store shopping stimuli must integrate hedonic and utilitarian elements in order to increase the positive influence on the relationship with customer satisfaction. The environment can be customised and thus become more comfortable, pleasant, fun, and valuable elements such as information. As Grewal et al. (2018) claim, the increase of time spent in-store caused by the use of the devices also exposes customers to store elements longer, contrary to what Bellini and Aiolfi (2017) demonstrated. It is concluded that this exposure can bring benefits since customer satisfaction was strongly influencing to the intention to return to the store (H8). A customer who wants to return and re-experience the store is a strong indicator of a loyal customer (Arnold & Reynolds, 2003; Jones, 1999; Jones et al., 2006).

The data validate hypotheses H6 and H7, since the effects caused by the use of mobile devices, the perceived enjoyment and the perceived control, in addition to moderating all variables (except the relationship with customers), also have a direct effect on customer satisfaction. Therefore, we conclude that this technological element can change and improve our perception of the experience. Answering the research questions, the Physical experience dimension is the one that most influences customer satisfaction when customers use their mobile devices. Moreover, the influence effect of Perceived Control is higher than Perceived Enjoyment on Customer Satisfaction, which contradicts with previous studies (Högberg, Shams & Wästlund, 2019; Högberg et al., 2018) that assume that the hedonic aspects of the use of mobile devices in-store can influence satisfaction more than the utilitarian aspects. Nevertheless, we only studied one key effect of the use of mobile devices from each side of the spectrum, and as results showed, it requires further investigation. As previously noted, the effects on customer satisfaction, purchase intentions, and loyalty may differ depending on the type of use, and in this study, the types of use were not differentiated.

The moderating effects of gender (H9 *1-14*) and generations (H10 *1-14*) were not as significant as initially expected, mainly considering the literature and the results of usage preferences by different genders and generations, being only significant in some relations of the structural model.

In the case of the relationship between physical experience and perceived control, the direct influence is only significant for women. The results say that the use of mobile devices within the store, experiencing the variables of the store environment, increases their sense of perceived

control. On the other hand, this relationship is not significant for men. Since devices are more frequent in performing tasks not related to shopping (Bhatnagar & Papatla, 2019; Kiba-Janiak, 2014; Pantano & Gandini, 2017), they play an essential role in influencing the environment and the perception of it.

Regarding the effect of generations, differences were noted between the older generation (Gen X) and the younger generation (Gen Z). For Gen X, the relationship between physical dimension and satisfaction is significant while for Gen Z, this is not the case. As Grewal et al. (2018) indicate, the age factor can explain this situation since the elderly are more affected by the distraction that mobile devices cause and thus, are more exposed to the stimuli of physical experience. On the other hand, Gen Z is the one that presents a higher value in the relationship between the experience with other customers and satisfaction (although not significant), which may indicate that this generation is the most connected to other customers. Some studies suggest that Generation Z, contrary to what had been demonstrated by the previous generation (GenY), wants a more present in-store social experience, whether online or offline. Despite being a tech-savvy generation, it seeks social interaction, involvement and co-creation of experiences (Vojvodić, 2019).

These results have to be taken into account as well as those resulting from the analysis of preferences for the use of mobile devices within the store, because retailers may, due to lack of research, be developing store environments and technologies that serve older generations, not realising the needs of future generations of consumers. As Parment (2013) claims, Generation Y avoids social interaction in-store, but the next generation (Gen Z) values it (Vojvodić, 2019), even though both value technological solutions in-store (Pantano et al., 2017).

In brief, this chapter analysed the results of the different stages of the quantitative study, culminating in the analysis and discussion of the most important results. The proposed model showed how differently dimensions are affected by the use of mobile devices and how they contribute to forming in-store shopping experiences. In the next and last chapter, we will present the main conclusions of the study, its theoretical contribution and recommendations for management and future research as well as its limitations.

Chapter 8 – Conclusions

The purpose of this thesis was to develop an integrated model that analyses the effects of the use of mobile devices on the in-store shopping experience, and consequently on customer satisfaction and repatronage intention. It was also intended to explain how the effects of the use of mobile devices in-store contribute to advancing the theoretical knowledge on this topic and provide valuable insights for practitioners, particularly electronic retailers.

To this end, an extensive review of the literature on the customer experience in retail management and a systematic literature review on the use of mobile devices in-store and its effects on the shopping experience was conducted. Afterwards, an exploratory qualitative study was made to suppress the absence of information and improve the knowledge on the retailer's perspective. As a result of this preliminary study and literature review, a research model was built. It establishes the impact of the use of mobile devices on the in-store shopping experience dimensions, effects of the use of mobile devices, as well as shopping behaviour intentions. Subsequently, a methodology to support the empirical study was established, which was carried out in order to validate the research model.

After presenting and discussing the results obtained in the empirical study, in the last chapter of this thesis, the main conclusions are posed, as well as details of the main contributions of the research, either of academic nature or relevance to business. Next, we will critically analyse the limitations of this study and, subsequently, leave further research recommendations.

8.1.   Main conclusions

Based on the results of the preliminary studies and the empirical research of this thesis, the main conclusions drawn are the following.

In-store mobile device usage effects

Besides contributing to the theoretical model, the systematic literature review exhibited important findings on the in-store mobile device usage effects. Using the TCM framework, a research agenda was presented accordingly to the knowledge gaps encountered. The information proved to be scattered and the present thesis added knowledge to the topic focusing on the required measurement of the effects on the shopping experience.

The first preliminary study concludes that customers perceive mobile devices in-store more positively because they allow for a more efficient shopping experience. Therefore, their use should be promoted and encouraged since reports of positive effects exceed the negative ones. The mobile device usage that adds hedonic value is mainly driven by customers' initiative and is not controlled by retailers. Although they explore these motivations and development of m-services that meet the needs of utilitarian customers, it was verified that the hedonic value could enhance the shopping experience and bring satisfaction to the customer. Promoting the use of mobile devices in-store can increase purchase intention and effective sales, whether due to distraction caused by the device leading to more impulse purchases or the greater distance travelled within the store, exposing customers to more stimuli.

The proposed conceptual framework resulting from preliminary study 1 comprises various types of tasks found in the literature and performed in-store. Depending on the type of task, the effects of the mobile device usage differ. They can lead to feelings of empowerment, control, support, convenience, entertainment, and also enjoyment. The same effects add value to the shopping experience, depending on whether they are associated with the usage of hedonic or utilitarian motivations.

The retailer's perspective

Another research gap we proposed to fill was the lack of knowledge about retailers' perception of this topic. As a result, the subsequent conclusions were drawn.

Retailers focus on the disadvantages of mobile device use (e.g., showroom, loss of employees influence, price checking, and competition espionage) even when they show opportunities to enhance the experience and facilitate customer service. Retailers address the use of mobile devices in-store without any strategy to improve customer experience or increase

competitive advantage. They point at the financial risk as the main obstacle in investing in technological innovation and M-Marketing in-store.

Gender and Generational cohorts – usage preferences

In order to be able to analyse the problem comprehensively, after obtaining the results from the literature review, we investigated the topic from another perspective to gain more knowledge about it. In addition to the proposed moderating effect, we analysed whether the gender and generation cohort aspects impacted usage preferences. We wanted to know what customers do with their mobile devices while they are in-store, and by analysing the differences between gender and generations, we collected relevant information, both at theoretical as managerial levels.

Overall, males use their mobile devices more frequently and can be more influenced by mobile information when shopping and be less influenced by the in-store stimuli. As for age, the differences between generations and the types of use are in line with previous research about behaviour on the internet and general use of mobile devices (Dorie & Loranger, 2020; Eriksson et al., 2017; Eriksson et al., 2018; Ewerhard et al., 2019; Hall et al., 2017; Li et al., 2019) meaning that GenY is the heavy user age group.

As for purchase intention and showroom, the main conclusion is that there are no differences in the purchase intention. Yet, the showroom intention can be related to the levels of mobile device use, since Gen Y is the only group that has significant values for showroom behaviour intention and that also uses the mobile devices more. This demonstrates the impact of mobile devices in the information search stage. Following the results, this generation can have loyalty issues towards the retailers.

When looking at the product categories, the higher the technological complexity, the higher probability of the use of mobile devices to support the decision-making. All generations and gender demonstrate the relation between high involvement products and the use of mobile devices.

Findings highlight the complementary role of the mobile device in an in-store purchase since the purchase intention is high in every generation and gender. Even if they use their mobile, they do it to assist the decision-making process.

The effects of mobile device usage and the changing role of the physical store

The results obtained in the empirical study in each of the hypotheses and the analysis of direct, indirect, and total effects in the model allow us to draw the following main conclusions:

- The use of mobile devices influences the perception of the dimensions of the shopping experience;
- Cognitive, Affective, Physical experience and Experience with Employees when using mobile devices stimulate the customer in the store environment, increasing their sense of Perceived Control, Enjoyment, and Satisfaction;
- The Physical experience is the most influential dimension of the in-store shopping experience on Customer Satisfaction;
- Experience of the Physical store environment using the mobile device increases the sense of Perceived Control most significantly among women;
- The older generation (Gen X) and the youngest (Gen Z) cohorts experience the dimension of Physical experience and Experience with Customers differently;
- Promoting the use of mobile devices in-store can increase Customer Satisfaction and, consequently, the Repatronage Intention.

Figure 8.1 displays the structural relations supported in our study.
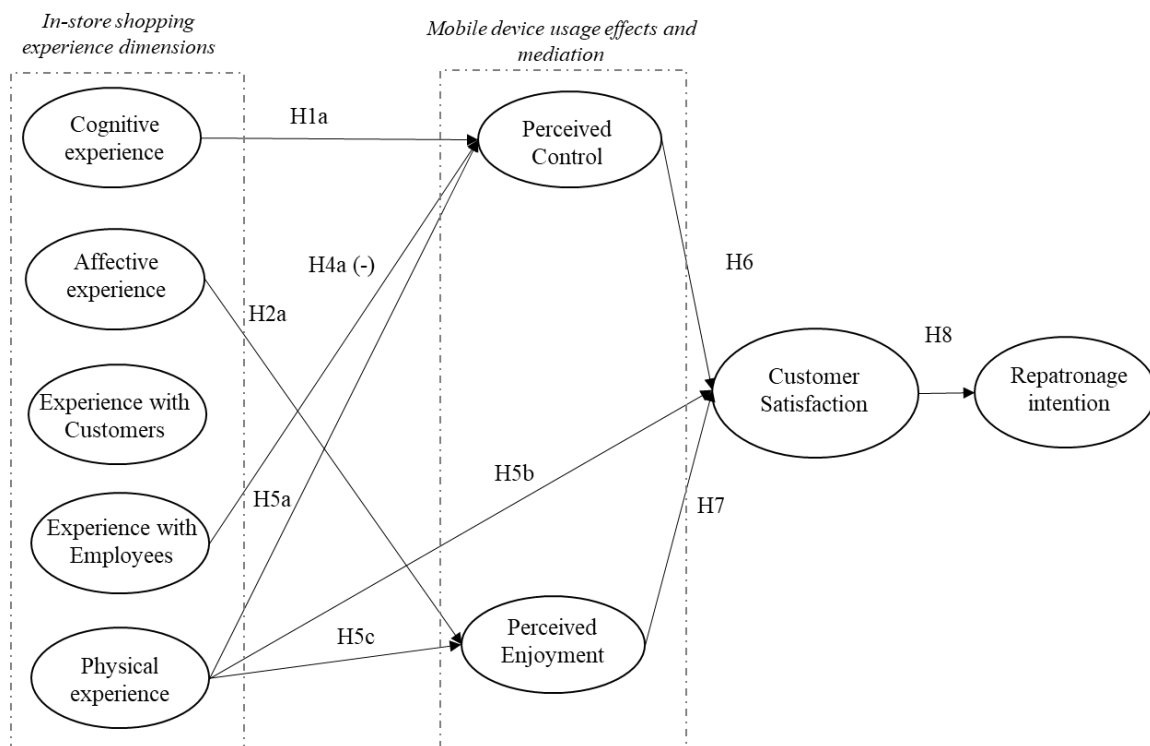
Figure 8.1 – Supported research hypotheses

The triangulation process allows to achieve a comprehensive understanding of phenomena (Patton, 2004). Therefore with the contributions of the previous studies and the results of the quantitative study, we conclude that if the use of mobile devices in-store is mainly the consequence of utilitarian motivations, such as convenience, the need to be more efficient, and in control of the shopping process, logically, the Perceived Control has an important role as a mediating effect. Even though Satisfaction is reported as strongly related to hedonic motivations, rather than utilitarian in the shopping context (Jones et al., 2006), the research shows that both have a significant influence on Customer Satisfaction, and in this study, the Perceived Control associated with utilitarian shopping value has a higher effect.

