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"Adoption and Impact of QR-codes in an Omnichannel Customer Experience; The Perspective of Consumer Electronics"

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Abstract

Physical retailers are struggling to compete against digital players. Providing a positive omnichannel customer experience instore has become a vigorous strategy to stay competitive in today's retail environment. QR-codes can offer a wide variety of digital information almost instantaneously. Retailers of consumer electronics are suggested to benefit from this easy access to information by responding to consumers need for interactive and personalized experiences. QR-codes are especially suitable in the prepurchase stage of the customer journey, in which consumers consider and evaluate products. Moreover, QR-codes has had a revival due to its potential during the Covid-19 pandemic. Despite this, there is still an ongoing discussion about the adoption of QR-codes and a lack of empirical insight on the impact of QR-codes on the omnichannel customer experience as well as a lack of studies that take a holistic approach to investigate QR-codes in a consumer electronics setting. The objective of this study was therefore to fill this knowledge gap by answering the following research questions: (1) why consumers adopt or resist QR-codes, and (2) which QR-code information and features provides experiential value and influences purchase intention in consumer electronics.

In answering the first question, a theoretical framework was developed, which extends the Technology Acceptance Model with functional and physiological barriers from the Innovation Resistance Theory, as well as potential moderating factors like age, gender, and personal innovativeness. One or more hypotheses for each construct were based on extensive literature review, and the framework was tested in a cross-sectional survey study. In answering the second question, an experiential value and purchase intention framework was built upon theories on customer experience. Based on literature regarding omnichannel behavior, QR-codes, and shopper-facing technology, it was assumed that more digitalized and personalized information and features were preferred by consumers. This assumption was tested using conjoint analysis.

The findings from the cross-sectional survey shows that QR-code adoption is primarily driven by perceived enjoyment, perceived usefulness, compatibility, and age. The findings from the conjoint analysis generally indicate that less digitalized and personalized information and features can add experiential value and that more digitalized and personalized trigger purchase intention. Features such as *personalized reviews* should especially be consider by retailers as this was important across both experiential value and purchase intention. In conclusion, retailers should focus on both utilitarian and hedonic benefits of QR-codes and ensure that the touchpoints fit with consumers' shopping behavior and age. Retailers must also be aware that there are differences in the preferences for what can create experiential value and purchase intention, and they should carefully consider the purpose for which QR-codes are implemented and allow this to guide them in what information and features they apply.

Keywords: QR-codes, omnichannel customer experience, technology acceptance model, innovation resistance theory, experiential value, purchase intention

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Abbreviations

CX = Customer experience
BI = Behavioral intention
PU = Perceived usefulness
PEOU = Perceived ease-of-use
PE = Perceived enjoyment
UB = Usage barrier
VB = Value barrier
RB = Risk barrier
TB = Tradition barrier
IB = Image barrier
PI = Personal innovativeness
TAM = Technology Acceptance Model
IRT = Innovation Resistance Theory
IS = Information systems

1 Introduction

Retail is one of the most rapidly changing industries. Innovations in information technology, ongoing digitalization and the growth of online and mobile shopping is constantly transforming global markets and consumer behaviors (Mosquera et al., 2017). These advances have led to the emergence of digital retailers like Amazon, who thrive on digital capabilities, inferior prices, and wide product assortment. Traditional retailers are struggling to compete, especially as their attempts have often been to strengthen the areas where these tech-companies are dominating (Rigby, 2011; von Briel, 2018). The Covid-19 pandemic also accelerated the shifts toward online shopping as quarantines, restrictions, and social distancing became the new norm and made consumers more digitally-savvy and channel-agnostic (Bradley et al., 2021; Wilson, 2021). Yet, despite the rise and growth of online and mobile shopping, the traditional brick-and-mortar store remains the most dominating channel (Alexander and Cano, 2019). Consumers still appreciate unique instore experiences and want immediate purchase gratification (von Briel, 2018; Wilson, 2021). According to Forrester, 72% of U.S. retail sales will still occur in brick-and-mortar stores in 2024 (Wilson, 2021).

Offering a compelling omnichannel experience is perhaps one of the most important developments within business strategy and is now a requirement for survival (Mosquera et al., 2017; Briedis et al., 2021). It has provided traditional retailers with the ability to compete against digital players and endure the pandemic (Bradley et al., 2021). It is perceived as the ongoing evolution of e-commerce and the current and third wave of retail disruption following multichannel retailing (Rigby, 2011; Piotrowicz and Cuthbertson, 2014; Juaneda-Ayensa et al., 2016). Unlike multichannel retailing, however, which is characterized by channels operating in silos, omnichannel retailing implies full integration of online and offline channels and allows consumers to shop anywhere at any time (Piotrowicz and Cuthbertson, 2014; Rodríguez-Torrico et al., 2017). The objectives for each channel are coordinated to create synergies and a holistic customer experience (Cao and Li, 2015). Channel integration has been shown to increase traffic, sales, and appeal of physical stores, and consumers are found to favor integrated retailers above non-integrated (Gallino and Moreno, 2014; Herhausen et al., 2015). As such, omnichannel retailing can turn the one feature that online retailers are lacking – the physical store – from a liability to an asset (Rigby, 2011).

To enable omnichannel fulfilment, physical retailers are increasingly implementing shopper-facing technologies. Technologies which consumers can directly engage; those that are situated at the point-of-purchase and are shopper oriented (Willems et al., 2017). Serving as digital touchpoints for retailer-consumer interactions, shopper-facing technologies bridge the gap between digital and physical environments (Alexander and Kent, 2020). One such shopper-facing technology is the QR-code, which is the current unit of analysis. QR-codes are not new and have been used by marketers for a decade. However, during the pandemic they made a comeback and have since become nearly ubiquitous (Woo, 2021). QR-codes are the new form of mobile payment and are replacing restaurant menus. They are in newspapers, advertisements, on public transportation, business cards, and at events and exhibitions. QR-codes are also featured in store windows and fashion shows, and even sewn and printed onto clothes, as well as they are a part of product packaging design and instore displays (Moore, 2021). Bean (2021) finds that QR-code usage grew by 96% from 2018 to 2020. The world is communicating through QR-codes, which comes with major benefits for retailers. They are affordable, quick to create, and easy to scan with a mobile phone to direct instore customers to a wide variety of online locations such as digital campaigns, company websites, and product pages (Tanner et al., 2019). As information storage systems, QR-codes come with endless

opportunities to inform and engage consumers (Cate et al., 2013; Liébana-Cabanillas et al., 2015). Therefore, QR-codes can be valuable during the early stage of the customer journey when consumers search for information and evaluate products (Trivedi et al., 2019). According to Okazaki et al. (2012, p.102), the use of QR-codes is particularly suitable for omnichannel retailing as it "is one of the few alternatives that enable consumers to transfer from one [channel] to another, more or less instantaneously".

A retail segment suggested to benefit from QR-codes is consumer electronics; Best Buy in the United States has been applying them instore since 2010 (Jung et al., 2012). Consumer electronics refers "to a range of products containing electronic circuit boards, intended for personal use" (Laricchia, 2022). They include TVs, computers, mobile phones, and other home appliances, which are often considered high-involvement products where consumers conduct extensive information research (Szopiński et al., 2020). According to Laricchia (2022) "consumers are forecasted to increase their spending on [consumer electronics], with more than half a trillion U.S. dollars expected to be spent on traditional and emerging technologies worldwide in 2022 alone". What makes the fit between consumer electronics and QR-codes particularly interesting, however, is that consumer electronics is a highly commoditized and thus competitive sector where Amazon is increasing its market shares (Kim, 2022). Electronic retailers are struggling with the disadvantage of smaller instore inventory and high real estate costs. This raises interesting questions whether QR-codes are valuable digital touchpoints and if consumers are willing to use them, especially as it is argued that consumers do not necessarily use instore technology and are slow to adopt them (Morgan, 2021).

Within the academic community, a related discussion regarding QR-codes has emerged as a slow adoption was initially identified (Sago, 2011; Okazaki et al., 2019; Tanner et al., 2019). Consequently, the QR-code stream has been driven by identifying factors that influence consumer usage. Most of this research however, originated prior to the pandemic as well as often approach QR-codes from either a wider marketing or advertisement perspective (e.g., Jung et al., 2012; Okazaki et al., 2012; Cata et al., 2013; Di Betta and Lucera, 2013; Ozkaya et al., 2015; Okazaki et al., 2019; Trivedi et al., 2019); an ambiguous marketing-retail environment (e.g., Shin et al., 2012; Atkinson, 2013; Ryu and Murdock, 2013; Ryu, 2013); food traceability and grocery retailing (e.g., Higgins et al., 2014; Kim and Woo, 2016; Tanner et al., 2019); or from a mobile payment context (e.g., Liébana-Cabanillas et al., 2015). To our knowledge, two studies address instore QR-codes (e.g., Albăstroiu and Felea, 2015 and Sundström et al., 2015), however, the context is either unspecified or related to home décor and fashion. Moreover, the more recent post-pandemic literature center around QR-codes in mobile payment solutions (e.g., Yan et al., 2020; Chang et al., 2021). Few studies address QR-codes solely as instore digital touchpoints; the current revival of the QR-codes; or QR-codes in the context of consumer electronics. Moreover, despite the slow adoption in retailing as identified by practitioners and academia, none have looked at whether the slow adoption is caused by consumers resistance of QR-codes. Up-to-date research is therefore required about QR-codes and why consumers of electronic goods are motivated to interact with them or even possibly resist them.

Moreover, retailers are often swayed by innovative technologies that sound promising, however, omnichannel retailing, requires a laser-like focus on value creation (Briedis et al., 2021). Retailers need to consider the right technology for the consumers, who increasingly demand personalized, engaging, seamless, and convenient instore experiences (Rigby, 2011; Morgen, 2021). Shopper-facing technology is argued to influence both customer experience

and buying behavior (Alexander and Kent, 2020). Yet, there is a dearth of empirical research that investigate the impact of emerging technologies (Shankar et al., 2021). To our knowledge, the literature that investigates the effects of shopper-facing technologies and QR-codes on the omnichannel customer experience are either conceptual in nature (e.g., Grewal et al., 2019; Hoyer et al., 2020; Grewal and Roggeveen, 2020), take a qualitative approach from a retailer perspective (e.g., Hansen and Sia, 2015; von Briel,2018; Alexander and Cano, 2019), or are explorative (e.g., Albăstroiu and Felea, 2015; Alexander and Kent, 2020). McColl-Kennedy et al. (2019) empirically examine how to gain insight into the customer experience using text-mining but in a business-to-business setting. We have not identified literature on the impact of QR-codes on customer experience nor purchase intention. Hoyer et al. (2020), however, emphasize the need to look at which information is most useful for consumers, in which format and when it should be provided, as well as the experiential value consumers gain from interacting with shopper-facing technologies. Lemon and Verhoef (2016) emphasize the need to include immediate purchase consequences when examining the customer experience. Inman and Nikolova (2017), however, argue that retailers need a holistic view and before investigating consumer preferences and which value can be derived, retailers need to understand what motivates consumers to use the shopper-facing technologies.

To our knowledge, there are few or no studies that take such a holistic approach as to investigating the impact of QR-codes within consumer electronics. Thus, the objective of this study is to fill this gap by combining perspectives on consumer adoption of QR-codes with investigating the impact of QR-codes on the omnichannel customer experience and purchase intention. The following research questions (RQ) are therefore asked:

RQ1: Why do consumers adopt or resist QR-codes in consumer electronic settings?

RQ2: What QR-code information and features provide value and influences the omnichannel customer experience and purchase intention in consumer electronic settings?

By finding answers to these questions this study may contribute to scientific knowledge, as well as provide retailers and researchers with a better understanding on the usage of QR-codes. What motivates consumers to adopt may not be sufficient to fully understand consumers needs and preferences. Exploring the QR-codes capabilities that can create positive instore customer experiences and influence decision-making provides insight into effective execution of QR-codes to maximize value creation. Moreover, this study contributes to QR-code adoption literature by adding the context of consumer electronics and high-involvement products, as well as it empirically tests and advances theories within customer experience that has remained relatively conceptual.

This Master Thesis is structured as following. First, a literature review is presented, which is sectioned into conceptual background and theoretical framework. The conceptual background comprises an overview of how the literature review was conducted, and the main topics of omnichannel retailing, customer experience, shopper-facing technologies, and QR-codes. The theoretical framework presents the two models that guides the empirical investigation. Methodology is then presented, which outlines how the study was conducted and analyzed. This is followed by findings and then a discussion of the main findings, implications, limitations, and future perspectives. Lastly, a conclusion is presented.