The customer experience from a retailing perspective is developed during interactions with a retailer, sometimes including other customers and its purpose is to improve the customer experience through retailing elements (Grewal & Levy, 2009; Verhoef et al. 2009). The role of the physical environment in an increasingly omnichannel experience is still a critical dimension and a competitive advantage for offline stores. Nevertheless, the environment variables manipulated to create satisfying shopping experiences or to minimise the unsatisfying factors previously controlled by retailers are now influenced by technological aspects out of retailers control, urging the need for organising the physical store (Bäckström & Johansson, 2017b). The distraction effect caused by mobile devices (Grewal et al., 2018) and the increased time spent in-store raise a number of stimuli and potential touchpoints (online or offline) that retailers can manipulate.

This investigation dismisses retailers' doubts about the positive effects of in-store use of mobile devices and the sparse and scattered evidence present in the literature, reinforcing that can increase satisfaction and repatronage intention. The theoretical contributions and managerial implications of the research are going to be explained further.

8.2. Theoretical contributions

Regarding the literature on the marketing area, the most important contribution focuses on the design and empirical validation of the model that explains the impact of the use of mobile devices on the in-store shopping experience and consequently on customer satisfaction and repatronage intention. The originality of the model proposed and partially validated in this study

is materialised by the inclusion of the effects of mobile devices and by the verification of these effects in the outcomes. Bäckström and Johansson (2017) pointed the lack of accountability on the role of moderating variables in the store environment. The present study is the first one to include the key effects of the use of mobile devices on customers and on the shopping experience enabling its measurement.

Another theoretical contribution is related to the fact that the results obtained reinforce the theories on the multidimensionality of the in-store shopping experience and demonstrate that not all the dimensions are influenced in the same way and that not all of them have the same weight in influencing customer satisfaction. Following the research streams identified in the literature review, this research is inserted and adds knowledge in the research stream of - Attitudes and behaviours towards mobile device use (activity focused).

The thesis also provides an overview of the current knowledge about how the use of mobile devices in-store affects the shopping experience, tackles future research and expands knowledge on the subject. Moreover, it also demonstrates the perspective of retailers on the phenomenon. The triangulation process, that used in an integrated way three types of different methods to access the phenomenon under study, is in itself innovative and adds credibility and validity to the research.

The research extends the knowledge in the field by confronting the previous findings and, as far as the author is aware, it is the first study that explores the differences found between generations. The present analysis has the singularity of the collected data from actual customers right after the shopping experience while being the first study of this kind on the consumer electronic retail sector (high involvement categories). Previous research on the topic focused their studies on groceries stores or lab settings (Bellini & Aiolfi, 2019; Grewal et al., 2018; Hui et al., 2013; Mills & Zamudio, 2018; Viejo-Fernández et al., 2020). Furthermore, this study contributes to related specific research areas such as communications in-store, shopping behaviour, and technology in retail settings by showing the usage preferences of different gender and generations.

The research also contributes to a better characterisation of the customers who use their mobile devices in-store and analyses their preferences in-store. Furthermore, it sheds light on the differences between gender preferences and demonstrates divergencies between generations when using mobile devices.

Previous empirical studies were restricted to young adults, mainly students. In relation to the country of origin, it is the first study that carried out a survey (using face to face interviews in retail settings) with a Portuguese sample of actual customers, in addition to making it more heterogeneous and concerning age and socioeconomic status (Bailey et al., 2019; Fagerstrøm et al., 2020; Fuentes & Svingstedt, 2017; Ono et al., 2012; Pantano, Priporas, & Dennis, 2018). Few studies include the Generation Z, still focusing on the Millennials (Gen Y) (Bailey et al., 2019; Bilgihan, 2016; Dorie & Loranger, 2020; Sullivan & Hyun, 2016), this investigation contributes with evidence that their in-store usage preferences are different.

8.3. Managerial contributions

Although using mobile devices is an activity that customers do on a daily basis and often in a non-rational way, it changes the perception of the activities we engage in, such as the shopping experience. The shopping experience variables used to be managed exclusively by the retailers, but this control has shifted to the customers, mainly due to the use of mobile devices. This research explains how it affects the perception of different dimensions of the experience, but it also shows that this reality is not reversible and that it forms the essential piece for omnichannel behaviours.

Furthermore, this study demonstrates that mobile devices certainly affect the decision-making process. Most of the services developed by retailers so far allow for a more efficient decision-making process focused on the utilitarian aspects of shopping management (Pantano & Priporas, 2016; Spaid & Flint, 2014; Tyrväinen & Karjaluoto, 2019). This leads customers to feel empowered and in control when they use their mobile devices for shopping assistance. However, their use also brings enjoyment and entertainment as the features of the mobile devices allow customers to personalise their experience through online touchpoints and redesign the retail environment. This, in turn, results in the need to know the ways in which the customer uses their device, but at the same time, retailers must promote and encourage the customer to use the device in ways that are most convenient to them. Noticeably, most of the mobile device usage that adds hedonic value is mainly driven by customers' initiative and not controlled by retailers. In order to affect the in-store customer shopping experience in a positive way, retailers must add hedonic components to the use and interaction with the customer's mobile devices.

As Sciandra, Inman, and Stephen (2019) report, the type of use can affect the retailer outcome. The non-shopping related activities are more prone to negatively impact the shopping activities and consequently the retailer outcome (fewer purchases). On the other hand, in what regards the customer experience, they can result in more enjoyment. Therefore, to maximise customer experience and the retailer outcome as well as to create a seamless experience, the first step is to make the in-store environment as technology-friendly as possible. Afterwards, to improve customer experience in-store, retailers must develop solutions for shopping management, including an entertainment component where customers can choose what they want or need. Creating a shopping list before the shopping trip makes the decision-making process more conscious and helps customers to fulfil the shopping plan (Bellini & Aiolfi, 2019), but e.g., introducing a gaming component to the task will bring them more entertainment.

If studies show that store communication efforts can be ignored and retailers' high investment gets lost because customers are distracted with their devices (Bellini & Aiolfi, 2019), the investment should be diverted or complemented in mobile communication (Bues et al., 2017; Grewal et al., 2018). Our research demonstrates that the physical dimension highly impacts the customer satisfaction and the interaction elements in the store environment are crucial.

The retailers must promote the use of mobile devices for social purposes: managing social media, writing reviews, sharing and requesting opinions of family, friends, or followers, in order to add value to the social interactions (Nakano & Kondo, 2018). Social media and mobile devices are also an important element since they can increase in-store sales (Nakano & Kondo, 2018).

Simultaneously, it is crucial to continuously stimulate the aspects of the shopping experience in-store, encouraging contact with store employees and facilitate the interaction between them through the use of mobile devices, but only with an adaptative selling behaviour (Rippé et al., 2016) or else it can decrease the customer's satisfaction as proved in this study. Additionally, the use of mobile devices can stimulate the cognitive and affective aspect of the experience by bringing online stimuli to the offline. The store environment can stimulate the senses in a unique way and it is still an important aspect that must be continually developed, explored, and integrated with the online solutions. The synchrony of both environments is fundamental in order to create an integrated scenario and experience, while giving the customer

the opportunity to be a participant and to add value to the shopping experience (Banerjee & Longstreet, 2016).

From the Wi-Fi signal to the search and purchase solutions, all staff members in-store must be aware of this reality and be prepared to face it. Whether it is an employee who receives a complaint where customers present information that is collected on their device, or a member of the security team who sees customers creating an Instagram story where the products or services are going to be shared among their contact network. These behaviours are often discouraged in-store, but they bring hedonic feelings to customers and ultimately benefits to retailers.

This study gains ever higher relevance at a time when customers resort to technology solutions, avoiding direct human contact due to restrictive measures imposed by the pandemic (COVID-19), as the role of the physical store is changing and the omnichannel services are increasing (Accenture, 2020; Briedis et al., 2020). When customers shop, they use the mobile device as their advisor, assistant, and shopping companion (Fuentes et al., 2017). This implies an opportunity for retailers to play an active role and be present in the crucial moments, making the customer's participation in the shopping process more dynamic. Services such as contactless payment, virtual consultations, curb side pickup, social commerce, and others can take advantage of the potential of mobile device functionalities.

Physical retailers still fear the showroom behaviour (search offline and buy online), but as mentioned in Viejo-Fernández et al. (2020) research, showrooming, when performed in-store using mobile devices, is more likely to make the purchase action more expensive. Therefore, it is important to create a way to direct customers to the retailer's online platforms where all the necessary information is available, but at the same time to guarantee a competitive price concerning potential online competitors.

The findings of the empirical study provide answers to the most sceptical retailers investing in mobile solutions. The concerns related to privacy are more of a retailer's perceptions than consumers, as they understand the value exchange (van de Sanden, Willems, & Brengman, 2019). As Grewal et al. (2018) state, the effect for the retailers is generally positive, which can increase purchase intention and effective sales.

Retailers can improve the service by developing and targeting technological solutions considering the gender and generations differences. For example, if males are more heavy users

than females, the product design for men (e.g. shaving machines) can have a more significant investment in mobile marketing. As for females, the investment can be shared in the different channels, but with special attention to social media, since they present slightly higher levels than males. The same with the Gen Z that present significant higher values of use for socialisation.

For customers that already use their mobile devices, in-store Wi-Fi enabled devices let retailers track a store's traffic and personalise mobile advertising. Retailers also can create a retail app for those who seek product comparison (e.g. Worten website enables the customer to choose products to compare characteristics and prices) and/or self-service technology that helps customers in the decision-making process.

Gen Z showed to value the experience with other customers. For this group, both online and offline social aspects are very important, which can be subjected to the test on new highly technological concepts that are focused on convenience and efficiency with less social interaction (self-service stores). These concepts are made in line with the preferences of Generation Y (Millennials), which soon will become a large share of customers. Therefore, if retailers think about concepts for the future, they must analyse future customers and the youngest generations, seams that have a higher demand for social interaction both online and offline.

These conclusions contribute to how we should design better solutions for interacting with this type of customer who uses their mobile devices in-store.

8.4. Research limitations

Models are always approximations of reality and the hypotheses in the model reproduce the structure of population associations. Therefore, the theoretical and managerial contributions must be analysed, considering the study's limitations.

Based on a systematic literature review, the first preliminary study showed some limitations, mainly in fewer papers found and the time interval was also reduced due to the type of devices chosen. On the one hand, the number of studies on smartphones, tablets, and wearables is scarce, while on the other hand, it was essential to understand better the use of these devices as they are indispensable part of our daily routine and our lives without them are

unimaginable. As the analysis of the number of published studies indicates, there is a growing tendency for publications. However, the information proved to be scattered and possibly there are more studies in different areas that could bring knowledge to the topic.

The exploratory qualitative study on the retailer's perspective about mobile devices should be further investigated with a different sample and the results should be compared among various countries. The specificities of a small country such as Portugal and the small size market can influence the results. The answers obtained will also be limited to respondents who were available for interviews.

Concerning the quantitative research, although real customers were used and there was a search for diversity regarding age, gender and use face to face interviews, a convenience sample was used. Hence conclusions hold for the collected sample and can not be directly generalized.

As mentioned in the literature review, the dimensions of the in-store experience can range on average between three to five, but they can reach up to fourteen (Bonfanti et al., 2020), and considering that we chose only five, this factor may be limiting in interpreting the results. The choice of dimensions was based on the sector under analysis, and the dimensions that could be most influenced by the use of devices were taken into account.

Last but not least, the model proposed was partially validated. Therefore, other formulations can be developed, such as including different dimensions or other relevant mediators as presented in the systematic literature review (e.g., entertainment, empowerment, convenience, and support).

8.5. Recommendations for future research

In addition to the extensive research agenda proposed in the preliminary study 1 (Chapter 3), since we have already answered some research directions that have arisen, we also suggest the following recommendations for future research.

Since the retail technological aspects will continue to evolve, we propose to find the effects on interacting with AI, AR, and IoT in-store, which could contribute to research developing this field of knowledge and help retailers respond appropriately to their customers' needs and understand their behaviour.

A comparative study between users and non-users, as well as their perception of the in-store shopping experience, would extend the knowledge on the usage effects. Supplementary to the study on other key effects of mobile devices in-store as mediators, the moderation effects should also be extended. In addition, other socioeconomic and cultural aspects could be analysed as moderators. The customer shopping motivations and the types of mobile device usage should be further investigated since they can change the experience and the retailers outcomes.

Despite our efforts to fill the gaps, there is still a lack of empirical studies in this area. Additionally, other important retailers' outcomes need to be addressed as well as the antecedents and outcomes of the shopping experience from the customer perspective. Therefore, for future research we propose the development of a measurement scale to assess this phenomenon that can include omnichannel customers.

The analysis after a long period can develop knowledge on the subject. Therefore, a longitudinal study would be helpful to understand if, in a few years time, there will be differences in behaviour and in results.

The retailer's perspective about mobile devices should be further investigated, and our results should be compared with the results obtained from electronic retailers from other countries, as the specificities of a small country, and a small market can influence the results. Furthermore, the present research results could be compared with research on other retailer types (e.g., clothing, toys, furniture and home decor).

The use of mobile devices continues to change our daily lives, and it has also proven to change the in-store shopping experience. Therefore, the subject deserves increasing curiosity and constant investigation by academics and retailers.

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Appendices

The appendices section presents additional information reported in the thesis.

All the support material is identified in the main text.

Appendix A: Systematic literature review Protocol

Protocol

Necessary to define the study design, goals and outcomes.

Purpose

This research aims to provide an overview of the current knowledge <u>about how the use of mobile devices in-store influences the in-store shopping experience</u> and describe the most important findings and consider possible inconsistencies. In addition, identify research gaps and provide future research directions.

Research Question

A detailed review of the existing literature on this precise topic in order to address our specific questions:

*S1*RQ1: Which are the most important streams and studies on the topic?

*S1*RQ2: Which are the effects of the use of mobile devices in the in-store shopping experience?

*S1*RQ3: What are the research gaps and possible future research directions?

Keywords and Synonymous

Search terms that addressed mobile devices usage in-store and possible effects on shopping experience.

Search terms and synonymous driven from previous analysis of the literature.

Key concepts	Mobile Devices	In-store	Shopping experience
Synonyms and other Similar Terminology	Mobile Devices	In-store	Shopping experience
	Mobile	In store	Experience
	Mobile internet devices	Brick-and-mortar	Shopping
	M-shopping	Brick and mortar	
	Mobile phone	Offline	
	Smartphone	Retail	
		Retail store	
		Physical	

Sources /Digital Libraries

The search process for the review was conducted between the 25th and the 28th May, 2020. Online scientific databases: **Web of Science** and **Scopus.**

To reach the best quality information and ensure that main editors were listed in the results, the search method was designed based on online databases, specifically Web of Science and Scopus.

After analysing the final set of articles resultant of the search in the databases, to find more relevant studies that could also fit in the quality criteria, which could not be found by keyword search, citation mining was used, including forward and backward search.

Search Strings

Search String
((Mobile OR "Mobile devices" OR "Mobile internet devices" OR "M-shopping" OR "Mobile phone" OR "Smartphone") AND ("In-store" OR "In store" OR "Brick-and-mortar" OR "Brick and mortar" OR Offline OR Physical) AND (Experience OR Shopping OR "Shopping experience"))

The choice of this search stream is justified to ensure that it covers as much as possible all the literature addressing this topic.

Quality Criteria

To ensure the quality criteria, the searches were restricted to academic journals, peer-reviewed, in English, published between 2007 and 2020 around the world, listed and ranked in the Association of Business School (ABS 2018). This specific time frame was chosen because of the types of mobile devices in analysis, we considered only the devices launched and adopted after the period of 2006-2007, with IOS, Android, Windows and Blackberry systems that enable Apps and the use of 3G/4G Internet (Marriott et al., 2017), these mobile devices are more similar to what we know nowadays as Smartphones, tablets and wearables.

The practitioner's literature is left aside in this search, because it is not possible to compare objectives and methodologies and using the same analytical constructs (Athanasopoulou, 2009).

Identification and Screening criteria	
Online database	Web of Science (all data bases) and Scopus
Search in	Article title, Abstract and Keywords
Filter	Full-text; peer-reviewed papers
Language	English
Document and source type	Academic Journal Article
Time frame	2007 – 2020
Subject areas	"Business, management and accounting" in Scopus. "Business Economics" in Web of Science.
Quality criteria	ABS 2018 list
Content Analysis	Title reading; Abstract reading; Full-text reading.

Inclusion and Exclusion Criteria

	Inclusion	**Exclusion**
Source type	Academic Journal Article	Other sources
Time frame	2007 - 2020	<2007
Language	English	Other language than English, since is an executive language for research.
Settings	In-store, physical retail stores (Offline)	E-commerce, M-commerce (Online)
Mobile Device	Smartphone, Tablet or Wearable with IOS, Android, Windows and Blackberry systems that enable Apps and the use of the Internet.	In-store technologies promoted by retailers (e.g. scanners, touchscreens)

The focus is exclusively on the physical retail store settings. The usage of mobile devices needs to be or intended to be performed by customers inside the store. Despite the cross-channel, multi-channel or omni-channel environment, the research has to contribute with findings of the use of mobile devices in-store and their possible effect on the customer shopping experience.

The articles need to fit all criteria and give an answer to the research questions.

Threats to validity - Internal and external

- Access to all data (papers) can be restricted
- Data can be quickly outdated
- Language bias

Appendix B: Highlights from data extracted from the final pool of articles

Authors and year of publication	Main Findings	Future Research
Aloysius et al. (2016)	The strongest predictors for the adoption of mobile scanning and payment are computer self-efficacy, technology anxiety, and personal innovativeness.	How can firms exploit big data and offer customers more attractive solutions based on their individual preferences?
Bailey et al. (2020)	The factors "ease of use" and "system trust" are the most significant in the role of the adoption of m-payment.	The use of m-payment on other types of goods or services, other contexts, and analysis of other demographic.
Banerjee & Longstreet (2016)	Dissociation of virtual-physical environment is a negative aspect and the customers need to be guided to an integrated scenario.	Studies in other cultures and different social settings.
Bellini & Aiolfi (2019)	The use of mobile devices while shopping decreases impulse purchases.	Extend the sample to other types of retail. Analyse the preparation phenomenon out-of-store.
Bhatnagar & Papatla (2019)	Consumer ownership of electronic devices produces the habits of using mobile devices for information search and social management.	Test if the ownership of electronic devices in fact produces the habits.
Bues et al. (2017)	For the design of mobile promotions in-store, the price is the least important driver, and the location where the customer received the mobile ad is the most important driver for purchase intention.	Context variables related to the customer. The study of additional factors of value and effects of personalisation and exclusivity.
Danaher et al. (2015)	Time and location are the most important features of the coupons for redemption. Specific weekdays highly affect redemption rates.	Customise coupons in terms of face value, price format, expiry length, etc.
Ewerhard et al. (2019)	The channels are complementary since they are used at different stages.	What are the effects of improving the omnichannel and what happens when it is neglected? What are the critical touchpoints?

Fagerstrøm et al. (2020)	IoT services related to the expiry date, quality indicators, and offers had a positive impact on tendencies to explore the smartphone app, and increase the likelihood to buy.	Experimental research using a prototype app. Different countries, sample and product category.
Falk et al. (2016)	Mobile payments lead to more positive OSPI judgments and significantly increase customers' willingness to pay when compared to cash payments.	Research on mobile payments, based on a sense of transparency and on how mobile payments are made by customers. Longitudinal study.
Faulds et al. (2018)	Identifications of four-pillar for mobile shopping: consumer-retailer interconnectedness, consumer empowerment, proximity-based consumer engagement, and web-based consumer engagement.	[unidentified]
Fong et al. (2015)	Competitive local targeting can increase sales without the negative effects of focal local targeting (saturation and cannibalise profits).	Further research should investigate the effects of brand asymmetries and defensive mobile tactics.
Fuentes & Svingstedt (2017)	For the adoption of mobile shopping, the consumers have to possess technological and shopping skills and it has to be meaningful and suitable to their lifestyle.	Studies of mobile shopping among other groups of practitioners, other countries, and between user groups.
Fuentes et al. (2017)	It can be a distraction for the shopping goals, and sometimes even a physical barrier to accomplish the shopping tasks since multitasking is difficult.	[unidentified]
Gazley et al. (2015)	Receiving mobile phone location-based advertising at the point of purchase strengthens the relationship with intrusiveness and attitudes, but diminishes the effect of customisation on attitudes.	Consider more widespread product categories and try to measure actual behaviour. There is also the potential to investigate mobile relationship marketing.
Grewal et al. (2018)	The distraction caused by the use of mobile phone increases purchases because shoppers spend more time in the store.	Research on different shopping tasks and different activities using the mobile phone. Study of different types of retailers.
Groβ (2015)	It provides a classification framework and literature review on m-shopping. The acceptance and reactions to m-shopping are the most explored aspects and the technological aspects are still scarce.	While studies have mostly explored the consumers' acceptance and reactions to m-shopping themes, the technology perspective is still being researched.
Hoehle et al. (2018)	Customers show a higher tolerance for validation with mobile shopping checkout compared with traditional self-service checkout.	Integrate tolerance for validation in the examination of the effects on customer satisfaction, repurchase intentions, and loyalty.

Högberg et al. (2018)	In-store mobile advertising using gamification is not always useful. If there is not enough engagement, customers do not tend to act on offers.	Products that are relevant to the participants and use real offers.
Högberg et al. (2019)	Gamification affects hedonic value and the hedonic value is a better-continued engagement predictor than satisfaction with the reward.	Longitudinal research on the effects of gamification and its implications for creating customer experiences.
Holmes et al. (2014)	The use of mobile devices in-store is higher for products with a high level of involvement and risk at the search and review stage of the decision-making process.	Explore different categories and other countries.
Houliez (2010)	The shopping experience is a combined experience, the technologies and store result in a new servicescape.	More research is needed to fully assess the potential impact of mobile devices on the social dimension of servicescapes.
Hui et al. (2013)	Targeted mobile promotions can increase the in-store shopping distance and so their unplanned spending, by exposing the customers to more in-store stimuli.	Different stores and retail environments.
Kang et al. (2015)	The relationship between emotional involvement and intention to use is greater for mobile consumers with high experiential orientation than for those with low experiential orientation.	Address perceived risk as a determinant to downloading and usage intention.
Karimi & Liu (2020)	Customers' mood interacts with decision-making style and the need for gratification affects the intention to adopt m-payment.	Use other methodologies and research in different settings, the impact of mood, decision-making style, and need for gratification.
de Kerviler et al. (2016)	Between m-p-payment and in-store m-info search, the customer perceived more risk and benefits in the first one, therefore it is more difficult to adopt.	Studies in other categories, such as fashion, household appliances, and groceries. Study the effect of m-search and m-payment loyalty.
Kiba-Janiak (2014)	There are differences between gender and the use of in-store. Men more often compare prices, search for reviews, and other information. Women prefer to call friends and family to ask for advice.	Study different countries. Survey the retailers.
Kim et al. (2019)	Webroomers prefer to use mobile platforms over PCs while searching for information. Utilitarian shopping motives are stronger predictors for searching for goods than they are for experiences.	Study other countries. Analyse the showrooming effect. Develop a model that apprehends more psychological mechanisms behind consumer search behaviour and platform choice.