2 Literature Review

Upon the recommendation of Webster and Watson (2002), the current study employs a structured approach to determine the source material for the review starting with an exhaustive database search using Oria, Google Scholar, ACM, and Web of Science. The search was conducted in the timeframe of January to March 2022 and search terms included various combinations of "omnichannel retailing", "customer experience", "customer experience measurement", "customer journey", "physical store", "instore technology", "shopper-facing technology", "consumer electronics", "QR-code", "QR-code adoption", "technology acceptance", "the technology acceptance model", "consumer resistance" and "innovation resistance theory". The leading information systems (IS) journal, MIS Quarterly, was also scanned for relevant articles using similar search terms. The titles, abstracts, discussions, and conclusions of the initial set of articles were scanned for relevancy, before selected articles were read in full. Furthermore, we reviewed the references in the selected articles and used Google Scholar to identify articles citing the selected articles (Webster and Watson, 2002). The search for relevant literature stopped once no new concepts emerged.

Due to the interdisciplinary nature of the topics of omnichannel, customer experience, and QR-codes, and the field of IS itself, articles from journals within a wide variety of fields were considered appropriate to include (e.g., journals from marketing, organizational psychology, human behavior, management science, and human-computer interaction). However, to ensure a high-quality literature review, some inclusion criteria were set; only peer-reviewed articles and conference papers written in English were included, and they had to be available for download and free of cost. Due to the origin of some of the concepts, such as customer experience and technology adoption, we were not restricted by a timeframe. Grey literature such as published dissertations were also included (Beck and Rygl, 2015) due to its contribution within the field of IS, e.g., the Technology Acceptance Model by Davis (1986).

A total of 104 articles are included in the following review. These publications are categorized according to concepts of a conceptual background (Section 2.1) or theoretical framework (Section 2.2) that lay grounds for empirically investigating QR-codes. The conceptual background includes omnichannel retailing, customer experience, shopper-facing technologies, and QR-codes respectively. The theoretical framework consists of the Technology Acceptance Model extended with the Innovation Resistance, and an experiential value and purchase intention framework.

2.1 Conceptual Background

2.1.1 Omnichannel Retailing

The move to omnichannel retailing was triggered by advances in digital technologies, particularly the advent of smartphones, and, accordingly, evolving consumer behaviors (Rigby, 2011; Brynjolfsson et al., 2013). Digital technologies are faster, cheaper, and more accessible and versatile than ever, and have increasingly enabled price and information transparency and higher consumer demands. Consumers now want the broad selection, rich product information, tips and inspiration, and customer reviews offered by offline channels, as well as the personal service, the ability to see and touch products, and the experience of shopping offered by physical stores (Rigby, 2011). Consequently, "channels are interchangeably and seamlessly used during the search and purchase process and it is difficult

or virtually impossible for firms to control this usage" (Verhoef et al., 2015, p. 175). Omnichannel retailing, however, facilities a means of responding to these consumer behaviors. It allows retailers to interact with their customers at each stage of the customer journey through combinations of channels, touchpoints, and devices in a holistic and unified manner (Rigby, 2011; Brynjolfsson et al., 2013; Berman and Thelen, 2018). It places consumers at the center and enables them to undertake the buying process on their terms and at their convenience (Cook, 2014). According to Verhoef et al. (2015, p. 176), omnichannel retailing is "the synergetic management of the numerous available channels and customer touchpoints, in such a way that the customer experience across channels and the performance over channels is optimized". A touchpoint is an episode or an instance of direct or indirect contact between a customer and a retailer (Court et al., 2009; Baxendale et al., 2015; Verhoef et al., 2015). They are mediated by channels, thus "a specific channel as the physical store can include more than one touchpoint; the physical store space itself, a technology, and the sales or customer service executives" (Gerea et al., 2021, p. 16).

Channel integration is found to increase performance and sales growth through improved trust, increased customer loyalty, higher customer conversion rates and greater opportunities in cross-selling (Cao and Li, 2015). According to Lee et al. (2019), high quality integration and consistency positively influences customer engagement which in turn lead to positive word of mouth and repurchase intentions. Zhang et al. (2018) also find a positive relationship between channel integration and consumer patronage and satisfaction, mediated by consumer empowerment, i.e., consumers perception of control during the customer journey.

Creating an omnichannel customer experience (CX), however, is challenging. Besides the operational complexities (Bijmolt et al., 2021), which is beyond scope of this thesis, it is particularly challenging for retailers of electronic goods where consumers, on one hand, adopt a tactile approach to the decision-making process and consider aesthetics and potential fit of a product in a living space as important as the functionality and design specifications (Cook, 2014). On the other hand, consumer electronics are often considered high involvement products where consumers conduct extensive information search and evaluation of alternatives (Lee et al., 2019). It is a segment where price, risk of dissatisfaction, and personal traits (i.e., technical skills and knowledge about rapid technological change) of the customers influence purchasing decisions, and is thus subjected to showrooming, i.e., when consumers visit physical stores to evaluate products firsthand while simultaneously using smartphones to compare products for potential purchase (Rapp et al., 2015; Rejón-Guardia and Luna-Nevarez, 2017; Szopiński et al., 2020). This comes in addition to the increasing expectations of more personalized shopping experiences across all touchpoints. Thus, the challenge becomes, in addition to creating a perfect integration, to design a CX compelling enough to compete with showrooming (von Briel, 2018) and the magnitude of touchpoints offered by competitors (Lemon and Verhoef, 2016).

2.1.2 Customer Experience

Gerea et al., (2021) finds that the construct of omnichannel CX has not been operationalized enough. To understand how retailers can create the omnichannel experience, however, the omnichannel literature often borrows concept from the marketing literature (Barwitz and Maas, 2018; Lynch and Barnes, 2020; Alexander and Kent, 2020), where CX is a cornerstone of understanding consumer behavior. A well-accepted definition of CX is that of Lemon and Verhoef (2016, p. 71), which conceptualize CX as "a multidimensional construct focusing on

a customer's cognitive, emotional, behavioral, sensorial, and social responses to a firm's offering during the customer's entire purchase journey". This definition considers the CX dynamic and iterative. It pertains to a customer's interaction with channels and touchpoints throughout the customer journey. As such, it consists of two components; the customer journey itself, and the customer responses derived from interacting with touchpoints along the customer journey (Følstad and Kvale, 2018; Grewal and Roggeveen, 2020; Hoyer et al., 2020; Alexander and Kent, 2020)

The customer journey is the process a customer goes through across touchpoints to access or use a firm's offering (Lemon and Verhoef, 2016; Følstad and Kvale, 2018). It is generally agreed that it consists of three main stages; *prepurchase*, *purchase*, and *post-purchase* (Neslin et al., 2006; Tueanrat et al., 2021; Santos and Gonçalves, 2021). The *prepurchase* consists of everything a customer does or encounter before a purchase. It is characterized by three substages; need recognition, information search, and consideration or evaluation of alternatives (Lemon and Verhoef, 2016; Bijmolt et al., 2021). That is, after identifying a need, customers search for information and compare products until they reach a point of saturation (Lynch and Barnes, 2020). Lynch and Barnes (2020) also identify an inspiration substage among high-involvement customers and argue, in line with Workman and Studak (2006), that some customers have a want rather than need based approach. Some may therefore use the prepurchase stage as an instance to learn about new products and acquire ideas about what to buy. The *purchase* stage is the most temporally compressed stage. It covers the customer interactions with the brand and its environment during the purchase event itself (Lemon and Verhoef, 2016). Bijmolt et al. (2021) asserts it starts when a choice is made and ends by completing the payment. The *post-purchase* stage encompasses everything that may follow a purchase. According to Lemon and Verhoef (2016), this stage comprises usage and consumption, post-purchase engagement and service request. It also includes 'post-journey evaluation', which influence consumer experience and potentially result in a feedback loop back to the 'need recognition' phase (Court et al., 2009; Bijmolt et al., 2021).

In line with Bijmolt et al. (2021), our study depicts the customer journey as a sequential process of consumer decision-making. It does recognize that, in the omnichannel reality, the customer journey may be nonlinear and heterogenous as consumers may jump back and forth between stages and have different preferences for how they interact with a retailer (Herhausen et al., 2019; Rooderkerk and Kök, 2019; Grewal and Roggeveen, 2020). However, depicting a sequential process makes it more manageable (Lemon and Verhoef, 2016), and helps identify customer needs, what satisfies their needs, and their preferences regarding how they prefer to interact with retailers at certain moments in their decision-making (Willems et al., 2017). According to Hoyer et al. (2020), breaking up the journey into the different stages is critical to identify the distinct role that a touchpoint will play.

The second component of the CX concerns the customer responses, which (Tueanrat et al., 2021, p. 324) describe as "an individual's reactions to an interaction with a touchpoint". Although this area is emphasized to be important in understanding the CX (Grewal and Roggeveen, 2020; Hoyer et al., 2020), it is not as clearly defined as the customer journey. Research is dispersed in context focusing on product-, brand-, instore-, and technology experiences (Gentile et al., 2007; Verhoef et al., 2009; Brakus et al., 2009; Bustamante and Rubio, 2017). As such, the experience dimensions of the internal and subjective responses (e.g., the cognitive, emotional, behavioral, sensorial, and social dimensions) are also diverse as these appear context dependent. Research does, however, build on the premise that "experiences occur as a result of encountering, undergoing or living through things" (Schmitt,

1999, p. 57), and that experiences are not evaluative judgements (Brakus et al., 2009), but the result of the interaction between a customer and a touchpoint and the act of co-creation between the two (Bustamante and Rubio, 2017). There is also a consensus that the dimensions of the customer responses are triggered or evoked by various factors, stimuli, or cues provided by touchpoints (Schmitt, 1999; Verhoef et al., 2009; Brakus et al., 2009; Grewal and Roggeveen, 2020). Therefore, Hoyer et al. (2020) argue touchpoints create experiential value, which in turn can be used to assess the role and impact of touchpoints in value creation. According to Grewal and Roggeveen (2020), the experiential value that can be evoked becomes important to identify and shape as the impacts from each stage of the customer journey may have impact on the other stages. Moreover, the CX should also be created in such a way that it contributes to the value creation for the retailer, and tangible measures should also be considered (Gentile et al., 2007; Verhoef et al., 2009; Lemon and Verhoef, 2016).

2.1.3 Shopper-Facing Technologies

Shopper-facing technologies can serve as important instore touchpoints to customers throughout the customer journey, and they can deliver several benefits to retailers, including enhancing operational efficiency (Grewal et al., 2019). Inman and Nikolova (2017) suggest that shopper-facing technologies can create value by increasing revenue through (1) attracting new shoppers, (2) increasing share of value from existing shoppers, or (3) decreasing costs through offloading labor to shoppers. Moreover, consumers often remain anonymous when they enter a physical store unless they provide transactional data (Baxendale et al., 2015; Grewal et al., 2017; von Briel, 2018). Shopper-facing technologies can offer opportunities for retailers to identify individual consumers, e.g., through digital display technologies (von Briel, 2018). Being able to identify consumers and preferences instore build the foundation for establishing a holistic view of customers that will enable retailers to tailor instore offerings and seamlessly integrate stores into the omnichannel experience (von Briel, 2018).

As for the consumers, shopper-facing technologies offer digital access instore (von Briel, 2018). They can influence the CX by addressing and affecting one or multiple stages in the customer journey (Pantano and Naccarato, 2010; Willems et al., 2017). Shopper-facing technologies can also deliver value by making the shopping experience more convenient. Customers seek to minimize the time and effort they devote to shopping (Grewal et al., 2019). As such, they deliver utilitarian value. Alexander and Kent's (2020) also emphasize shopper-facing technologies can deliver hedonic value by being experimental and interactive (e.g., augmented/virtual reality). These technologies have increasingly more influence on consumers' decision-making than those with utilitarian benefits. Alexander and Kent (2020) also argue shopper-facing technologies can positively influence customers' buying behavior by increasing the attractiveness and aesthetic appeal of stores. Additionally, shopper-facing technologies enable more informed purchase decisions (Imman and Nikolova, 2017; Tanner et al., 2019).