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Li et al. (2017)	Based on the purchase information of other customers and on the user's social information, the proposed system can effectively provide the ideal route for purchasing support.	The use of semantic analysis on customers' preferences on social websites.
Mills & Zamudio (2018)	Successfully deploying mobile coupons must consider segment membership, loyalty, coupon value, and NPR to optimise redemption.	Examine the percentage of brand purchases in a category with coupon redemption and other retail settings.
Nakano & Kondo (2018)	Mobile and social media are important elements to increase sales in physical stores.	Study in other countries and product categories types.
Ono et al. (2012)	Idea motivation is the most important in browsing mobile-based online stores and browsing physical stores .	Different ages and product categories. Add another type of browsing (desktop) and consumer characteristics to the model.
Pantano & Gandini (2017)	Social network substitutes face-to-face interaction with a salesperson. Used mainly for utilitarian purposes and to support the shopping experience.	Quantitative approach. Larger sample. Older participants. Collect data from different countries.
Pantano & Priporas (2016)	The use of mobile in the purchase experience is more convenient and chosen by consumers from a cognitive perspective.	Use larger and more representative samples and also research in other countries.
Rippé et al. (2017)	Results show that adaptive selling can affect purchase intention and customer's likelihood to comply with mobile device input. The perceived control increases purchase intention.	Research in other countries and cultures. Explore other ways where the salesperson can improve the shopping experience.
Saarijärvi et al. (2014)	M-services allow food retailers to have a more relevant role in the in-store activities, diversifying the activities, and adding value to the experience.	Address the customer perspective on food retailers' m-services and find the potential effect and on the use of m-service on their consumer activities and impact on satisfaction and loyalty.
Sciandra & Inman (2015)	The use of mobile devices as a source of distraction affects negatively display recall and increases unplanned purchases when used for non-related shopping activities. Consumers are unaware of the negative effects and understand the positive effects.	Study how shopping-unrelated mobile device use impacts consumers' explicit memories of external stimuli. Use eye-tracking technology to understand where and how long consumers focus on their mobile devices.

Sciandra, Inman & Stephen (2019)	Non-related shopping tasks negatively affects consumers' shopping plans and increase unplanned purchases, the effect is higher in consumers who are highly dependent on their mobile devices.	[unidentified]
Shankar et al. (2010)	The consumer, the mobile, and the retailer are the three key entities of the conceptual framework proposed for mobile marketing in retail environment.	How advances in technology and changes should guide retailers? How mobile marketing differs across countries? How mobile technology will change marketing communications?
Shieh et al. (2019)	Pull Location-Based Advertising created greater click intention among consumers than the opt-out push LBA when the consumers recognised the benefits of LBA messages.	Investigate the interaction effect between hedonic content time-consciousness to obtain evidence of the effect of LBA. How decoy options can induce a reduction of negative emotions and help when making an LBA-induced buying decision.
Spaid & Flint (2014)	The use of mobile devices in-store is motivated by intrinsic and extrinsic factors and can be used for utilitarian and hedonic purposes. They give the shoppers a higher sense of empowerment assisting them throughout the shopping experience.	TAM theories may investigate the way the comments and imitated feedback shape the experience. Study the return of investment in technologies that interact with MD.
Spaid et al. (2019)	The shoppers' satisfaction about the information they found online creates a positive effect on satisfaction and trust towards the retailer, and also on repatronage intentions.	Explore the relationships and psychological experiences of shoppers.
Ström et al. (2014)	The retailer's value is impacted by the perceived value of mobile marketing by the consumer, and it also can increase the relative value for retailers and consumers.	Measure the relative outcome value of mobile marketing. Evaluate the effectiveness and efficiency of mobile marketing practices.
Tyrväinen & Karjaluoto (2019)	The past experience with the online channel and with a mobile device and the perceived usefulness and ease of use can influence the adoption. The motivation and the stage of adoption influence customer behaviour.	Research could consider the relationship between online and mobile channels.

van de Sanden et al. (2019)	Retailers must have an integrative approach when implementing beacons and add hedonic components to the experience in order to be successful.	The use of field experiment could benefit the research of Mobile location-based advertisement in-store.
Viejo-Fernández et al. (2020)	Showroomers who use smartphones in-store are more likely to buy more expensive products.	Understand the touchpoints of the Omni-shoppers customer journey and their behaviour at each stage. Approach the antecedents and consequences of showrooming from an economic and cognitive-affective perspective. Study other product categories and sectors.

Appendix C: Interview script

EXPLORATORY QUALITATIVE STUDY – Interview Script

1. Introduction and Background

- Presentation and acknowledgement;
- Recall on the confidential and anonymous treatment of all information collected;
- Ensure the agreement to submit a summary with the main conclusions of the study;
- Explain the subject and the main goals, highlighting the relevance of the contribution of the interview, as part of the exploratory study, for the development of the research work;
    - Subject and main goals: New technologies, such as smartphones and other mobile devices, have significantly altered customer behaviour, making them a tool that allows them to interact with the store differently. It is then intended to know how the impact of using these devices on the in-store shopping experience.
    - Importance of the contribution: Find out if speciality store retailers are aware of this new reality, and have strategies to deal with these new consumer behaviours in their stores, and from their point of view, what impact these behaviours have on the various dimensions of experience and the consequent satisfaction of their customers.

Section A – The Shopping Experience

Q1- How long have you been working in retail? Have you seen any changes in customer behaviour/habits?

Q2 - In your opinion, what is the most recurring problems/challenges that customer experiences when they shop in-store?

Q3 – Is there a specific strategy in the organization to improve the in-store shopping experience?

Q4 - In your opinion what is the most important dimension of the in-store shopping experience and what the organization have done to improve it?

Section B – The use of Mobile Devices in-store

Q5 – Do you believe that technologies, such as mobile devices, would help to give a better customer experience? If yes, in what way?

Q6 – Are you aware of the customers that use their mobile devices in-store?

If yes, what you think they are doing?

Q7 - What is the official position of the organization about the use of mobile devices in-store? Do you approve or disapprove? And why?

Q8 – Do you believe that this can interfere with their shopping activities and their global experience in-store?

Q9 - Do you feel that customers have more knowledge about specific products of the store?

Q10 – From your experience, do the customers that are using their mobile devices more approachable or they deliberately avoid salespeople?

Q11 – When they approach salespeople what types of questions they normally ask?

Q12 – Are the salespeople trained to deal with these situations? If yes, what is the main guideline for customer service?

Section C – Retail strategies

Q13 – Do you think that the organization is prepared to deal with this new reality and have specific strategies to enable these activities in store? If yes, what strategies? (Ex: free WiFi)

Q14 – In the near future do the organization have a plan/measures to improve the experience of these customers? If yes, in what ways?

Conclusions and Closing

Q15 - Can you think of anything we may have missed that could be of value for our research?

- Share the proposed conceptual model and collect the opinion of the interviewee on the relationship between the constructs;
- Confirm that the interviewee wants to receive a summary of the main conclusions of the study;
- Share an email address for possible future communications;
- Present the best thanks and regards.

Appendix D: Interview request letter

Estudo exploratório – Solicitação de Entrevista

Assunto: Investigação sobre experiência de compra

Exmo./Exma. Senhor(a),

Sou aluna no Iscte e encontro-me a desenvolver o meu Projeto de Doutoramento em Gestão, com especialização em Marketing.

O tema em estudo é o *Impacto dos dispositivos móveis na experiência de compra.* Em particular, pretende-se estudar de que forma a utilização de smartphones e outros dispositivos móveis interferem nas diversas dimensões da experiência de compra dentro da loja e o impacto na satisfação do cliente e na sua intenção de voltar.

Pelo conhecimento e experiência que V. Exa tem no sector que se pretende estudar, o seu contributo será crítico para o sucesso deste trabalho de investigação, cujos resultados podem interessar à vossa organização. Deste modo, venho solicitar uma breve entrevista, cujo objetivo será o esclarecimento de algumas questões em relação ao sector e a compreensão deste assunto do ponto de vista empresarial. Toda a informação recolhida na entrevista será anónima e confidencial.

Acreditando que este estudo poderá ser do vosso inteiro interesse, assumo o compromisso de enviar um resumo das principais conclusões e recomendações da investigação, assim que esta estiver concluída, caso manifeste esse desejo.

Sem mais de momento, aguardo uma resposta em breve e agradeço desde já a colaboração.

Com os melhores cumprimentos,

Sílvia Cavalinhos

Appendix E: Questionnaire script (in Portuguese)

Experiência de compra dos utilizadores de dispositivos móveis

---

Questionário sobre a experiência de compra dentro da loja

Muito obrigado por dedicar algum do seu tempo a este questionário! Ele faz parte de uma tese de Doutoramento no Iscte sobre o impacto dos dispositivos móveis na experiência de compra dentro da loja. Tendo em mente as suas últimas vistas a lojas de especialidade de Eletrónica, Informática e Entretenimento, dê-nos a sua opinião pessoal e objetiva. Este questionário é de natureza confidencial e anónimo, com uma duração de cerca de 5 minutos. O seu contributo é de extrema importância para a investigação.

1. Idade

- ☐ 16 - 24 anos
- ☐ 25 - 34 anos
- ☐ 35 - 45 anos

2. Género

- ☐ Masculino
- ☐ Feminino

3. Tendo em mente as suas últimas vistas a lojas de especialidade de Electrónica, Informática e Entretenimento, selecione a loja que mais vezes frequentou nos últimos meses.

- ☐ Fnac
- ☐ Media Markt
- ☐ Rádio Popular
- ☐ Worten
- ☐ Outra _____
- ☐ Nenhuma

---

4. Durante a sua visita utilizou algum destes dispositivos móveis: smartphone, tablet ou smartwatch?

- ☐ Sim
- ☐ Não

Skip To: End of Survey If 4. Durante a sua visita utilizou algum destes dispositivos móveis: smartphone, tablet ou smartwat... = Não

5. Com que frequência utiliza o seu dispositivo móvel: smartphone, tablet ou smartwatch, nas suas visitas a lojas de especialidade de Eletrónica, Informática e Entretenimento?

	Nunca	2	3	4	5	6	Muito frequentemente
Frequência							

---

6. Para cada uma destas atividades indique com que frequência utilizou o seu dispositivo móvel durante a sua visita?

	Nunca	2	3	4	5	6	Muito Frequentemente
Procurar informação sobre produtos/serviços (p.ex. stock disponível, comparar preços, características, comentários, etc.)	○	○	○	○	○	○	○
Entretenimento (p.ex. ler, jogar, ouvir música, ver vídeos, etc.)	○	○	○	○	○	○	○
Realizar tarefas profissionais (p.ex. e-mail, chamadas, Office, etc)	○	○	○	○	○	○	○
Socializar com família e amigos (p.ex. chamadas, mensagens, Facebook, Instagram, WhatsApp, etc.)	○	○	○	○	○	○	○
Gerir as minhas compras (p.ex. Lista de compras, cálcular gastos, etc.)	○	○	○	○	○	○	○
Gerir finanças pessoais (p.ex. transferências, consultar saldo bancário, pagamentos, etc.)	○	○	○	○	○	○	○

7. Indique com que frequência utilizou o seu dispositivo móvel para o <u>ajudar no processo de decisão de compra</u> nas seguintes categorias.

	Nunca	2	3	4	5	6	Muito frequentemente
Informática	○	○	○	○	○	○	○
Entretenimento e cultura	○	○	○	○	○	○	○
Electrodomésticos	○	○	○	○	○	○	○
Smartphones e telemóveis	○	○	○	○	○	○	○
TV, vídeo e som	○	○	○	○	○	○	○

Tendo em mente as últimas vezes em que <u>utilizou o seu dispositivo móvel enquanto estava dentro da loja</u>, numa escala de 1 - discordo completamente e 7 - concordo completamente, indique o seu grau de concordância em relação aos seguintes elementos presentes na loja.