Despite the many benefits, shopper-facing technologies are complex and involve several challenges. First, they must be implemented with a clear purpose and not just for the sake of the technology (Grewal et al, 2019; Piotrwicz and Cuthbertson, 2014). Managers' excitement about their own side of the value equation often makes them forget to consider whether customers share the same excitement (Imman and Nikolova, 2017). All shopper-facing technologies should be integrated fully with the CX and be designed to meet customer needs (Piotrowicz and Cuthbertson, 2014). Another challenge is that customers seek different levels

of interaction with technologies, which is often linked to their experience with technology. It is important to ensure that the technology does not become a barrier for people less familiar with it, and retailers should therefore offer a combination of options. For example, technology should complement the store staff rather than replacing them. Thus, store employees must receive adequate training to work with technologies as an integrated support system (Piotrowicz and Cuthbertson, 2014).

2.1.4 QR-Codes

QR-codes were originally invented by Denso Wave in 1994 to track the manufacturing of vehicle components and have since been adopted across diverse industries, including logistics, tourism, restaurant and food services, advertisement, and retailing (Trivedi et al., 2019). Unlike standard one-dimensional barcodes, QR-codes are two-dimensional codes that stores data in both horizontal and vertical directions and as such allow for rapid transmission of information (Albăstroiu and Felea, 2015). Due to their ability to be scanned by any smartphone camera and direct users to a variety of data embedded in the code (Cata et al., 2013), QR-codes can be leveraged by retailers during the prepurchase stage of the customer journey (Rooderkerk and Kök, 2019). As consumers frequently search for information (e.g., price comparison sites and competing firms' online stores) while visting physical stores, Rooderkerk and Kök (2019) assert that digital touchpoints such as QR-codes can combat showrooming by providing additional product information, enabling efficient evaluation of larger sets of alternatives, and help consumers choose. Trivedi et al. (2019) also argue QR-codes are suited for the early stage of the decision-making process for high-involvement products as they can facilitate cognitive processing by creating a knowledge repository, increasing product liking, and building preferences. Moreover, Albăstroiu and Felea (2015) find that the main reason consumers scan instore QR-codes is to retrieve product information. This supported by Alexander and Kent (2020) who developed a shopper-facing technology framework that highlights which stage in the consumer journey different technologies are influential. This framework identifies that QR-codes are most suitable for the prepurchase stage. Thus, although shopper-facing technologies may be applicable to more than one stage as highlighted above, the present study will focus on the prepurchase stage where QR-codes are argued to be effective.

QR-codes have large potential for supporting tasks during this stage, which both retailers and consumers can benefit from. For instance, one major benefit of the QR-code is that retailers can modify the contents embedded in the code without changing the code symbol itself (Ryu and Murdock, 2013), enabling customization and personalization efforts, which are highly sought after by retailers as the need for personalization has grown amongst customers (von Briel, 2018). Retailers can thus differentiate their offerings. As for the consumer, QR-codes can enable a more convenient and efficient CX (Ryu, 2013). Scanning QR-codes into a mobile phone to access detailed information and shopping tips can enhance benefit convenience, which refers to the resource needed to experience the core benefit of the product or service, such as locating and evaluating them (Grewal et al., 2019). QR-codes can also provide targeted and interactive product information at the right time and place (Atkinson, 2013). Albăstroiu and Felea (2015) argue that enhanced interactivity contributes to a better experience.

2.2 Theoretical Frameworks

The following frameworks are based on the two components of the CX. As QR-codes are suitable for the prepurchase stage, both frameworks are situated in this stage.

First, an adoption framework is presented. QR-code usage has been addressed in research and theories and frameworks such as the Technology Acceptance Model (TAM) and Uses and Gratification Model have also been applied, combined, and extended with system characteristics and personal traits or other theories on media effectiveness, social influence, compatibility, and individual mobility (e.g., Jung et al., 2012; Ruy and Murdock, 2013; Shin et al, 2012; Atkinson, 2013; Liébana-Cabanillas et al., 2015). TAM is a theoretical model suggested by multiple researchers to be an appropriate theoretical model for investigating omnichannel consumer behavior, CX and retail technology (Santos and Gonçalves, 2021; Gerea et al., 2021; Shankar et al., 2021). It is also found to be a model appropriate to align with other theories (Lee et al., 2003). To our knowledge, no previous research has been conducted on QR-code resistance. According to Ram (1987), resistance and adoption can coexist during the life of an innovation; the adoption begins only after the initial consumer resistance is overcome. Thus, we extend the TAM with barriers from Ram and Seth's (1989) framework to address the ongoing discussion on QR-code adoption to gain a deeper understanding of QR-codes usage.

This will be followed by a CX framework that combines affective and cognitive value and purchase intention with QR-codes content and feature attributes. This framework lay grounds for exploring QR-codes and its content and features that provides the greatest value to consumers, and thus, in turn, provide potential value for retailers.

2.2.1 QR-code Adoption Framework

The Technology Acceptance Model

The Technology Acceptance Model (TAM), as proposed by Davis (1986), theorizes what motivates people to accept information systems (IS) in an organizational context. Recognizing that desired outcomes of new systems are not obtained if users fail to adopt them, the TAM explores the motivational process of *stimulus* → *organism* → *response* (Davis, 1986). It builds on Fishbein's (1967) and Fishbein and Ajzen's (1975) Theory of Reasoned Action (TRA), a well-established theoretical model in social psychology that has proven successful in explaining and predicting behavior across different contexts (Davis, 1986; Davis et al., 1989).

The TRA postulate that behavior is an antecedent of behavioral intention (BI), and that BI in turn is determined by attitude toward use and subjective norm (Fishbein and Ajzen, 1975; Davis, 1986). BI is defined as an individual's subjective probability that it will perform a specified behavior. Attitude toward use is the degree of an individual's evaluative (positive or negative) affect toward the target behavior. Subjective norm is an individual's perception that most people who are important to it thinks it should or should not perform the behavior in question (Fishbein and Ajzen, 1975; Davis, 1986). The TRA also posits that attitude toward use is a function of the perceived consequences (i.e., beliefs), which is an individual's subjective probability that performing the target behavior will result in salient consequence. The beliefs are not specified, but they are in turn influenced by external variables (Fishbein and Ajzen, 1975; Davis, 1986).

In adopting these motivation linkages, the TAM posit that attitude toward use is determined by two salient beliefs related to IS user-acceptance: perceived usefulness (PU) and perceived ease-of-use (PEOU) (Davis, 1986). PU assumes a positive use-performance relationship and is defined as “the degree to which a person believes that using a particular system would enhance his or her job performance” (Davis, 1986, p. 26; Davis, 1989, p. 320). PEOU is defined as "the degree to which a person believes that using a particular system would be free of effort” (Davis, 1986, p. 26; Davis, 1989, p. 320). While PU and PEOU are both directly influenced by external variables (e.g., system characteristics), PU is also influenced by PEOU as the easier a system is to operate, the more useful it will be (Davis, 1986). The role of attitude toward use, however, has been questioned. In developing measurement scales for PU and PEOU, Davis (1989) omits attitude toward use and find that PU and PEOU significantly correlate with self-reported usage. Davis et al. (1989) adds a direct PU → BI relationship and argue that people form behavioral intentions they believe will increase their job performance, over and above whatever affective attitude they may have toward the behavior. This is because PU is extrinsically motivated in that enhanced performance is instrumental in achieving valued outcomes that are distinct from the activity itself, such as promotions and increased pay (Vroom, 1964; Davis et al., 1989). Davis et al. (1989) confirm the less important role of attitude toward use. Attitude does little to explain the causal linkages between beliefs and BI and at best only partially mediate this relationship, in which case, its value is forgone. Taken together, Davis (1989) and Davis et al. (1989), which are two subsequent follow-up studies of Davis (1986), support a more parsimonious causal structure of the TAM comprising PU, PEOU and BI, wherein PU and PEOU both influence BI and PEOU indirectly influences BI through PU.

Substantial empirical support has accumulated in favor of the parsimonious TAM as the preferred model to predict and explain IS usage (Venkatesh and Davis, 2000; King and He, 2006; Marangunić and Granić, 2015). It is considered a simple, robust, and powerful model both within and outside the organizational context (Lee et al., 2003), including consumer settings such as online shopping (Gefen and Straub, 2000; Childers et al., 2001), shopper-facing technologies (Kim et al., 2017) and QR-codes (Ryu and Murdock, 2013). As such, this study finds it appropriate to apply to the current investigation of QR-code. Although the role of attitude toward use is still debated (e.g., Kim et al., 2017), this study omits it. This is because BI “reflects a decision that the person has made, and as such gets formed through a process of mental deliberation, conflict and commitment that may span a significant time-period” (Janis and Mann, 1977; Einhorn and Hogarth, 1981; Warshaw and Davis, 1985; Davis, 1986, p. 38). It is considered a better predictor than attitude when an intention for or against a behavior has already been formed. QR-codes have been utilized from a marketing perspective for a decade (Okazaki et al., 2012; Atkinson, 2013) and its application in different consumer settings proved valuable during Covid-19 restrictions (Yan et al., 2021), thus, it is assumed that consumers may have already formed an intention to use.

The ‘parsimonious’ TAM provides an appropriate theoretical basis for adding additional variables that can further explain BI (Marangunić and Granić, 2015). Adding new variables may improve previously noted limitations of the TAM in that PU and PEOU alone may exhibit low explained variance on BI (Lee et al., 2003; Legris et al., 2003). Davis (1989) explicitly addressed the need to investigate how intrinsically motivated variables such as perceived enjoyment (PE) relate to PU, PEOU, and BI. Intrinsic motivation is considered the complement of extrinsic motivation, and “refers to the performance of an activity for no apparent reinforcement, other than performing the activity” (White, 1959; Berlyne,1966; deCharms, 1968; Davis et al., 1992, p. 1112). PE can therefore be seen as the degree to which

fun and pleasure can be derived from the process of using a system (Childers et al., 2001; van der Heijden, 2004). Moon and Kim (2001) argue that adding intrinsic motivation better reflects consumer-use environments where the tasks for which a system is used differs more greatly. The TAM does not specify the task for which a system is intended, but the strength of the belief variables is argued to be task dependent (Gefen and Straub, 2000; Moon and Kim, 2001). This is consistent with Childers et al. (2001) who assert that people engage in retail shopping for both utilitarian and hedonic reasons; some people shop primarily for goal-oriented purposes, while others enjoy shopping and use of the interactive media in the process. Therefore, this study adds PE to the TAM.

The Innovation Resistance Model

Studies on the resistance paradigm generally mobilize the concept of resistance for investigating the factors that lead consumers to reject new systems (Mani and Chouk, 2018). Resistance to change is defined as "any conduct that serves to maintain status quo in the face of pressure to alter the status quo" (Zaltman and Wallendorf, 1983; Ram, 1987; Mani and Chouk, 2018, p. 783) and "is associated with the degree to which individuals feel themselves threatened by change" (Ram, 1987; Mani and Chouk, 2018, p. 783). Resistance is a natural response to innovations that cause changes to consumers' lifestyles and behaviors (Ram and Seth, 1989; Migliore et al., 2022). Innovation resistance refers to the resistance offered by consumers to changes imposed by innovations (Ram, 1987). According to the adoption process (Talke and Heidenreich, 2014), the literature discusses two types of innovation resistance; passive and active innovation resistance (Joachim et al., 2018). Passive innovation resistance leads to the rejection of an innovation prior to its evaluation and the adoption process ends already in its early stages (Bagozzi and Lee, 1999; Heidenreich and Handrich, 2015; Joachim et al., 2018). It refers to the "predisposition to resist innovations due to an individual's inclination to resist changes and status quo satisfaction that already forms rather unconsciously prior new product evaluation" (Heidenreich and Handrich, 2015, p. 881; Mano and Chouk, 2018, p. 786). Conversely, active innovation resistance occurs during the customers evaluation stage of an innovation (Joachim et al., 2018). It is defined as "a negative attitude formation driven by functional and psychological barriers that follows deliberate new product evaluation" (Heidenreich and Handrich, 2015, p. 881; Mano and Chouk, 2018, p. 786).

Innovation resistance is often referred to as 'consumer resistance' (Ram, 1987; Mani and Chouk, 2018). If a consumer perceives a high degree of change in using the innovation, they often resist it (Ram, 1987). If the innovation triggers consumer resistance, the innovation needs to be altered by the firm to align with consumer needs and overcome resistance. Various theoretical models have been developed to understand consumers resistance to innovation, however, the framework of Ram and Seth (1989) has been the most preferred choice among scholars to examine innovation resistance to technology (Kaur et al., 2020). Thus, the present study applies this framework, which builds on a set of barriers that may trigger innovation resistance. The model identifies two categories of barriers to explain consumer resistance: functional and physiological barriers. Functional barriers appear "if consumers perceive significant changes from adopting the innovation" (Ram and Seth, 1989, p. 7). Physiological barriers arise when the innovation is not in line with or "upsets" the consumer's prior beliefs (Mani and Chouk, 2018). The functional barriers are divided into usage, value, and risk barriers, while psychological barriers include tradition and image barriers. (Ram and Seth, 1989; Laukkanen et al., 2007).

2.2.2 Hypothesis Development

Perceived usefulness (PU) concerns the functions a system performs and the outcomes of using it (Davis, 1989; Childers et al., 2001). PU is generally considered the strongest determinant of behavioral intention (BI). Davis (1989) finds PU significantly more correlated with usage than perceived ease-of-use (PEOU), and Davis et al. (1989) conclude PU is a major determinant of BI, while PEOU is a significant secondary determinant. Davis (1989) argues the prominence of PU is conceptually fitting. People can cope with some difficulty if the system is believed to provide instrumental value, but no amount of ease can compensate for a system that does not provide a useful functionality. In evaluating 74 TAM studies across a variety of technologies, Lee et al. (2003) confirm that the PU and BI relationship is strongly significant. Similarly, King and He (2006) find the influence of PU on BI is profound in 88 studies and that it is consistently the strongest path.

In consumer settings related to QR-codes, PU also appears to be a strong predictor of BI. Shin et al., (2012) investigate the use of QR-codes as interactive marketing tools in advertisement. Their findings confirm the key role of PU, suggesting that the more meaningful the content is, and the more input consumers receive in the decision-making process, the more likely they will use it. Higgins et al. (2014) indicate that increasing functional benefits such as promotions increases acceptance. Similarly, Ozkaya et al. (2015) argue QR-codes can enrich consumers' product enquiry, however, if consumers do not perceive apparent advantages of using QR-codes, acceptance rate will be staggered at best. Kim and Woo (2016) examine the role of QR-codes in the food traceability and find that consumers who understand the usefulness of QR-codes have a positive attitude toward using QR-codes for product inquiry. In the context of shopper-facing technologies, Inman and Nikolova (2017) examined six different technologies and showed that acceptance is primarily driven by PU. Thus, based on these findings, the following hypothesis is presented (Figure 1).

H1: Perceived usefulness has a positive influence on behavioral intention to use QR-codes.

Perceived ease-of-use (PEOU) concerns how easy the process leading to the outcome is perceived (Childers et al., 2001). It is a controversial belief variable. Davis (1986) and Davis (1989) find that PEOU may be an antecedent of PU rather than a direct parallel determinant. Conceptually, this makes sense; the easier a system is, the more effort an individual can allocate to other activities that may contribute to overall job performance (Radner and Rothschild, 1975; Davis, 1989). Yet, Davis et al., (1989) finds the effect of PEOU on BI significant but decreases over time, whereas Venkatesh and Davis (2000) find PEOU to significantly influence BI across four longitudinal studies. Gefen and Straub (2000) posit these inconsistencies may also be explained by differentiating between intrinsic and extrinsic tasks. For instance, purchasing a product through an online store is an extrinsic task. It denotes that the IT is a means to achieve the primary end and that the task itself is not an inherent part of the system. Conversely, inquiring about a product is an intrinsic task. It implies that the system provides the primary end and is an inherent part of the task. While a system can facilitate both tasks, intrinsic tasks are affected by system characteristics whereas extrinsic task are not. That is, if the task is to purchase, how easy a system is will not likely affect product selection. As such, PEOU directly influence BI only when the task is intrinsic and when the system contributes to achieving the task.

In the context of QR-codes and shopper-facing technologies, the view of Gefen and Straub appear to be supported. Jung et al. (2012) find PEOU an important motivational driver when the QR-code task is product inquiry. Similarly, in investigating QR-codes as valuable instore information sources, Ryu and Murdock (2013,) find that PEOU positively affect consumer attitude toward use and consumers perception usefulness. Juaneda-Ayensa et al. (2016) find that, when investigating shopper-facing technologies implemented to improve the omnichannel prepurchase stage, PEOU is a determining factor in BI. Based on these findings and keeping consistent with the 'parsimonious' TAM, the following hypotheses are presented.

H2: Perceived ease-of-use has a positive influence on behavioral intention to use QR-codes.

H3: Perceived ease-of-use has a positive influence on perceived usefulness of QR-codes.

In investigating whether people use computers at work primarily because they are useful or because they are enjoyable to use, Davis et al. (1992) find PE to be the second most important determinant of BI following PU. However, a positive interaction between PU and PE has been found; indicating that PE has a greater positive effect on BI when a system is perceived to be more useful, and vice versa. Finding the utilitarian and hedonic aspect consistent with consumer retail behavior, Childers et al., (2001) examined interactive systems (i.e., online shopping) in two different settings. One wherein the task of shopping is utilitarian (i.e., shopping for groceries) and the other wherein the task is hedonic (i.e., shopping for CD's). Their findings indicate that PU and PE were equally influential in both settings. Moon and Kim (2001), however, find intrinsic motivation more powerful than extrinsic motivation in explaining acceptance of the Internet, which is used for both leisure and work. These findings are supported by Venkatesh et al. (2012), who find that in consumer use settings utilitarian and hedonic benefits can coexist, and that hedonic motivation is a critical determinant.

In the context of QR-codes in the retail environment, Ryu and Murdock (2013) find that PE is one of the main motivators. Although PU is a stronger predictor, consumers consider QR-codes more useful and easier to use when it is perceived as more fun and entertaining. This is consistent with Kim et al. (2017) who compare three shopper-facing technologies across the prepurchase stage. PU has a stronger influence on BI; however, PE has a stronger influence in creating favorable attitude; suggesting that usefulness alone may not be able to compensate for a shopper-facing technology that does not provide enjoyment. Based on these findings, the following hypothesis is presented.

H4: Perceived enjoyment has a positive influence on behavioral intention to use QR-codes.

The usage barrier (UB) is one of the most common causes of customer resistance to innovations (Ram and Seth, 1989). In this study, we conceptualize the UB as compatibility. In prior research on technological innovation, the UB has mainly concerned usability and complexity of a system. Therefore, PEOU and UB are argued to be two closely paralleled concepts (Davis, 1989; Teo and Pok, 2003; Wu and Wang, 2005; Laukkanen et al., 2008). Due to the potential overlap between the two constructs, it was appropriate to change the focus of UB from complexity to compatibility. This is in line with the initial definition of Ram and Seth (1989), stating that the UB concerns the degree to which an innovation is compatible with existing workflows, practices, and habits. Compatibility refers to the degree "to which an innovation is perceived as consistent with the existing values, past experiences, and needs

of potential adopters" (Rogers, 1983, p. 224; Molesworth, 2001, p.158). The importance of compatibility is highlighted in Wu and Wang's (2005) study, showing that compatibility is the most significant determinant for the intention to use QR-codes. However, compatibility has been seen to lower the usage barrier (Molesworth, 2001). Visa versa, if an innovation is not compatible with existing workflow patterns, or habits, the UB increases (Ram and Seth, 1989).

Several examples from the literature have shown that UB have a negative effect on behavioral intention and adoption of mobile and digital technologies. It has also shown to have a negative association with use intention toward mobile payment systems (Kaur et al., 2020), mobile commerce (Moorthy et al., 2017; Hew et al., 2019), mobile services (Joachim et al., 2017) and mobile banking (Borraz-Mora et al., 2017). Some authors have positioned the compatibility barrier as a separate independent variable. The compatibility barrier showed negative associations with usage intention in mobile services (Joachim et al., 2017). To our knowledge, there is no prior research on the UB of QR-codes nor positioning compatibility as a barrier. However, there can be drawn parallels from the research presented above. Therefore, the following hypothesis is presented:

H5: Usage barrier has a negative influence on behavioral intention to use QR-codes.

The value barrier (VB) is based on the momentary value of an innovation (Laukkanen et al., 2007). Ram and Seth (1989) suggest that an innovation must offer a strong performance-to-price value compared to the product substitutes, for the customer to be willing to change their ways of performing tasks. A reason why many products and services fail are due to the lack of acceptance by the "pragmatists" (i.e., those who believe that the cost of learning the innovation exceeds the benefits it offers them) (Dunphy and Herbig, 1995; Laukkanen et al., 2007). The literature has found that VB have a negative association with user intention in various contexts, namely online shopping (Lian and Yen, 2012), mobile commerce (Moorthy et al., 2017), and mobile payment and services (Joachim et al., 2018; Kaur et al., 2020). There is no prior research, to our knowledge, examining the actual momentary value of QR-codes. However, Venkatesh et al. (2012) highlight the importance of investigating price value in consumer-use settings, as it is often the consumer who bears the momentary cost of using the technology. For QR-codes, the consumer itself must provide the smartphone to use it. Moreover, Kaur et al. (2020) emphasize the prominent role of providing users with the expected value of using the chosen technology. Moorthy et al. (2017) find that VB appear because users do not meet the desired experience, such as convenience, during the usage of the technology. If the retailer fails to provide users with the desired value and experience when searching for product information through QR-codes, users might resist these codes. Therefore, the following hypothesis is presented.

H6: Value barrier has a negative influence on behavioral intention to use QR-codes.

Risk barriers (RB) refer to the degree of risk that stems from an innovation (Ram and Seth, 1989). Ram and Seth (1989) identify four main types of risk inherent to an innovation; physical risk (e.g., the harm to a person or property), economic risk (e.g., the perceived risk that stems from the high cost of an innovation), functional risk (e.g., the uncertainty in which the innovation has been properly tested and if it reliable and functioning), and social risk (e.g., the social ostracism and fear of being seen in a negative light by others) (Laukkanen, 2007).

Customers' awareness of these risks has shown to hinder adoption (Ram and Seth, 1989). In instances where the perceived risk is higher, consumers likelihood of usage decreases (Hubert et al., 2017; Tanner et al., 2019). This is in line with prior literature which suggests that RB have a negative effect on BI in different contexts, e.g., mobile commerce (Moorthy et al., 2017), mobile payment (Kaur et al., 2020) and online shopping (Lian and Yen, 2014).

To our knowledge, no previous research has directly studied RBs' influence on QR-codes; however, in an exploratory study Okazaki et al. (2012) find that consumers are likely to perceive privacy concerns when they access QR-codes promotions. Moreover, parallels can be drawn from studies of RB in other similar contexts. Risks related to security, privacy, and trust issues have been central in IS literature (Lee, 2013; Kaur et al., 2020). For example, in the context of mobile payment, one potential risk is the fear of losing confidential information and creating security violations when purchasing through the phone (Kaur et al., 2020; Moorthy et al., 2017). Risks such as data leakage and information violations can also be attached to QR-code usage, as retailers can track consumers' behavior and collect customer data and information through QR-codes (Trivedi et al., 2020). Furthermore, the literature highlights that the awareness about the security- and privacy-related aspects of digitalized services among customers can contribute to increased RB (Luo et al., 2010; Kaur et al., 2020). We therefore argue that consumers' uncertainties around the security of QR-codes and their awareness of privacy risks could potentially increase the RB, and by that, negatively influence BI. Based on these findings, our study presents the following hypothesis.

H7: Risk barrier has a negative influence on behavioral intention to use QR-codes.

The tradition barrier (TB) refers to the cultural change created for the customers by an innovation (Ram and Seth, 1989). When an innovation requires the customer to deviate from existing routines and traditions, it is likely that they will resist it (Ram and Seth, 1989). TB have a negative association with adoption intentions of new innovations (Antico and Kleijnen, 2010; Kaur et al., 2020). This is in line with prior research, showing that the TB has a negative effect on use intention towards mobile payment (Migliore et al., 2022), mobile commerce (Moorthy et al., 2017), mobile baking (Laukkanen et al., 2016), and mobile services (Joachim et al., 2018).

Mani and Chouk (2018) highlight that in service contexts, the TB refers to the need for customers to have human interaction in their service experience. Shopper-facing technologies in stores, such as QR-codes are performing services that previously were carried out by sales staff (Mani and Chouk, 2018). This requires a change in customers' behavior of how they search for and make decisions about products in retail stores. Moorthy et al. (2018) argue that TBs occur due to customers' preferences of shopping with assistance provided by sales staff, rather than shopping online. This could also be the case for QR-codes, where customers might resist them due to the required change in their habit of interacting with technologies rather than sales staff instore. Customers' need for human interaction could potentially increase the TB and hinder the adoption of QR-codes in stores. Therefore, the following hypothesis is presented.