8. Enquanto estou na loja a utilizar o meu dispositivo móvel, o ambiente de loja, os seus produtos/serviços, **fazem-me**:

	Discordo completamente	2	3	4	5	6	Concordo completamente
Aprender coisas interessantes	○	○	○	○	○	○	○
Despertar a criatividade	○	○	○	○	○	○	○
Ter novas ideias	○	○	○	○	○	○	○
Bem disposto(a)	○	○	○	○	○	○	○
Feliz	○	○	○	○	○	○	○
Ter uma experiência emocionante	○	○	○	○	○	○	○

9. Enquanto estou na loja a utilizar o meu dispositivo móvel:

	Discordo completamente	2	3	4	5	6	Concordo completamente
Interajo com outros clientes	○	○	○	○	○	○	○
Aconselho os clientes que pedem a minha opinião sobre os produtos/serviços da loja	○	○	○	○	○	○	○
Não interajo com colaboradores da loja	○	○	○	○	○	○	○
Não partilho as minhas opiniões com os colaboradores da loja	○	○	○	○	○	○	○

10. Enquanto estou na loja a utilizar o meu dispositivo móvel, **perceciono** o ambiente de loja com:

	Discordo completamente	2	3	4	5	6	Concordo completamente
Tem produtos e expositores atrativos	○	○	○	○	○	○	○
Tem uma decoração agradável	○	○	○	○	○	○	○
É confortável	○	○	○	○	○	○	○

11. Enquanto estou na loja a utilizar o meu dispositivo móvel:

	Discordo completamente	2	3	4	5	6	Concordo completamente
Sinto-me em controlo quando interajo com os colaboradores da loja	○	○	○	○	○	○	○
Tenho mais controlo sobre as minhas decisões de compra	○	○	○	○	○	○	○
Sinto-me com poder de decisão	○	○	○	○	○	○	○
Durante o processo de compra, posso escolher livremente os produtos/ serviços	○	○	○	○	○	○	○
Divirto-me interagindo com o meu dispositivo móvel	○	○	○	○	○	○	○
O meu dispositivo móvel proporciona-me entretenimento	○	○	○	○	○	○	○
Gosto de utilizar o meu dispositivo móvel	○	○	○	○	○	○	○

12. Tendo em conta a <u>experiência global na loja</u> classifique, numa escala de **1** - Discordo completamente e **7** - concordo completamente, a sua experiência:

	Discordo Completamente	2	3	4	5	6	Concordo Completamente
Estou muito satisfeito com os produtos/serviços desta loja	○	○	○	○	○	○	○
A experiência que tive nesta loja foi satisfatória	○	○	○	○	○	○	○
Esta loja dá resposta às minhas necessidades	○	○	○	○	○	○	○
Eu considero esta loja a minha primeira escolha para comprar	○	○	○	○	○	○	○
Provavelmente voltarei a visitar esta loja	○	○	○	○	○	○	○
No futuro continuarei a fazer compras nesta loja	○	○	○	○	○	○	○

13. Tendo em conta os produtos/serviços da loja indique o nível de probabilidade em efetuar uma compra, numa escala de **1** - Não é provável e **7** - Muito provavelmente:

	Não é provável	2	3	4	5	6	Muito provavelmente
Irei comprar os produtos/serviços **nesta loja**	○	○	○	○	○	○	○
Irei comprar os produtos/serviços em **outra loja**	○	○	○	○	○	○	○
Irei comprar os produtos/serviços **nesta loja online**	○	○	○	○	○	○	○
Irei comprar os produtos/serviços em **outra loja online**	○	○	○	○	○	○	○

14. Escolaridade

- ☐ Inferior ou equivalente ao ensino básico
- ☐ Ensino secundário
- ☐ Ensino superior

15. Vencimento mensal líquido do indivíduo

- ☐ Inferior a 580€
- ☐ 580€ a 1000€
- ☐ 1001€ a 2000€
- ☐ Superior a 2001€

16. Situação Profissional

- ☐ Estudante
- ☐ Desempregado(a)
- ☐ Trabalhador não qualificado / não especializado
- ☐ Trabalhador qualificado / especializado
- ☐ Pequeno proprietário
- ☐ Técnico especializado
- ☐ Quadro médio
- ☐ Quadro superior
- ☐ Outra _____

Appendix F: Store locations in the area of Lisbon, Portugal, for data collection

Worten
Continente Amadora - R. Guarda Nacional Republicana 35, 2724-520 Lisboa
Continente Telheiras - Avenida das Nações Unidas, 1600-528 Lisboa
Praça da Liberdade, 2800-648 Almada

Media Markt
R. Alto do Forte IC 19, 2636-901 Rio de Mouro
R. Casal do Canas 5, Carnaxide
Estádio Sport Lisboa e Benfica, Av. Eusébio da Silva Ferreira, 1500-313 Lisboa

Radio Popular
Rua da Azinheira, Arm.D, Zona Industrial Pau Queimado, 2870-100 Montijo
R. Comendador José Noronha Gorjão Quinta das Pevides, Loja B, 2640-408 Mafra
R. Alto do Forte IC 19, 2636-901 Rio de Mouro

Box - Jumbo
Praceta Francisco Lyon de Castro, 2725-397 Algueirão-Mem Martins

Fnac
Armazéns do Chiado, R. do Carmo nº 2 Loja 407, 1200-094 Lisboa
À saída dos armazéns

Appendix G: Evaluation of the reliability of the items according to the Cronbach's Alpha

Alpha (α)	Evaluation
> 0.9	Excellent
Between 0.8 e 0.9	Good
Between 0.7 e 0.8	Acceptable
Between 0.6 e 0.7	Weak
< 0.6	Unacceptable

Source: adapted from Hair et al. (2014).

Appendix H: Model fit indices

Absolute fit measures	
X^2 (p-value)	>0.05
GFI – Goodness-of-fit Index	>0.90
RMSEA – Root Mean Square Error of Approximation	<0.05 Good fit
	>0.05 <0.08 acceptable fit
RMR / SRMR – Root Mean Square Residual/	0 Perfect fit
	≤ 0.5 Good fit
Comparative fit – Incremental fit measures	
NFI – Normed Fix Index	
NNFI – Non-Normed Fix Index	
CFI – Comparative Fix Index	≈ 1 Perfect fit
RFI – Relative Fix Index	≈ 0.9 Good fit
	< 0.9 Bad fit
Parsimonious fit measures	
AGFI – Adjusted Goodness-of-fit Index	0.9 a 0.95 Good fit
	< 0.9 Bad fit
	0 No Fit
PNFI – Parsimonious Normed Fit Index	The adjustment will be better for the
PGFI – Parsimonious Goodness-of-fit Index	model with the highest PNFI and PGFI
X^2/df	>1 <3 (5 at most)
AIC – Akaike Information Criterion	The adjustment will be better for the
	model with a lower AIC

Source: Adapted from Hair et al. (2014)

Appendix I: PCA for the types of mobile devices (MD) usage in-store

Factor loadings for the 3 components, Eigenvalues and % of the variance explained.

Item	Factor			Communalities
	1	2	3	
	Shopping Related Tasks	Non-Shopping Related Tasks - Hedonic	Non-Shopping Related Tasks - Utilitarian	
MD use for Manage shopping	**.771**	.015	.345	.713
MD use to entertainment	.123	**.844**	.102	.737
MD use for Socializing with family and friends	.031	**.790**	.264	.695
MD use to professional tasks	-.003	.223	**.844**	.762
MD use to Manage personal finances	.422	.189	**.702**	.706
MD use to find information about products/services	**.849**	.123	-.038	.738
Eigenvalue	2.446	1.159	.746	
% of Variance Explained	40.773%	19.309%	12.439%	

Appendix J: PCA for the product categories

Factor loadings for the 3 components, Eigenvalues and % of the variance explained.

	Factor			
	1	2	3	
Item	Home Appliances	Technologies	Entertainment and culture	**Communalities**
MD use for purchase decision support in computing	.239	**.885**	.233	0.894
MD use for purchase decision support in Entertainment and culture	.150	.240	**.959**	.999
MD use for purchase decision support in Household appliances	**.901**	.206	.136	.872
MD use for purchase decision support in Smartphones and mobile phones	.483	**.719**	.205	.792
MD use for purchase decision support in Tv. video and home cinema	**.782**	.405	.120	.791
Eigenvalue	3.086	.781	.481	
% of Variance Explained	61.727%	15.626%	9.614%	

Appendix K: PCA for the Showroom intention behaviour

Factor loadings in the 3 components, Eigenvalues and % of the variance explained – Showroom intention, Purchase in another store, and Purchase intention.

	Factor		
	1	2	
Item	Showroom intention	Purchase intention	**Communalities**
Purchase in-store	.155	**.976**	.976
Purchase in another store (physical)	**.643**	.223	.487
Purchase in the same store (online)	**.746**	.223	.606
Purchase in another store (online)	**.929**	-.032	.863
Eigenvalue	2.071	.861	
% of Variance Explained	51.775%	21.521%	

Appendix L: ANOVAs with a Tukey HSD post hoc test for generations

Dependent Variable	Age in years (I)	Age in years (J)	Mean Difference (I-J)	Sig.	95% Conf.Int	
					Lower Bound	Upper Bound
How often do you use your mobile device: smartphone, tablet or smartwatch. in your visits to Electronics. Computers and Entertainment speciality stores?	16 - 24	25 - 34	-0.423	0.168	-0.97	0.13
		35 - 45	0.153	0.805	-0.42	0.72
	25 - 34	16 - 24	0.423	0.168	-0.13	0.97
		35 - 45	.575*	0.03	0.05	1.11
	35 - 45	16 - 24	-0.153	0.805	-0.72	0.42
		25 - 34	-.575*	0.03	-1.11	-0.05
Frequency of use: Search for information about products/services	16 - 24	25 - 34	-.773*	0.009	-1.39	-0.16
		35 - 45	0.131	0.879	-0.51	0.77
	25 - 34	16 - 24	.773*	0.009	0.16	1.39
		35 - 45	.904*	0.001	0.31	1.5
	35 - 45	16 - 24	-0.131	0.879	-0.77	0.51
		25 - 34	-.904*	0.001	-1.5	-0.31
Frequency of use: Entertainment	16 - 24	25 - 34	1.085*	0.001	0.39	1.78
		35 - 45	1.149*	0.001	0.43	1.87
	25 - 34	16 - 24	-1.085*	0.001	-1.78	-0.39
		35 - 45	0.064	0.973	-0.61	0.73
	35 - 45	16 - 24	-1.149*	0.001	-1.87	-0.43
		25 - 34	-0.064	0.973	-0.73	0.61

Dependent Variable	Age in years (I)	Age in years (J)	Mean Difference (I-J)	Sig.	95% Conf.Int	
					Lower Bound	Upper Bound
Frequency of use: Perform professional tasks	16 - 24	25 - 34	-0.495	0.186	-1.16	0.17
		35 - 45	-.761*	0.027	-1.45	-0.07
	25 - 34	16 - 24	0.495	0.186	-0.17	1.16
		35 - 45	-0.266	0.592	-0.91	0.37
	35 - 45	16 - 24	.761*	0.027	0.07	1.45
		25 - 34	0.266	0.592	-0.37	0.91
Frequency of use: Socialize with family and friends	16 - 24	25 - 34	0.341	0.383	-0.27	0.95
		35 - 45	.888*	0.003	0.26	1.52
	25 - 34	16 - 24	-0.341	0.383	-0.95	0.27
		35 - 45	0.547	0.072	-0.04	1.13
	35 - 45	16 - 24	-.888*	0.003	-1.52	-0.26
		25 - 34	-0.547	0.072	-1.13	0.04
Frequency of use: Manage my purchases	16 - 24	25 - 34	-0.532	0.157	-1.21	0.15
		35 - 45	-0.043	0.989	-0.75	0.66
	25 - 34	16 - 24	0.532	0.157	-0.15	1.21
		35 - 45	0.489	0.185	-0.17	1.14
	35 - 45	16 - 24	0.043	0.989	-0.66	0.75
		25 - 34	-0.489	0.185	-1.14	0.17
Frequency of use: Manage personal finances	16 - 24	25 - 34	-.773*	0.034	-1.5	-0.04
		35 - 45	0.163	0.868	-0.59	0.92
	25 - 34	16 - 24	.773*	0.034	0.04	1.5
		35 - 45	.936*	0.005	0.23	1.64
	35 - 45	16 - 24	-0.163	0.868	-0.92	0.59
		25 - 34	-.936*	0.005	-1.64	-0.23