H8: Tradition barrier has a negative influence on behavioral intention to use QR-codes.

The image barrier (IB) refers to the unfavorable association that customers make up about the identity from an innovation's origins (e.g., product category to which it belongs, the country of origin or brand) (Ram and Seth, 1989). Thus, the IB arises from stereotyped thinking and can hinder the adoption of an innovation (Ram and Seth, 1989). Prior research has reported that IBs have a negative influence on users' behavior and adoption in different contexts related to mobile and digital technologies. For example, image has a negative association with use intention toward mobile payment solutions (Kaur et al., 2020), mobile banking (Laukkanen, 2016), mobile commerce (Moorthy et al., 2017), online shopping (Lian and Yen, 2014) and mobile services (Joachim et al., 2018).

To our knowledge, there is no prior research on the influence of IB on QR-code usage. However, just like other mobile technologies, we suggest that customers have made up an image of QR-codes prior to the adoption. Some researchers have identified that there has been a slower adoption rate of QR-codes than first expected (Sago, 2011; Ozazaki et al., 2017; Tanner et al., 2019). This could potentially be due to people's associations with these codes. Tanner et al. (2019) argues that the slow adoption arises from peoples lack of understanding as to the purpose of QR-codes. The fact that people do not understand the purpose of using QR-codes can create negative association towards them and potentially hinder the adoption. Furthermore, consumers can potentially have negative associations with QR-codes complexity and difficulty to use (Laukkanen et al., 2007). The following hypothesis is therefore presented.

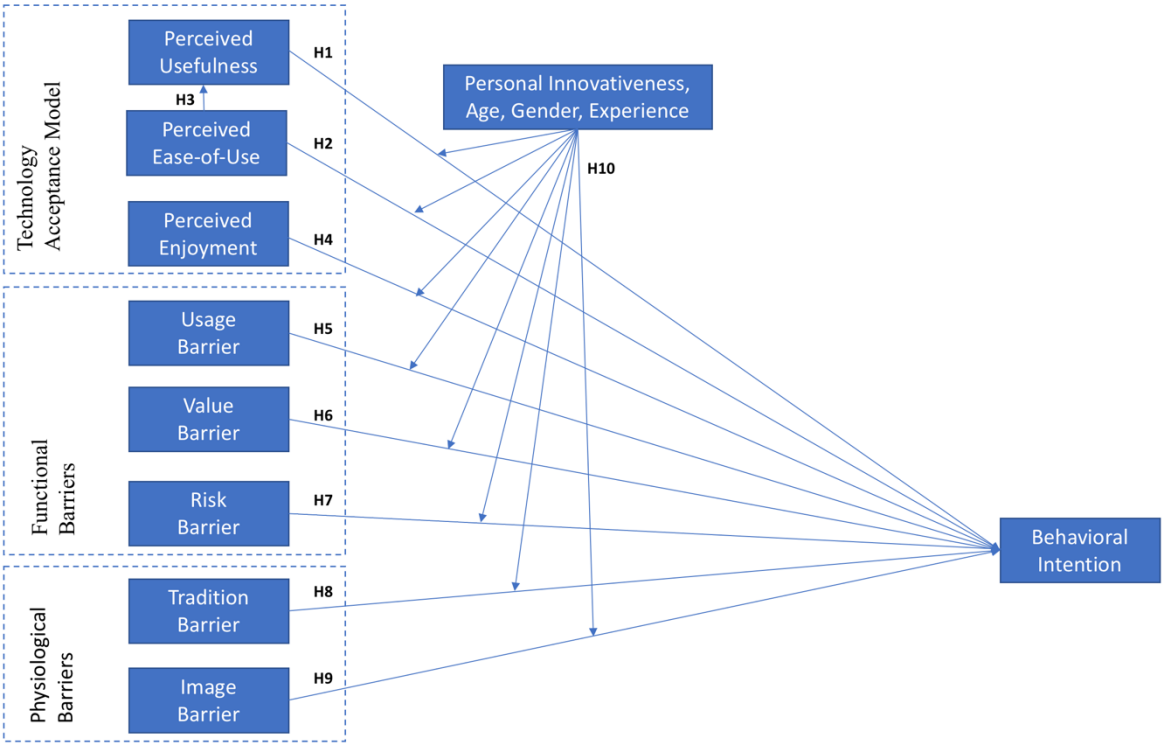
H9: Image barrier has a negative influence on behavioral intention to use QR-codes.

Prior studies find that the strength of motivating belief variables and barriers may depend on consumer characteristics (e.g., age and gender) and prior experience with a technology (e.g., Laukkanen et al., 2007; Venkatesh et al., 2012; Mani and Chouk, 2018; Roy et al., 2018). Szopiński et al. (2020) also find strong differences among men and women in their use of touchpoints when purchasing consumer electronics, as well as an influence levels of skills with technology. Thus, age, gender, experience, and personal innovativeness (PI) are controlled for to gain a deeper understanding of what may influence BI.

PI is defined as the "tendency to be a technology pioneer and thought leader" (Parasuraman, 2000; Parasuraman and Colby, 2015, p. 60). It reflects consumers' willingness to explore a new technology. In the context of shopper-facing technologies, PI is often added to the TAM model as a belief variable and found to significantly influence BI (e.g., Ryu, 2013; Liébana-Cabanillas et al., 2015; Juaneda-Ayensa et al., 2016). However, as it may be regarded as a personal characteristic (Jung et al., 2012; Roy et al., 2018), we find it appropriate to apply as a moderating factor. PI is one of four components next to optimism, discomfort, and insecurity that make up the concept of *technology readiness*, which concerns consumers propensity to embrace technology and is an individual-level characteristic that varies widely. (Parasuraman, 2000; Parasuraman and Colby, 2015). PI is positioned here as a 'motivator' trait that can positively influence technology readiness. Thus, consumers with high PI are more inclined to adopt shopper-facing technologies and less likely of resisting them (Roy et al., 2018). *Technology readiness* can be used as a moderating variable in studies involving multivariate frameworks to explain the dynamics between variables and a subset of the construct may be used to reduce the burden on respondents (Parasuraman and Colby, 2015). Thus, the following hypothesis is presented.

H10: Age, gender, experience, and personal innovativeness will moderate the relationship between independent variables and behavioral intention.

Figure 1. Model of hypotheses exploring relationships between various predictors in the technology acceptance model extended with perceived enjoyment and innovation resistance barriers and the dependent variable behavioral intention, with personal innovativeness, age, and gender as possible moderating factors.



2.2.3 Experiential Value and Purchase Intention Framework

The importance of considering different CX dimensions can be traced back to experiential theorists such as Holbrook and Hirschman (1982), who encourage enriching traditional information processing views with an experiential perspective. Thereby considering subjective and emotional aspects of consumer consumption, rather than merely seeing consumers as rational decision-makers. This view is echoed by applied management researchers. Pine and Gilmore (1998, p. 99) assert consumers unquestionably want memorable retail experiences; those that "are inherently personal, existing only in the mind of an individual who has been engaged on an emotional, physical, intellectual, or even spiritual level". Similarly, Schmitt (1999) argue customers take functional features, benefits, and quality as a given; what they want is for companies to dazzle their senses, touch their hearts, and stimulate their minds. Thus, consumers are thus rationally and emotionally driven.

As mentioned in Section (2.1.2), the experience dimensions are triggered by touchpoints, which, Schmitt (1999) argue, can be purposefully designed to provide different kinds of

experiential value. According to Gentile et al. (2007), the most successful touchpoints involve experience dimensions in different ways, and depending on the type of touchpoints, multiple dimensions can be leveraged to create complex experiences that provide value closer to consumer needs and wants. McColl-Kennedy et al. (2019) and Hoyer et al. (2020) apply a similar view as a conceptual framework to identify triggers and types of experience dimensions to understand either areas of improvement or what type of experiential value can be provided by a touchpoint. Hoyer et al. (2020) particularly emphasize the role of functions and capabilities of digital technology as triggers. Taken together, we understand QR-codes as technological touchpoints that can, through their content, functions, and capabilities, trigger different type of experience dimensions that influence the CX. As such, we posit that these experience dimensions can identify which QR-code content, functions, and capabilities create experiential value. Due to scope, and in line with McColl-Kennedy et al. (2019), we limit experience dimensions to cognitive and affective responses, as these are consistently considered throughout prior research. We do, however, integrate a purchase intention dimension into the model. For retailers, improvements in the bottom line are one of the goals of creating positive a CX, and Lemon and Verhoef (2016) encourage CX models to include outcomes (e.g., immediate purchase consequences). In that sense, it can be argued that the behavioral dimension is included, which Grewal and Roggeveen (2020) assert concerns reactions such as making a purchase. Yet, we find purchase intention a stronger construct to understand what trigger purchase, which is important for retailers as this is the ultimate objective.

The Cognitive Dimension

The cognitive dimension is, according to Schmitt (1999), common in technology and intend to appeal to consumers' intellect with the objective of creating cognitive, problem-solving experiences that engage customers creatively. Bustamante and Rubio (2017) view cognitive processes as those that transform interactions into thoughts. The aim is to awaken the customers' thoughts and offer a complete cognitive experience as they become involved with touchpoints. As such, the cognitive dimension can be understood as the capability of touchpoints to inspire customers; to make them think and reflect; and to arouse curiosity and awaken creativity in a way that is meaningful to them. Similarly, Hoyer et al. (2020, p. 62) assert "cognitive value is the experiential value that consumers receive as a result of processing the information", which includes deeper knowledge, enhanced imagination, and better decisions that match customers' preferences.

The Affective Dimension

The affective dimension can be understood as emotions. The emotions of interest to the experiential view includes diverse feelings as love, hate, fear, joy, boredom, anxiety, pride, anger, disgust, sadness, sympathy, lust, ecstasy, greed, guilt, elation, shame, and awe (Holbrook and Hirschman, 1982). The objective of appealing to the positive emotions is to create affective experiences that range from mildly positive moods to strong emotions of joy and pride during consumption (Schmitt, 1999). Bustamante and Rubio (2017) define affective experiences as intrinsic attraction (or aversion) and find them to be important components of CX as stimuli or triggers can provoke emotions which in turn influence customer behavior. Intrinsic attraction is described amongst other things as enthusiastic, thrilling, good mood. Hoyer et al., (2020) argue emotional value result from affective features, which may create attachment or connection to a touchpoint.

Purchase Intention

Purchase intention is an important predictor of actual buying behavior. It can be regarded as an outcome of consumers' assessment of product information and evaluation (Poddar et al., 2009; Chen et al., 2010). Such a metric can show that excelling at CX results in stronger firm performance in terms of sales or return on investment (Lemon and Verhoef, 2016).

The QR-codes Functional Features

QR-codes are unique in its ability to deliver diverse digital content and features (Ryu and Murdock, 2013). Just as for online platforms, the variation of product information that QR-codes can offer are endless, ranging from customer reviews to product availability to prices and promotional offers (Brynjolfsson et al., 2013). In terms of pricing, a dynamic pricing strategy can be applied, by promoting a limited-time scarcity message, in which the retailer presents an offer or a price to the consumers that is only available for a short-predefined period (Aggarwal et al., 2011). This strategy can positively influence consumer choice as scarcity messages induce arousal and lead to reactance (Cremer and Loebbecke, 2021). Digital features such as wishlists and basket functions can be attached to QR-codes. According to Lynch and Barnes (2020) wishlists can enable consumers to curate and consider potential items for purchase, supporting them during the evaluation stage. Furthermore, buy online-, pick-up-instore (BOPS) functionality can be implemented. This can show customers the locations at which the items are available and give customers the option to purchase directly through the QR-code and then pick it up in a physical store shortly after (Gallino and Moreno, 2014). QR-codes can also assist customers in evaluating the different products of interest, by comparing product features and prices in store in an accessible and efficient way (Ryu 2013; Piotrowicz and Cuthbertson, 2014; von Briel, 2018).