Dependent Variable	Age in years (I)	Age in years (J)	Mean Difference (I-J)	Sig.	95% Conf.Int	
					Lower Bound	Upper Bound
Frequency of use to help in the purchase decision process: Technology	16 - 24	25 - 34	-0.436	0.305	-1.13	0.26
		35 - 45	0.224	0.746	-0.5	0.95
	25 - 34	16 - 24	0.436	0.305	-0.26	1.13
		35 - 45	0.66	0.055	-0.01	1.33
	35 - 45	16 - 24	-0.224	0.746	-0.95	0.5
		25 - 34	-0.66	0.055	-1.33	0.01
Frequency of use to help in the purchasing decision process: Entertainment and culture	16 - 24	25 - 34	-0.271	0.587	-0.92	0.38
		35 - 45	0.492	0.201	-0.18	1.17
	25 - 34	16 - 24	0.271	0.587	-0.38	0.92
		35 - 45	.764*	0.012	0.14	1.39
	35 - 45	16 - 24	-0.492	0.201	-1.17	0.18
		25 - 34	-.764*	0.012	-1.39	-0.14
Frequency of use to help in the purchase decision process: Home appliances	16 - 24	25 - 34	-.870*	0.005	-1.52	-0.22
		35 - 45	-.788*	0.017	-1.46	-0.11
	25 - 34	16 - 24	.870*	0.005	0.22	1.52
		35 - 45	0.082	0.949	-0.54	0.71
	35 - 45	16 - 24	.788*	0.017	0.11	1.46
		25 - 34	-0.082	0.949	-0.71	0.54
Frequency of use to help in the purchase decision process: Smartphones and mobile phones	16 - 24	25 - 34	-0.199	0.703	-0.78	0.39
		35 - 45	0.304	0.469	-0.3	0.91
	25 - 34	16 - 24	0.199	0.703	-0.39	0.78
		35 - 45	0.502	0.092	-0.06	1.07
	35 - 45	16 - 24	-0.304	0.469	-0.91	0.3
		25 - 34	-0.502	0.092	-1.07	0.06
Frequency of use to help in the purchase decision process: TV. video and sound	16 - 24	25 - 34	-0.31	0.457	-0.92	0.3
		35 - 45	-0.135	0.871	-0.77	0.5
	25 - 34	16 - 24	0.31	0.457	-0.3	0.92
		35 - 45	0.175	0.765	-0.41	0.76
	35 - 45	16 - 24	0.135	0.871	-0.5	0.77
		25 - 34	-0.175	0.765	-0.76	0.41

Dependent Variable	Age in years (I)	Age in years (J)	Mean Difference (I-J)	Sig.	95% Conf.Int	
					Lower Bound	Upper Bound
I will buy the products/services in this store	16 - 24	25 - 34	0.051	0.963	-0.41	0.51
		35 - 45	0.21	0.556	-0.27	0.69
	25 - 34	16 - 24	-0.051	0.963	-0.51	0.41
		35 - 45	0.159	0.677	-0.29	0.6
	35 - 45	16 - 24	-0.21	0.556	-0.69	0.27
		25 - 34	-0.159	0.677	-0.6	0.29
I will buy the products/services at another store	16 - 24	25 - 34	-0.013	0.998	-0.58	0.55
		35 - 45	0.361	0.317	-0.23	0.95
	25 - 34	16 - 24	0.013	0.998	-0.55	0.58
		35 - 45	0.374	0.242	-0.17	0.92
	35 - 45	16 - 24	-0.361	0.317	-0.95	0.23
		25 - 34	-0.374	0.242	-0.92	0.17
I will buy the products/services from this online store	16 - 24	25 - 34	-0.513	0.156	-1.17	0.14
		35 - 45	-0.039	0.99	-0.72	0.64
	25 - 34	16 - 24	0.513	0.156	-0.14	1.17
		35 - 45	0.474	0.181	-0.16	1.1
	35 - 45	16 - 24	0.039	0.99	-0.64	0.72
		25 - 34	-0.474	0.181	-1.1	0.16
I will buy the products/services from another online store	16 - 24	25 - 34	-.680*	0.039	-1.33	-0.03
		35 - 45	-0.121	0.907	-0.8	0.56
	25 - 34	16 - 24	.680*	0.039	0.03	1.33
		35 - 45	0.559	0.094	-0.07	1.19
	35 - 45	16 - 24	0.121	0.907	-0.56	0.8
		25 - 34	-0.559	0.094	-1.19	0.07

Appendix M: Gender differences within mobile device usage types with T-test

Gender differences within mobile device usage types with T-test

Dependent Variable	Gender	Mean	SD	Std. Error Mean	t / df	Sig.
Total frequency of MD use	Male	5.04	1.613	.138	2.57/ 299	0.01
	Female	4.55	1.666	.130		
MD use to find information about products/services	Male	4.91	1.751	.150	2.12/298	0.03
	Female	4.46	1.964	.153		
MD use to entertainment	Male	3.39	2.187	.187	1.62/299	0.11
	Female	2.99	2.075	.162		
MD use to professional tasks	Male	4.03	1.948	.166	1.07/299	0.28
	Female	3.78	2.043	.160		
MD use for Socialising with family and friends	Male	4.67	1.914	.164	-1.39/281	0.16
	Female	4.97	1.774	.139		
MD use for Manage shopping	Male	3.72	2.078	.178	1.46/299	0.14
	Female	3.38	1.998	.156		
MD use for Manage personal finances	Male	3.20	2.209	.189	-0.95/299	0.35
	Female	3.44	2.213	.173		

Appendix N: Generations differences within mobile device usage types and between categories with ANOVA

Dependent Variable	Generation	Mean	SD	Std. Error Mean	df	F	Sig.
Total frequency of MD use					2	3.560	.030
	Gen Z	4.66	1.635	.176			
	Gen Y	5.09	1.617	.149			
	Gen X	4.51	1.682	.170			
MD use to find information about products/services					2	7.610	.001
	Gen Z	4.41	1.862	.201			
	Gen Y	5.18	1.695	.157			
	Gen X	4.28	1.983	.200			
MD use to entertainment					2	8.844	.000
	Gen Z	3.97	1.997	.215			
	Gen Y	2.88	2.035	.188			
	Gen X	2.82	2.198	.222			
MD use to professional tasks					2	3.440	.033
	Gen Z	3.45	2.010	.217			
	Gen Y	3.95	1.856	.172			
	Gen X	4.21	2.107	.213			
MD use for Socialising with family and friends					2	5.685	.004
	Gen Z	5.26	1.810	.195			
	Gen Y	4.91	1.779	.164			
	Gen X	4.37	1.858	.188			
MD use for Manage shopping					2	2.260	.106
	Gen Z	3.31	2.002	.216			
	Gen Y	3.85	2.024	.187			
	Gen X	3.36	2.062	.208			
MD use to Manage personal finances					2	5.711	.004
	Gen Z	3.08	2.121	.229			
	Gen Y	3.85	2.210	.204			
	Gen X	2.92	2.186	.221			

Appendix O: Gender differences within mobile device usage for purchase decision support by product type with T-test

Dependent Variable	Gender	Mean	SD	Std. Error Mean	t / df	Sig.
MD use for purchase decision support in computing	Male	5.37	1.843	.157	5.58/298	0.00
	Female	4.10	2.117	.165		
MD use for purchase decision support in Entertainment and culture	Male	4.15	1.977	.169	0.84/299	0.40
	Female	3.96	1.950	.152		
MD use for purchase decision support in Home appliances	Male	3.95	1.957	.167	0.98/299	0.33
	Female	3.73	1.983	.155		
MD use for purchase decision support in Smartphones and mobile phones	Male	5.29	1.471	.126	3.95/297	0.00
	Female	4.52	1.894	.148		
MD use for purchase decision support in Tv, video and home cinema	Male	4.47	1.654	.141	3.72/298	0.00
	Female	3.71	1.889	.147		

Appendix P: Generation differences within mobile device usage for purchase decision support by product type with ANOVA

Dependent Variable	Gender	Mean	SD	Std. Error Mean	df	F	Sig.
MD use for purchase decision support in electronics and computers					2	2.813	.062
	Gen Z	4.58	2.209	.238			
	Gen Y	5.02	1.921	.178			
	Gen X	4.36	2.145	.217			
MD use for purchase decision support in Entertainment and culture					2	4.177	.016
	Gen Z	4.10	2.024	.218			
	Gen Y	4.38	1.799	.166			
	Gen X	3.61	2.029	.205			
MD use for purchase decision support in Home appliances					2	5.702	.004
	Gen Z	3.23	2.050	.221			
	Gen Y	4.10	1.932	.179			
	Gen X	4.02	1.850	.187			
MD use for purchase decision support in Smartphones and mobile phones					2	2.212	.111
	Gen Z	4.90	1.796	.194			
	Gen Y	5.09	1.592	.147			
	Gen X	4.59	1.877	.190			
MD use for purchase decision support in Tv, video, and home cinema					2	.733	.481
	Gen Z	3.90	1.879	.203			
	Gen Y	4.21	1.803	.167			
	Gen X	4.03	1.802	.182			

Appendix Q: Gender differences within Purchase Intention and showroom intention with T-test

Dependent Variable	Gender	Mean	SD	Std. Error Mean	t / df	Sig.
Purchase Intention (in-store)	Male	5.46	1.316	.113	-0.02/297	0.97
	Female	5.46	1.420	.111		
Purchase in another store (physical)	Male	4.67	1.559	.134	2.33/297	0.02
	Female	4.21	1.773	.139		
Purchase same store (online)	Male	4.24	1.899	.163	0.82/297	0.41
	Female	4.06	2.004	.157		
Purchase in another store (online)	Male	4.32	1.928	.165	4.23/297	0.00
	Female	3.39	1.893	.148		

Appendix R: ANOVA for generation differences within purchase intention and showroom intention

Dependent Variable	Gender	Mean	SD	Std. Error Mean	df	F	Sig.
						0.604	0.547
Purchase Intention (in-store)	Gen Z	5.55	1.386	0.149			
	Gen Y	5.5	1.327	0.124			
	Gen X	5.34	1.414	0.143			
					2	1.573	0.209
Purchase in another store (physical)	Gen Z	4.53	1.733	0.187			
	Gen Y	4.55	1.697	0.158			
	Gen X	4.17	1.637	0.165			
					2	2.271	0.105
Purchase same store (online)	Gen Z	3.93	1.969	0.212			
	Gen Y	4.44	1.911	0.178			
	Gen X	3.97	1.971	0.199			
					2	3.628	0.028
Purchase in another store (online)	Gen Z	3.51	1.993	0.215			
	Gen Y	4.19	1.946	0.181			
	Gen X	3.63	1.902	0.192			

Appendix S: PCA using all items of the model and 9 factors

| Item | Factor | | | | | | | | | Communalities |
	Perceived Control	Satis.	Cognitive	In-store Environment	Perceived Enjoyment	Affective	Exp. Employees	Exp. Customers	Rep. Intentions	
PC3	**0.894**	0.158	0.083	0.108	0.142	0.107	0.079	0.023	0.127	0.707
PC2	**0.877**	0.141	0.089	0.127	0.094	0.092	0.044	0.008	0.148	0.817
PC4	**0.796**	0.162	0.076	0.206	0.167	-0.002	0.089	0.033	0.271	0.826
PC1	**0.696**	0.225	0.222	0.085	0.222	0.154	-0.021	0.193	-0.135	0.876
SAT1	0.163	**0.841**	0.144	0.229	0.172	0.091	0.019	0.133	0.095	0.910
SAT2	0.202	**0.805**	0.164	0.284	0.182	0.088	0.019	0.054	0.184	0.740
SAT3	0.194	**0.781**	0.168	0.195	0.136	0.049	-0.033	0.039	0.279	0.835
RI1	0.179	**0.636**	-0.108	0.037	0.103	0.215	0.023	0.143	0.385	0.853
COG3	0.088	0.078	**0.862**	0.092	0.107	0.152	0.024	0.119	0.107	0.870
COG2	0.094	0.032	**0.840**	0.158	0.125	0.180	0.091	0.143	0.013	0.863
COG1	0.173	0.176	**0.720**	0.056	0.111	0.263	-0.066	0.167	-0.106	0.820

	Factor									

Item	Perceived Control	Satis.	Cognitive	In-store Environment	Perceived Enjoyment	Affective	Exp. Employees	Exp. Customers	Rep. Intentions	Communalities
ENV2	0.116	0.204	0.164	**0.858**	0.193	0.144	-0.064	0.141	0.019	0.901
ENV1	0.217	0.160	0.085	**0.825**	0.112	0.124	0.007	0.121	0.134	0.837
ENV3	0.154	0.275	0.149	**0.783**	0.225	0.210	-0.044	0.077	0.005	0.755
PE2	0.110	0.138	0.171	0.150	**0.867**	0.168	0.025	0.094	0.110	0.872
PE1	0.153	0.217	0.145	0.220	**0.825**	0.163	0.046	0.114	0.019	0.875
PE3	0.327	0.142	0.095	0.143	**0.752**	0.118	0.101	0.024	0.092	0.815
AFF1	0.164	0.139	0.353	0.201	0.209	**0.777**	0.062	0.101	0.050	0.675
AFF2	0.126	0.168	0.378	0.246	0.252	**0.759**	0.024	0.113	0.101	0.852
AFF3	0.120	0.126	0.499	0.240	0.191	**0.588**	0.035	0.142	0.017	0.870
SOC3	0.056	0.049	0.062	0.009	0.068	-0.007	**0.923**	-0.016	0.055	0.720
SOC4	0.078	-0.034	-0.009	-0.075	0.045	0.065	**0.919**	0.005	0.008	0.855

	Factor									
Item	Perceived Control	Satis.	Cognitive	In-store Environment	Perceived Enjoyment	Affective	Exp. Employees	Exp. Customers	Rep. Intentions	**Communalities**
SOC1	0.086	0.121	0.178	0.124	0.077	0.031	-0.057	**0.880**	0.018	0.898
SOC2	0.050	0.082	0.201	0.137	0.099	0.163	0.048	**0.853**	-0.026	0.818
RI2	0.235	0.414	0.002	0.077	0.067	0.014	0.088	-0.037	**0.778**	0.862
RI3	0.184	0.460	0.058	0.082	0.148	0.088	0.005	-0.005	**0.764**	0.884
Eigenvalue	9.760	2.961	2.035	1.620	1.468	1.266	1.169	0.708	0.619	
% of Variance Explained	37.538%	11.389%	7.829%	6.232%	5.644%	4.870%	4.497%	2.721%	2.382%	

Appendix T: Mahalanobis distance analysis

	Mahalanobis d-squared	p1	p2
2	78.046	.000	.000
3	73.754	.000	.000
1	71.838	.000	.000
7	66.800	.000	.000
5	66.438	.000	.000
4	65.178	.000	.000
8	63.531	.000	.000
10	60.651	.000	.000
11	58.956	.000	.000
18	55.102	.000	.000
13	53.760	.001	.000
6	53.419	.001	.000
20	52.135	.001	.000
19	51.669	.001	.000
29	51.423	.001	.000
21	51.166	.002	.000
24	50.249	.002	.000
9	50.050	.002	.000
12	49.375	.003	.000
14	48.846	.003	.000
23	48.112	.004	.000
16	47.988	.004	.000
31	47.713	.004	.000
27	45.935	.007	.000
17	45.734	.007	.000
36	45.291	.008	.000
30	45.250	.008	.000
25	43.159	.013	.000
44	43.013	.014	.000
33	42.995	.014	.000
15	42.985	.014	.000
50	42.034	.018	.000
39	41.837	.019	.000
40	41.614	.020	.000
41	41.446	.021	.000
34	40.659	.025	.000
46	40.390	.027	.000
54	40.001	.029	.000
26	39.879	.030	.000
37	39.391	.034	.000
64	38.948	.037	.000
43	38.920	.038	.000
38	38.901	.038	.000
59	38.898	.038	.000
67	38.872	.038	.000
63	38.824	.038	.000
48	38.758	.039	.000
32	38.562	.041	.000
56	38.502	.041	.000
53	38.067	.046	.000
47	37.685	.050	.000
72	37.457	.052	.000
42	37.412	.053	.000
71	37.138	.056	.000
82	36.718	.061	.000
77	36.462	.065	.000
49	36.403	.066	.000

28	36.350	.066	.000
89	36.066	.071	.000
61	35.672	.077	.000
70	35.385	.081	.000
45	34.681	.094	.000
80	34.625	.095	.000
65	34.584	.096	.000
90	34.509	.097	.000
86	34.318	.101	.000
85	34.247	.103	.000
94	34.212	.103	.000
52	34.049	.107	.000
58	33.948	.109	.000
78	33.717	.114	.000
87	33.710	.114	.000
62	33.529	.118	.000
91	33.304	.124	.000
35	33.182	.127	.000
75	33.180	.127	.000
76	33.041	.130	.000
84	32.814	.136	.000
51	32.630	.141	.000
92	31.792	.164	.000
97	31.695	.167	.000
79	31.506	.173	.000
103	31.504	.173	.000
88	31.454	.174	.000
69	31.438	.175	.000
104	31.177	.183	.000
68	31.116	.185	.000
105	31.051	.187	.000
106	30.502	.206	.000
108	30.359	.211	.000
107	30.145	.219	.000
116	30.123	.220	.000
57	29.876	.229	.001
74	29.152	.258	.019
99	28.878	.269	.041
96	28.706	.276	.058
100	28.651	.279	.054
115	28.553	.283	.059
131	28.510	.285	.053
93	28.403	.290	.060

Appendix U: Variance inflation factors (VIF)

(Items in Portuguese)

			Stand. Coefficients	t	Sig.	Collinearity Stat.	
			Beta			Tolerance	VIF
(Constant)	1.032	0.373		2.765	0.006		
Despertar a criatividade	0.231	0.065	0.232	3.531	0.000	0.378	2.648
Ter novas ideias	0.219	0.066	0.211	3.322	0.001	0.402	2.490
Bem disposto(a)	0.002	0.090	0.002	0.025	0.980	0.221	4.515
Feliz	0.210	0.101	0.204	2.084	0.038	0.170	5.883
Ter uma experiência emocionante	0.106	0.069	0.105	1.533	0.126	0.346	2.887
Interajo com outros clientes	-0.040	0.067	-0.036	-0.603	0.547	0.448	2.233
Aconselho os clientes que pedem a minha opinião sobre os produtos/serviços da loja	0.098	0.057	0.102	1.736	0.084	0.468	2.136
Não Interajo com colaboradores da loja	-0.010	0.052	-0.012	-0.187	0.852	0.421	2.375
Não Partilho as minhas opiniões com os colaboradores da loja	-0.033	0.050	-0.041	-0.658	0.511	0.428	2.335
Tem produtos e expositores atrativos	-0.105	0.072	-0.101	-1.464	0.144	0.345	2.903
Tem uma decoração agradável	0.077	0.090	0.078	0.857	0.392	0.194	5.149
É confortável	-0.065	0.080	-0.066	-0.817	0.415	0.246	4.061
Sinto-me em controlo quando interajo com os colaboradores da loja	0.156	0.051	0.180	3.054	0.002	0.468	2.137
Tenho mais controlo sobre as minhas decisões de compra	0.017	0.079	0.018	0.212	0.832	0.222	4.502
Sinto-me com poder de decisão	0.012	0.089	0.014	0.139	0.890	0.165	6.062
Durante o processo de compra, posso escolher livremente os produtos/ serviços	-0.047	0.072	-0.049	-0.650	0.516	0.284	3.521

Divirto-me interagindo com o meu dispositivo móvel	0.171	0.071	0.195	2.417	0.016	0.251	3.990
O meu dispositivo móvel proporciona-me entretenimento	-0.141	0.069	-0.163	-2.051	0.041	0.256	3.904
Gosto de utilizar o meu dispositivo móvel	-0.058	0.061	-0.058	-0.936	0.350	0.420	2.381
Estou muito satisfeito com os produtos/serviços desta loja	0.069	0.110	0.054	0.627	0.531	0.223	4.492
A experiência que tive nesta loja foi satisfatória	-0.091	0.126	-0.069	-0.723	0.470	0.180	5.541
Esta loja dá resposta às minhas necessidades	0.142	0.101	0.108	1.398	0.163	0.275	3.637
Eu considero esta loja a minha primeira escolha para comprar	-0.077	0.059	-0.077	-1.298	0.195	0.459	2.179
Provavelmente voltarei a visitar esta loja	-0.086	0.085	-0.072	-1.011	0.313	0.318	3.141
No futuro continuarei a fazer compras nesta loja	0.063	0.092	0.051	0.678	0.498	0.287	3.484

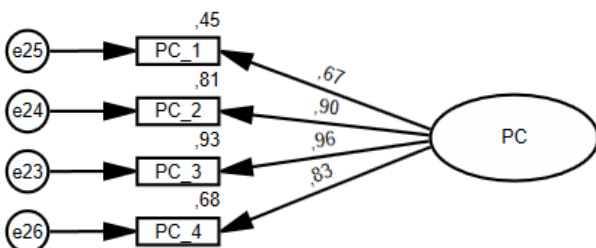# Appendix V: Measurement model for each construct
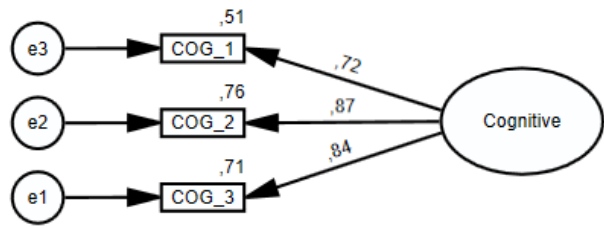
,51
COG_1
,72
,76
COG_2
,87
Cognitive
,71
COG_3
,84

X2(0)=,000; p=\p; X2/gl=\cmindf
GFI=1,000; CFI=1,000; TLI=\tli; RMSEA=\rmsea; P[rmsea<=.05]=\pclose

,78
AFF_1
,88
,97
AFF_2
,98
Affective
,56
AFF_3
,75

X2(0)=,000; p=\p; X2/gl=\cmindf
GFI=1,000; CFI=1,000; TLI=\tli; RMSEA=\rmsea; P[rmsea<=.05]=\pclose

,63
PHY_1
,79
,95
PHY_2
,98
Physical
,74
PHY_3
,86

X2(0)=,000; p=\p; X2/gl=\cmindf
GFI=1,000; CFI=1,000; TLI=\tli; RMSEA=\rmsea; P[rmsea<=.05]=\pclose