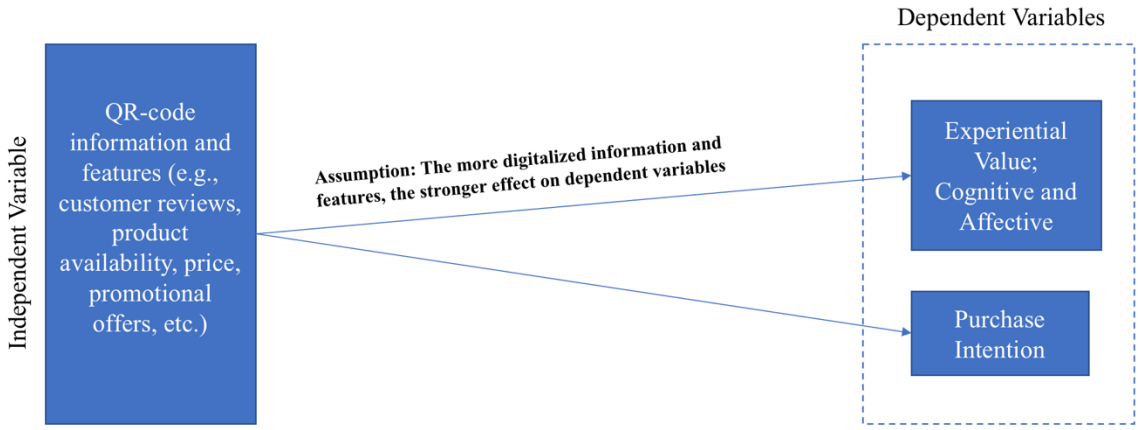
Ryu and Murdock (2013) find that QR-codes can be linked to entertainment and informational content to raise consumers' enthusiasm. For example, the fashion retailer, Macy's provide consumers with video clips, the latest fashion trends, and essential tips from style icons via QR-codes (Ryu and Murdock, 2013). Research shows that dynamic messages (e.g., videos), as opposed to static ones (e.g., pictures) create stronger emotional connections, which reduces customers' price sensitivity and enhances consumptions of hedonic options (Roggeveen et al., 2015; Grewal et al., 2017). Retailers should therefore focus on creating dynamic and interactive experiences as experimental aspects of technologies are argued to enhance the affective dimension and thus have greater influence on buying behavior (Alexander and Kent, 2020).

In addition to the need for a more digitalized and integrated shopping journey, consumers are now demanding personalization (von Briel, 2018). The key benefit of the QR-code is its distinctive ability to adjust the information embedded in the code without changing the actual code symbol itself, and by that, customize the information to match customers' needs (Ryu and Murdock, 2013). Thus, QR-codes are effective at providing consumers with targeted product information at the right time and place (Atkinson, 2013). Personalization efforts can also be attached to pricing, where retailers couple smartphone technology and loyalty card data, attempting to reach shoppers with personalized offers in real time (Imman and Nikolova, 2017). This can be particularly effective as Albăstroiu and Felea (2015) find that consumers scan QR-codes with the intention to buy products. Hoyer et al. (2020) argues that technologies in which deliver customized information can trigger cognitive value. Alexander and Kent (2020) also find that personalized technologies enhance consumers' excitement.

Based on the above discussion of digital information that QR-codes can provide, we make the following assumption to test the framework (Figure 2).

The more digitalized and personalized the QR-codes are, the stronger cognitive and affective value and purchase intention they create.

Figure 2. Experiential Value and Purchase Intention Framework



3 Research Methodology

The underlying philosophical view of this Master Thesis is positivism, which is one of the most applied paradigms available to study information system phenomena (Orlikowski and Baroudi, 1991). Positivism is grounded in the ontology that the real world is boundedly rational; that a phenomenon can be understood through a priori fixed relationships and structured instruments without subjective inferences. It is based on the epistemological belief that valid knowledge is created through empirically testing theories and verifying or falsifying hypothesized causal relationships to provide inferences that can be generalized. As such, the methodological stance is that data collection adheres to techniques such as survey and experiments and data analysis applies inferential statistics where the researcher is detached from the process and has no confounding influence on the results (Orlikowski and Baroudi, 1991).

In the preceding sections, two frameworks have been developed. The objective was to tests the extended TAM framework through a survey study and the experiential value purchase intention framework through a conjoint analysis. Therefore, the study assumed a deductive approach (Oates, 2006) to investigating QR-codes. However, the topic and challenges of QR-codes itself was identified through a set of interviews, which was the starting point of the investigation and therefore the first method to be addressed in the next section.

3.1 Interviews

Informal explorative interviews were conducted with the purpose of identifying issues related to the omnichannel CX and shopper-facing technologies which ultimately narrowed down to QR-codes (Oates, 2006). The interviews were applied as the first stage of defining the research problem (Oates, 2006 p. 143). The interviews followed a semi-structured approach, with predefined interview questions (see interview guide in Appendix 1) leading to an open conversation with follow-up questions (Oates, 2006).

3.1.1 Procedure, Participants, and Data Analyses

The first interviewee is an essential person in the marketing department at one of Norway's leading retailers of electronic goods with many years of experience working with omnichannel customer journey strategies. In line with Kristiania University College's ethical guidelines, the interviewee gave an oral consent and was ensured that the interview was anonymous. The interviewee was sent the questions in advance, enabling them to prepare for the interview, and the interview took place at the retailer's Headquarters. While one of the researchers conducted the interview, the other took notes. The interview started with a short introduction, followed by a conversation related to the prepared questions.

As the first interview explored issues from a managerial perspective, we wanted to ensure that the perceptions of instore staff were also included to gain a better understanding of sales advisors' knowledge of the advantages and usage of QR-codes. We therefore conducted informal explorative and semi-structured interviews with two employees working on the shop floor. Both had a few years of experience working for the company and were 20-30 years old. Oral consents were given, interviewees were ensured full anonymity, and handwritten notes were taken. Following each of the interviews, the notes were cleaned and analyzed, exploring the different themes that occurred during the interview (Oates, 2006). These themes laid ground for the direction of the study.

3.2 Survey

The survey was explanatory and aimed at testing the extended TAM. The TAM and IRT include elements of cause and effect in that they assume relations exist and that there is a directionality to the relationships (i.e., that the relationship is either positive or negative, or that independent variables influence a dependent variable). An explanatory survey may establish the existence of causal relationships and answer why the relationship exists (Pinsonneault and Kraemer, 1993). Moreover, since a survey data collection should comprise structured and predefined questions, a questionnaire was developed to obtain standardized data from a large group of people in a time-efficient manner (Oates, 2006). Also due to the inherent nature of this thesis, a cross-sectional design was applied. Although more longitudinal studies are recommended within IS research, cross-sectional studies can provide generalizable findings at the point in time when the survey was conducted (Pinsonneault and Kraemer, 1993).

3.2.1 Measurement Development

The questionnaire comprised scales to measure the different constructs in the conceptual model. Following the suggestion by Pallant (2016) and others (e.g., Venkatesh and Davis, 2000, Laukkanen et al., 2007; Mani and Chouk, 2018), previously validated scales from the literature review were adapted to the context of the study to ensure content validity; meaning how representative and comprehensive the items are in creating the scale for which they are intended to measure (Moon and Kim, 2001). In the questionnaire, the items were grouped according to their underlying construct (Davis and Venkatesh, 1996). They were also translated into Norwegian as requested by the retailer distributing the questionnaire. An overview of the items along with its source and translation is included in Appendix 2.

Three items were reversed; this was specifically intended to help prevent response bias (Pallant, 2016) and relates to the following items from the PE, TB, and IB scales; "*I think it is boring to use QR-codes in the context of information search and product consideration*"; "*Personal attention by the sales advisor is not important to me when shopping at an electronic goods retailer*"; "*I have a very positive image of QR-codes for the use of information search and product evaluation in the context of electronic goods"*. The final items were reviewed by the study's supervisor at Kristiania University College, and an Assistant Professor at the University of Oslo with research experience.

For each item a seven-point Likert scale ranging from strongly agree to strongly disagree was used, like in previous studies (e.g., Davis, 1989; Davis et al., 1992; Gefen and Straub, 2000). This response format provides a wider range of possible scores, increases the number of available statistical analyses, and allows for a 'neutral' response if respondents don´t have an opinion on a subject (Pallant, 2016).

3.2.2 Pilot Study

A pilot study was conducted to test the questionnaire, as highly recommended by Pinsonneault and Kraemer (1993) to increase the quality of data. To ensure that the items were tested on the right target group, it took place in the physical store of the electronic retailer for a duration of two days. Approximately 10-15 minutes were spent with each respondent. The purpose of the pilot study was two-folded. First, to understand which of the constructs were relevant in the context of instore QR-codes. Second, the retailer had requested that the questionnaire be translated into Norwegian, to ensure a larger response rate. Therefore, it was important to find the right translations. The pilot study gave us an indication of the appropriate language to use for each item in the questionnaire by observing how they were perceived by the participants. Through the pilot study, the constructs proved applicable to the study.

3.2.3 Participants and Setting

An online questionnaire using Nettskjema.no was created to test the hypotheses (Figure 1) on Norwegian consumers of electronic goods. A non-probabilistic, purposive sampling technique was applied with the help from the electronic goods retailer. Purposive sampling has the potential to offer valuable insight from a wide variety of respondents (Oates, 2006), and was chosen as it was believed it could, when applied in a naturalistic setting, meet the purpose of the study, and provide ecological validity as suggested by Venkatesh and Davis (2000). The

questionnaire was distributed via one of its weekly newsletters during the spring of 2022 and was available for one week. The newsletter has 1.6 M weekly subscribers. The retailer designed an attractive banner describing the purpose of the study and offered to reward three gift cards of a value of a 1000 NOK to three randomly selected respondents. The banner was placed at the bottom of the newsletter.

3.2.4 Procedure

First, in line with Kristiania University College's ethical guidelines, the survey was approved by NSD (Norsk senter for forskningsdata) before the data collection started. Following the link provided in the newsletter, the respondents were directed to the questionnaire. First, the respondents were presented with a consent form (Appendix 3). This comprised information about the study, what the participation meant for them, their rights to withdraw from the study at any time, and the contact information of the researchers. Respondents had to check the 'informed consent' box before moving on. The survey was anonymous; however, email addresses were collected for the purpose of contacting the winners of the incentive rewarded by the retailer. The respondents were ensured that their email addresses would be deleted after the three winners had been contacted.

Second, the respondents were then presented with a scenario and instructions for the 36 questions that would ensue. In the scenario, the respondents were told to imagine they were visiting an electronic-goods retailer during the prepurchase stage of their customer journey. In the store, they could scan a QR-code with their phone to access the web page of the products of interest. An image of the actual QR-code from the electronic-goods retailer's store was shown together with the scenario description, in addition to a link to the product page of the Samsung Frame television. This visualization was added to create a realistic representation of the scenario.

Third, they were asked questions related to demographics; age, gender, and QR-codes experience. Venkatesh et al. (2012) showed that these are important moderating factors in consumer use of technology. However, according to Pallant (2020), some people may not be comfortable with sharing their exact age (e.g., women over 30). To secure that the response rate was not affected by this issue, the age was categorized into groups such as ≤19, 20-29, 30-39 and so forth. This was also in accordance with NSD's recommendations. The respondents were finally asked to rate 32 statements. Upon completing the survey, the participants received a receipt thanking them for their participation.

3.2.5 Data Analyses

The data analyses started with exporting the raw data from Nettskjema.no to Excel, where it was initially inspected, and a codebook was created with the variable names (Appendix 4). All statistical analyses were then performed with IBM® SPSS® Statistics version 27. Variable names and coding instructions were defined in SPSS before data transfer from Excel to SPSS, followed by source data verification and inspection of categorial and continuous variables for errors; the minimum and maximum values were correct and there were no missing values or cases. The three negatively worded items were reversed and the total scores for the scales were calculated according to a stepwise procedure (Pallant, 2016).

Next, we analyzed descriptive statistics for both categorical and continuous data, followed by assessment of normality for continuous data to determine whether to use parametric or non-parametric statistical methods. Parametric tests assume normal distribution, while non-parametric do not. A normal distribution implies "a symmetrical, bell-shaped curve, which has the greatest frequency of scores in the middle with smaller frequencies towards the extremes" (Pallant, 2016). First, we evaluated the skewness and kurtosis values. The skewness value provides an indication of the symmetry of the distribution, while the kurtosis value provides information about the 'peakedness' of the distribution. In a perfect normal distribution both values are 0, which is uncommon in social science (Pallant, 2016). Second, the original mean and trimmed mean should not be very different in a normal distribution. We also considered the standard deviation and theoretical and actual range. Third, the Kolmogorov-Smirnov (Sig.) value should be non-significant ($p \geq .05$) to indicate normality, and histograms, normal and detrenched Q-Q Plots, and boxplots must be inspected. These diagrams were also used to check for outliers (Pallant, 2016), which are values very different from the rest of the data (i.e., a potential source of bias) and can be excluded from statistical analyses if appropriate (Field, 2018).