,45
PC_1
,67
,81
PC_2
,90
,93
PC_3
,96
PC
,68
PC_4
,83
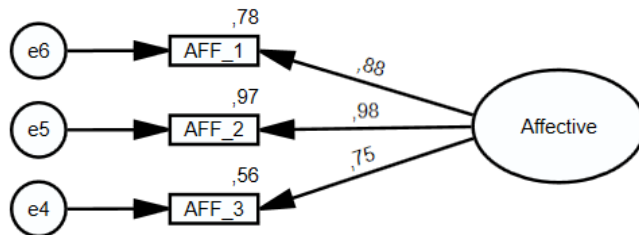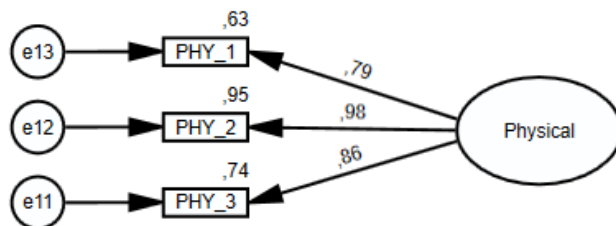
X2(2)=1,031; p=,597; X2/gl=,515
GFI=,998; CFI=1,000; TLI=1,003; RMSEA=,000; P[rmsea<=.05]=,774
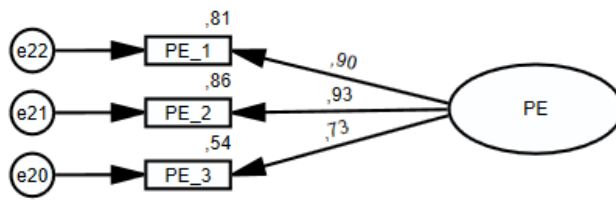
X2(0)=,000; p=\p; X2/gl=\cmindf
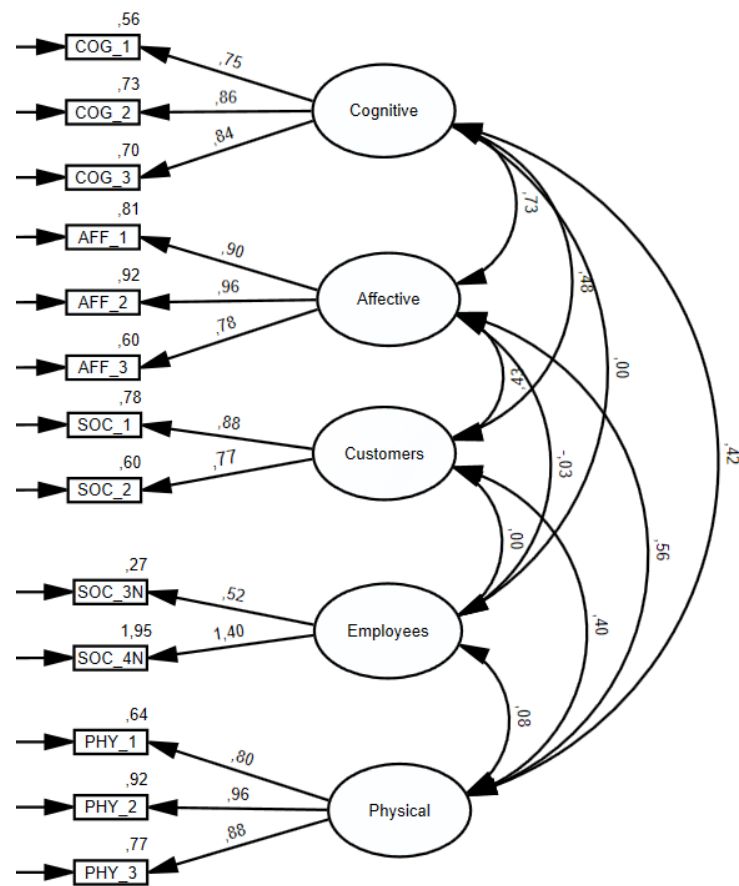GFI=1,000; CFI=1,000; TLI=\tli; RMSEA=\rmsea; P[rmsea<=.05]=\pclose
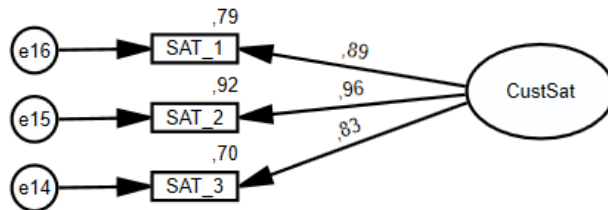
X2(0)=,000; p=\p; X2/gl=\cmindf
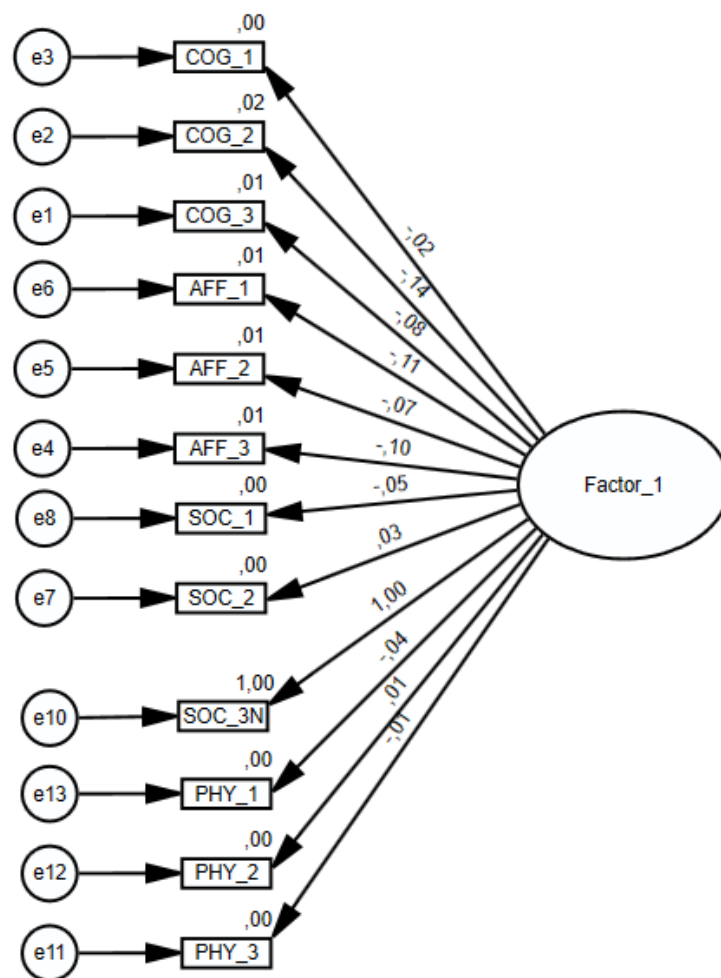GFI=1,000; CFI=1,000; TLI=\tli; RMSEA=\rmsea; P[rmsea<=.05]=\pclose
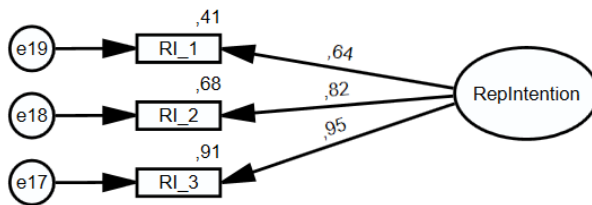
X2(0)=,000; p=\p; X2/gl=\cmindf
GFI=1,000; CFI=1,000; TLI=\tli; RMSEA=\rmsea; P[rmsea<=.05]=\pclose

# Appendix W: Measurement model of the in-store experiential dimensions

$[X^2(55)= 117.750 \ (\rho=0.000); \ X^2/df= 2.141, \ CFI= 0.975, \ TLI= 0.964, \ RMSEA= 0.062].$

Appendix X: Single-factor measurement model of the in-store shopping experience dimensions

X2(55)=2321,847; p=,000; X2/gl=42,215
GFI=,322; CFI=,003; TLI=-,197; RMSEA=,371; P[rmsea<=.05]=,000

Appendix Y: Final measurement model for the 9 constructs measured with 24 indicators
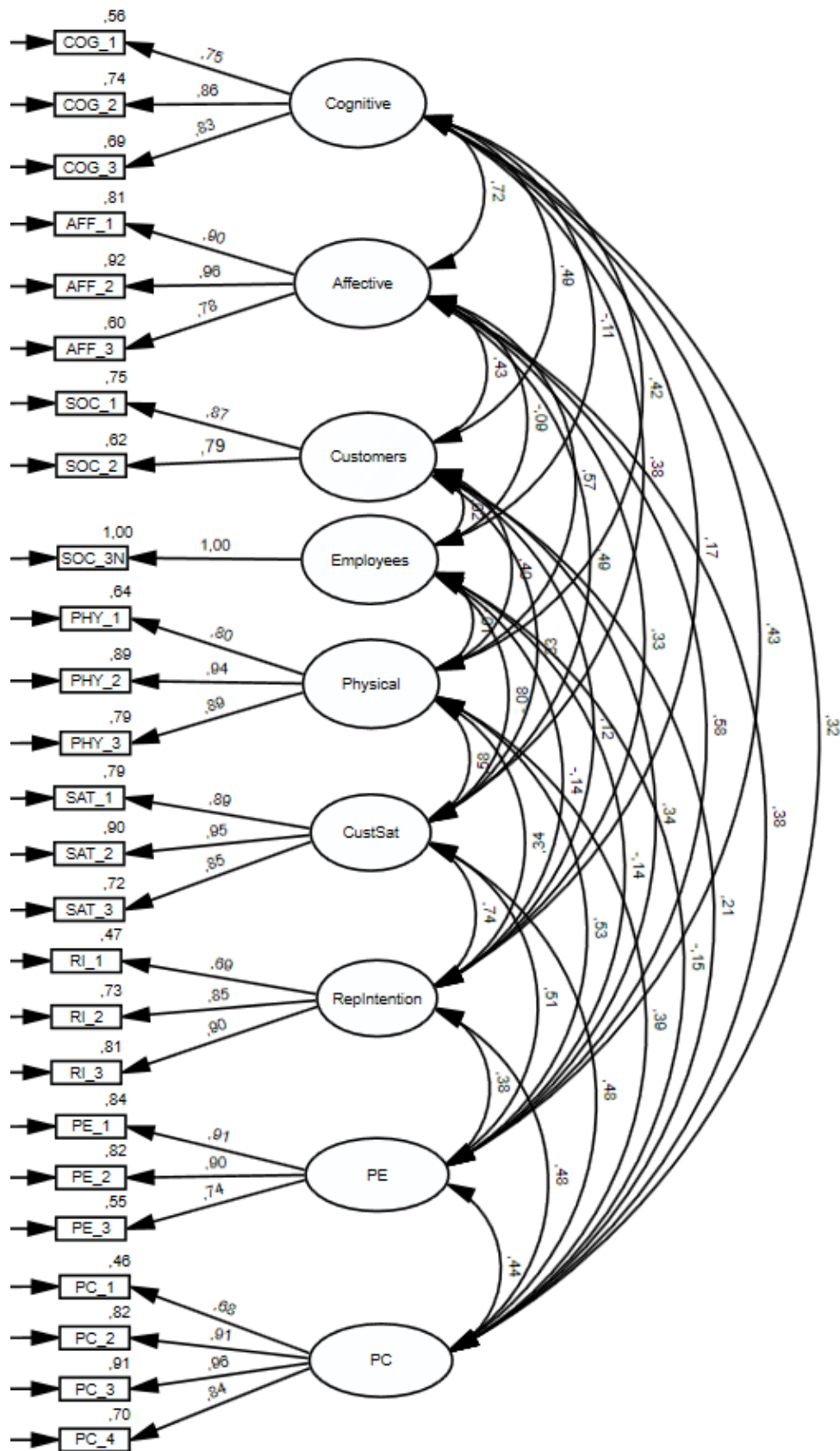
Appendix Z: Model Fit Summary

Metrics	Value
X^2 (p-value)	0.000
GFI	.886
RMSEA	.060
RMR / SRMR	.171
NFI	.915
CFI	.953
TLI	.942
RFI	.894
AGFI	.845
PNFI	.732
PGFI	.654
X^2/df	2.086
AIC	670.740