Evaluating validity and reliability followed, which are two important and interrelated means of reducing or evaluating measurement errors. "Validity is the degree to which a measure accurately represents what it is supposed to" (Hair et al., 2014, p.7). There are two types of validities that are pertinent to questionnaires: content validity and construct validity (Oates, 2006). Content validity was endeavored by ensuring that the scales were pre-validated. Construct validity is two-folded and consists of convergent validity and discriminant validity. Convergent validity refers to whether the items of a scale highly correlate and behave as if they are measuring a common underlying construct, and discriminant validity is concerned with the degree to which items from different scales are distinct and do not correlate (Campbell and Fiske, 1959; Davis, 1989). Some studies apply principal component and confirmatory factor analyses to assess construct validity (e.g., Moon and Kim, 2001). This is beyond scope as the objective of this study is neither to condense the information contained in the individual variables nor to test how well measured variables represent a smaller number of constructs (Hair et al., 2014). Campell and Fiske (1959) recommend a multitrait-multimethod analysis. This is when more than one construct and more than one method is applied in the validation process. This is also beyond scope as only one method is applied in this study; however, we attempted to use a multi-trait monomethod to get an indication of construct validity. Thus, we used the Pearson correlation coefficient (Pallant, 2016) and followed the guidelines of Cohen (1988), which assume that $r = 0.10\text{-}0.29$ has a small effect, $r = 0.30\text{-}0.49$ has a medium effect, and $r = 0.50\text{-}1.00$ has a large effect (this is the same scale used for the entire analyses). Convergent validity was evaluated by looking at the inter-item correlations, (i.e., the heterotrait-monomethod triangle). The discriminant validity was evaluated by looking at the monomethod blocks (i.e., columns below the heterotrait-monomethod triangle) and ensuring they were not higher than the inter-item correlations in the heterotrait-monomethod triangle (Campell and Fiske, 1959). Next, we evaluated the reliability of the measurements, which relates to whether a variable measures the true value and is error free (Hair et al., 2014). It can be assessed by looking at internal consistency, i.e., the degree to which the items that make up a scale is measuring the same underlying construct. The Cronbach's alpha coefficient was used, which is the most used indicator of internal consistency and provides an indication of the average correlation among all the items that make up the scale (Pallant, 2016).

Finally, the hypotheses (Figure 1) were tested using multiple regression analyses, which is appropriate when the research problem involves a single dependent variable presumed to be related to two or more independent variables (Hair et al., 2014). It can provide an indication of how consumers form behavioral intentions. The underlying assumptions of the method were evaluated to ensure that our dataset was suitable for regression analysis. First, the sample size was assessed. With too small sample sizes, the results may not be generalizable to other samples (Pallant, 2020). As such, Tabachnick and Fidell's (2013) formula was used to evaluate the sample size requirement: $n > 50 + 8m$ (m=number of independent variables). Second, to assess linearity, we checked the scatterplot for each independent and dependent variable. Pallant (2020) states that the residuals should show a straight-line relationship with the predicted dependent variable scores. Third, we evaluated multicollinearity (i.e., when the independent variables are highly intercorrelated ($r \geq 0.7$) and singularity (i.e., when one independent variable is a combination of other independent variables) by using the correlation matrix. According to Pallant (2020), highly intercorrelated variables should not be included in the same model as multiple regression has difficulty separating the unique contribution of each predictor and they might erroneously appear as not statistically significant. All these assumptions were met, as presented in Results.

When performing the regression analyses, a stepwise procedure was used to find the final model. This involves individually assessing each variable for their contribution to prediction of the dependent and allows adding or removing variables from the regression model based on their relative contribution (Hair et al., 2014). First, the bivariate relationship between the dependent and various independent variables were explored. We also explored possible associations between each independent variable and BI when adjusting for age and gender in the same model. Those that did not meet the significance level of $p<.05$ were not included in further analyses. The significant independent variables were added in order from the highest to the lowest bivariate correlation. During this process, the variables that did not show statistical significance in the multivariate model were removed before adding a new variable. The independent variables with low significance in the multivariate model or where the p-value was altered to a large degree (e.g., from highly significant in bivariate analysis to non-significant in the multivariate analysis) were inspected for potential confounding of other independent variables by adding interaction products as variables in the model (Field, 2018, p. 488). A significant interaction between two independent variables was defined as $p<.05$ for the interaction product included in the same model as the two independent variables in question. The variables that did not show any significant interaction and had a $p>.05$ were excluded from the final model. Finally, PEOU is hypothesized to indirectly influence BI through PU. Therefore, we also explored a possible association between PEOU and PU in a bivariate regression analysis with PU as the dependent and PEOU as the independent variable.

Because the stepwise procedure is designed to develop a regression model with the fewest number of statistically significant independent variables, it can be affected by issues such as multicollinearity (Hair et al., 2014). Therefore, we evaluated the independent variables in the final multivariate regression model thoroughly by using the VIF and Tolerance values. The Tolerance value is an indicator of how much of the variability of the specified independent is not explained by the other independent variables in the model. The VIF value is the inverse of the Tolerance value. The Tolerance value should be less than .10 and the VIF value below 10 (Pallant, 2020). Next, we assessed the strength of the final model by using the R square (R^2) value, which describes how much of the variance in the dependent variable is explained by the model. The adjusted R^2 value was used, as it provides a more realistic estimation for a smaller sample size (Pallant, 2020) and ANOVA was used to assess if the model reached

statistical significance. For each independent variable in the model, its contribution to the prediction of the dependent variable was reviewed by assessing the beta and p-values (Pallant, 2020). The beta coefficient indicates which variable makes the strongest unique contribution to explaining the dependent variable, when the variance explained by all other variables in the model is controlled for (Pallant, 2016). The p-value shows whether each variable is making a significant unique contribution to the equation, i.e., has a significant association with the dependent variable, when all other variables in the model are controlled for. Finally, the part correlation coefficient value was squared and reported as percentage to get an indication of the unique contribution of the variable to the adjusted R^2 for the complete model. This value tells how much of the total variance in the dependent variable is uniquely explained by the variable and how much the R square would decline if it was not included (Pallant, 2020).

3.3 Conjoint Analysis

Conjoint analysis is a popular marketing research method for analyzing how consumers make trade-offs concerning their preferences and intention to buy 'multi-attribute' products and services (Green et al., 2001). "It is based on the simple premise that consumers evaluate the value of an object (real or hypothetical) by combining the separate amounts of value provided by each attribute" (Hair et al., 2014, p. 34). Accordingly, respondents are presented with stimulus cards comprising various combinations of product attributes, and levels of those attributes that characterize the range of attribute options, that they are to judge and rate according to their preference. As such, conjoint analysis can statistically predict which importance they place on each attribute and the combination of product attributes consumers prefer (Mohr et al., 2005).

Conjoint analysis contains a lot of flexibility; this makes it applicable in almost any area in which decisions are studied (Hair et al., 2014), including the study of how self-service technology within retail add value (Fagerstrøm et al., 2021). We thus consider it appropriate to apply to study which QR-code attributes consumers value in their CX. The objective of this study is therefore to determine the contribution of each attribute and its levels related to cognitive and affective value and purchase intention. Moreover, since respondents are presented with hypothetical descriptions, it may be possible to compare predicted behavior with actual behavior (Green and Srinivasan, 1978), and thus further understand consumer preferences regarding QR-codes.

3.3.1 Participants and Setting

This study applied a combination of non-probabilistic self-selection and snowball sampling methods. A self-selection method encourages people interested in the topic (Oates, 2006). The data was collected through a web-based, self-administered survey, that was distributed through social networks and messaging apps as a starting point. By sharing the survey mostly through direct messages, participants could ask questions related to the conjoint analysis if needed. Due to the complexity of a conjoint survey, it is recommended using methods that enable the interviewer to explain the difficult tasks associated with it (Oates, 2006). A snowball sampling method was then employed, asking people from the target group to share the survey with their network. This method was applied to ensure a higher response rate. The chosen people for the task of sharing the survey were given an in-depth explanation of the study, enabling them to answer any questions related to the conjoint by the participants. The

conjoint survey resulted in 53 respondents. According to Hair et al. (2014), a small-scale sample study with 50 respondents can provide a glimpse into the preferences of the respondents and how they might vary in basic ways.

3.3.2 Apparatus

The study was conducted using a verbal description of the scenario the respondents were to consider along with both verbal and pictorial representation of hypothetical stimulus cards. This combination of information was applied as Holbrook and Moore (1981) suggest respondents make evaluative judgements based on both verbal and visual cues. Moreover, pictorial material makes respondents' tasks more interesting, convey information with little ambiguity, and reduce information overload as respondents are not required to read and then visualize large quantities of information (Green and Srinivasan, 1978; Green et al., 2001). Thus, to ensure ecological validity, a smartphone interface depicting QR-code attributes was designed in Adobe Photoshop 2022. The conjoint analysis was distributed using Qualtrics.

3.3.3 Procedure

The study was conducted in line with Kristiania's University College's ethical guidelines. Following a link to the online survey, the respondents were given general information about the study; the purpose of the study, what their participation would involve, and a consent form (Appendix 5). They were informed that the study was anonymous and that they could withdraw from the study at any time.

After signing the consent form, the respondents were given a scenario of a specific shopping situation. They were asked to imagine that they were in a physical store of an electronic-goods retailer searching for more information about a TV that they were considering. A QR-code was attached to the digital price display. A picture of this was shown to create a more realistic representation of the scenario. By scanning the QR-code, they would be directed to an online interface where they could access more detailed product information. An example of a stimulus card was shown, highlighting the attributes to be considered (Appendix 6), along with three questions pertaining to the experiential value and purchase intention framework.

The respondents were presented with 20 stimulus cards, showing different combinations of the attributes. Only one stimulus card was shown at a time, and these were rotated to minimize order effects (Hair et al., 2014). For each card, the respondents were required to rate the three questions mentioned above. Next, the participants were asked to answer questions related to demographics (age and gender) and their experience with QR-codes. Finally, the participants were thanked for their participation.

3.3.4 Study Design

The study applied traditional conjoint methodology, which is characterized by an additive model containing up to nine attributes to be estimated (Hair et al., 2014). The additive model, also referred to as main effects model, assume no interaction effects among the attributes (Green and Srinivasan, 1990) and rather assume respondents sum the part-worth estimates for each attribute level to get an overall total across the set of attributes. It is the most employed

model and suffices for most applications. Part-worth is the utility or impact estimate for the value placed on each attribute level; higher impact estimate is assumed to be more preferred (Hair et al., 2014).

To identify QR-code attributes and levels that can evoke experiential value during the prepurchase stage and trigger purchase intention, 16 semi-structured customer interviews were conducted instore. This was a part of the survey pilot study (section 1.2.2) and was guided by an interview guide with three questions pertaining to customer preference (Appendix 7). Interview notes were taken, and content analysis was applied, which involves establishing categories and then counting the number of instances those categories occur (Silverman, 2020). According to Green and Srinivasan (1978), questioning customers about which attributes are important to them helps identify relevant attributes. The final attributes were cross-referenced with attributes currently used among electronic goods retailers and relevant literature.

The attributes chosen for this study were *price*, *reviews*, *type of information*, *comparison of products*, and *call-to-action.* It is important to note that price was not identified through the interviews; it was included as it is important to the assessment of value (Grewal et al., 2009; Hair et al., 2014). These attributes are analogous to those identified by Fagerstrøm et al. (2021) in the context of retail mobile applications. Thus, they are considered suitable as product information and evaluation sources and represent attributes that can be updated, aggregated, and personalized by digital technology (Fagerstrøm et al., 2021). These attributes are measured on levels that range from low to high digital information and product evaluation functions (Table 1). We assumed there to be a linear relationship to the levels whereby the respondents would show higher preference for more digitalized and personalized information and features.

The levels were operationalized as following. Price was operationalized at three levels: *static price (*e.g., regular price*)*, *scarcity message (*e.g.*,* time limited offer*)*, and *personalized price* (e.g., offer based on purchase history*)*. Reviews were operationalized at two levels: *customer reviews* and *personalized reviews (*e.g., a feature currently used by digital retailers such as Amazon and is essentially a search function that enables consumers to search through customer reviews, frequently asked questions, and product information for a particular product to find answers related to their needs). Product information was operationalized at three levels: *verbal product information*, *video content*, and *product-testing* (e.g., a feature used by the retailer in this study whereby consumers can test different functions in products by scanning a QR-code). The comparison feature was operationalized at two levels: *similar products* and *scan and compare (*e.g., a feature used by the retailer in this study whereby consumers can scan different QR-codes on price displays to compare them side by side). The call-to-action feature were operationalized at three levels; *add to wishlist*, *buy now and ship home*, and *store availability* (these levels are all part of various omnichannel strategies).

Table 1. Product attributes and attribute levels

Attribute	Levels
Price	1. Static price 2. Scarcity message 3. Personalized price
Reviews	1. Customer reviews 2. Personalized reviews
Type of Information	1. Verbal product information 2. Video Content 3. Product testing
Call-to-action (CTA)	1. Add to Wishlist 2. Store availability 3. Buy now and ship home
Comparison of product	1. View similar products 2. Scan and compare products

For data collection, a full-profile method was applied; this works well when five attributes are under consideration (Green and Srinivasan, 1990) and is when participants see a complete set of full-profile situations (Green et al., 2001). However, if the current study were to array all possible combinations of the five attributes (3x2x3x3x2), it would result in 108 stimulus cards. Rather, it is recommended to implement the full-profile method by fractional factorial design. This is the experimental design in which the total number of situations is reduced to an orthogonal main-effects model with a manageable size of test combinations and whereby the independent contribution of all five attributes is balanced (Green and Wind, 1975; Green and Srinivasan, 1978). Albeit being complex, it involves fewer judgements to be made by the respondents (Green and Srinivasan, 1978). Thus, using IBM® SPSS® Statistics 27, a fractional factorial design resulted in 20 stimulus cards, including four holdout cards. An example card is found in Appendix 8. Holdout cards were not used in the estimation of the part-worth, rather part-worth were used to predict preference for the holdout cards to assess validity and reliability of the original part-worth estimates (Hair et al., 2014).

According to Green and Wind (1975), preference and likelihood-of-purchase are often used as measures, however, any explicit judgmental criterion can be used. Thus, the dependent variables were defined as the respondent's degree to which they derive cognitive and affective value from the attribute levels as well as purchase intention. One-item scales were adopted from Bustamante and Rubio (2017) to measure cognitive and affective experiential value. The item for cognitive read: *the retail environment offered by this QR-code inspires me*. The item for affective read: *the retail environment offered by this QR-code makes me feel enthusiastic*. A one-item purchase intention was also included: *I intent to purchase the product based on the product information and evaluation functions provided.* Green and Srinivasan (1978) assert full-profile method can employ a seven-point scale. Thus, to keep consistent with the survey study, the dependent variables were measured on a seven-point Likert scale ranging from strongly agree to strongly disagree. Rating scales are often considered less time-consuming and convenient for respondents while easy to analyze (Cattin and Wittink, 1982).

3.3.5 Pre-test

A pre-test was conducted to ensure that the attributes were communicable and actionable (Hair et al., 2014). Three respondents were chosen to test the survey and provide feedback. According to Hair et al. (2014), the factors and levels must be easily communicated for a realistic evaluation. Therefore, we focused on ensuring that the language was understandable, and that visualizations of the levels and factors were realistic. Small changes were applied based on the feedback. Some of the descriptions were re-written in less unambiguous language, and the visualization of the levels were made clearer to guarantee that the respondents could identify the difference between them. To ensure that the measures were actionable, we tested if the respondents viewed the levels and factors as representative of the given shopping context. Hair et al. (2014) highlights the importance of ensuring that the factors and levels are capable to be put into practice, meaning that the attributes must represent a concept that can be implemented precisely. The levels and factors were all recognized by the participants from previous shopping experiences and no further adjustments were therefore needed. Moreover, the three-item scale was also modified. Few experiential value scales currently exist (Bustamante and Rubio, 2017) and no scale exist in Norwegian. Thus, after discussing with the three respondents, they were adapted to be more understandable to the Norwegian target sample.

3.3.6 Data Analysis

The first step of the analysis was to assess the underlying assumptions. However, according to Hair et al. (2014), conjoint analysis has the least restrictive set of assumptions. Rather, it is a theory driven statistical method based on the choice of composition model, which is in the present study the main effect model. The data analyses were conducted in a sequential order that started with exporting the raw data from Qualtrics to Excel, where it was initially inspected. It was then transferred to IBM® SPSS® Statistics version 27, where the first step was to assess descriptive statistics. These statistics, however, were not further analyzed as the segmentation analysis is beyond scope and analyses was thus conducted at a disaggregated level. The next step was to conduct the main effect model in SPSS, which assumes there is no interaction effect between the attributes (i.e., between price and reviews) (Hair et al., 2014). A discrete effect model with a score subcommand was applied to assess the relationship between the levels and to apply rate preference measure. Due to the explorative nature of the study, the attributes were considered categorical and the relationship to be *part-worth form* so that a separate estimate of each level was possible. These estimates in turn determine how influential each level is in the consumers' evaluations (Green and Wind, 1975)

The next step was to evaluate Pearson's r correlation and statistical significance (p-value) to assess the goodness-of-fit measures; higher values indicate a better fit. Pearson is appropriate for choice task involve rating (Hair et al., 2014). Attribute importance was then assessed, which reflects the impact each attribute has in the calculation of consumers' overall preference (Hair et al., 2014). However, because we are interested in the relationship within each attribute (e.g., whether respondents prefer more digitalized information and features), rather than each attribute separately, the part-worth estimate is more applicable to this study. Thus, to assess the assumptions based on the framework, the part-worth estimates were examined for its impact estimate and to get an indication of whether a linear relationship might exist.

4 Results

4.1 Interview Results

While the interviews highlighted the need for seamless CX to compete in today's fast-paced retail environment, what was perhaps the most important finding was the potential of the physical store for this purpose. The marketing manager of the electronic-goods retailer stated as follows:

> *"What we want to differentiate ourselves from, is to create a position that I have called 'trusted advisors' ... What Amazon do not have is the trusted advisor role because they are an online solution ... 80% of the Norwegian electronic consumer says, 'I do not understand technology, I need help'. And if 80% of market potential says I need help then there will be a great need for a player like us who focuses on physical presence and thus focus on being as good at accessibility so that we put the customer's needs in focus".*

After identifying this need in the market, the electronic retailer invested in shopper-facing technologies in physical stores to become more accessible and gain competitive advantage. One of the most important findings from the interviews was related to the use of QR-codes in stores. The retailer had attached QR-codes to every price display and selected products (e.g., TV's and computers) for customers to access product information and compare products in store, however, they were not used, as explained by the marketing manager:

> *"We use QR-codes digitally on all store shelves, but customers use it minimally. QR-codes are used to easily direct customers to the website for the product to be able to read more / compare with other products ... The strategy is not very well thought out, which is a bit of a challenge. It is implemented without a plan and purpose".*

We also identified from the findings that there was limited training of instore staff related the use and importance of QR-codes. During the interviews with instore staff, it became evident that they were not at all aware of the potential of the instore QR-codes and was rather unsure about their purpose:

> *"We have not received any training on the use or importance of QR-codes. We generally come from an industry where there is poor training".*

The marketing manager backed up this statement, explaining that:

> *"There has not been completed any training on QR-codes, and there has been shared limited information about this".*

The findings from both the managerial and store staff interviews showed evidence that despite the need for more digitalized, shopper-facing solutions in stores, the technologies that already existed were limited in terms of usage. It was also a general lack of knowledge about the purpose and potential of these QR-codes within the organization. We therefore identified a need for a better understanding of QR-code adoption and the QR-code attributes that would add value to their experience in the prepurchase stage of the customer journey.

4.2 Survey Results

The results for survey data analysis will be presented in the three following subsections.

4.2.1 Preliminary Analysis; Assessment for Normality and Descriptive Data

35% (578 390) of the subscribers opened the newsletter and the banner for the questionnaire received 459 clicks, which was about 1,14 % of the total clicks the newsletter received. The sample of respondents consisted of 141 respondents, which resulted in a 30% response rate. According to Oates (2006), this is well above the normal respond rate of 10%. This number, however, was reduced after inspecting the distribution of scores on the continuous variables in terms of normality and outliers. Some of the variables showed high skewness and kurtosis values, e.g., image barrier (IB) and perceived ease-of-use (PEOU), and five respondents were detected as outliers in the boxplot diagrams. These respondents were cross-referenced with the original dataset and were found to be either within the age group ≥70 and had no prior experience or were in the age group 20-29 and strongly disagreed on the perceived usefulness (PU), perceived enjoyment (PE), and behavioral intention (BI) scales. As such, they were considered to present bias that could potentially disrupt the analysis of this relatively small sample size (Pallant, 2016). Removing these outliers improved the values for IB and PEOU, which originally had skewness values of -0.758 and 1.363 and kurtosis values 1.139 and 3.344 respectively. The results of normality assessment for continuous variables are reported in Table 3 and final histograms, normal and detrenched normal Q-Q plots, and boxplots for IB and PEOU in Appendix 9. The original mean and trimmed mean were relatively similar. What is noteworthy is also the standard deviation. It is below five for all variables (Oates, 2006); meaning that the distribution of scores is not far from the mean. Based on these findings, parametric methods were considered appropriate for all variables as all variables had acceptable Kolomogorov-Smirnov p-values <0.05.

The final sample consisted of 136 respondents, which is an adequate sample size for this purpose (Oates 2006). Researchers normally work with a 95% confidence level and an accuracy range of +/- 3. Assuming the 1.6 M newsletter subscribers represents the sample frame, a sample size of 136 results in a 94% confidence level and a +/- 8.4 accuracy range. An overview of the characteristics can be found in Table 4. 54.4% of the participants were men, 44.9% were women and one participant (0.7%) did not wish to specify gender. Nearly all subjects (99.3%) had prior experience with QR-codes, with a single exception reporting no prior experience (0.7%). The largest percentage of the participants were in the age groups 20-29 (42.6%) and 30-39 (16.9%).

Table 3. Assessment of normal distribution of variables (total scores) in the survey (n=136)

Variables	Theoretical Score Range (min. – max.)	Actual Score Range (min. – max.)	Mean Total Score	5% Trimmed mean	Standard Deviation	Skewness	Kurtosis	Kolmogorov-Smirnov (p-value)
Personal Innovativeness	4-28	4-26	11.2	11	4.3	.658	.442	.002
Tradition Barrier	3-21	3-19	9.7	9.6	3.3	.329	-.332	<.001
Image Barrier	3-21	7-21	15.6	15.7	2.9	-.386	-.011	.005
Risk Barrier	3-21	3-21	13	13	3.8	-.090	-.614	.022
Usage Barrier	3-21	3-21	11.2	11.1	3.6	.482	-.087	<.001
Value Barrier	3-21	6-21	14.7	14.7	3.2	-225	-.670	<.001
Perceived Usefulness	4-28	4-24	12.8	12.7	4.5	.594	-.222	<.001
Perceived Ease-of-use	4-28	4-20	9.9	9.8	3.3	.504	-.009	<.001
Perceived Enjoyment	3-21	3-21	10	9.8	3.9	.590	.124	<.001
Behavioral Intention	2-14	2-12	5.8	5.7	2.5	.811	-.017	<.001

*Score range was the respondents' lowest (min.) and highest (max.) sum of total scores for the construct. Theoretical score range was the lowest (min.) and highest (max.) sum of total scores possible for the construct.

Table 4. Descriptive Statistics

Variables	Items	Frequency (n)	Fraction (%)
Gender	Male	74	54.4
	Female	61	44.9
	No reply	1	0.7
Age	≤19	8	5.9
	20-29	58	42.6
	30-39	23	16.9
	40-49	18	13.2
	50-59	14	10.3
	60-69	12	8.8
	≥70	3	2.2
Experience w/ QR- codes	Yes	135	99.3
	No	1	0.7

4.2.2 Validity and Reliability

The Pearson correlation matrix including all items for all constructs showed adequate inter-items correlations within the heterotrait-monomethod triangles except for Reversed IB2 (RIB2) (Appendix 10). Davis (1989), however, finds that reversed items tend to exhibit this behavior. Discriminant validity did not meet the same criteria, as shown in the monomethod blocks by evaluating reversed image barrier 2 (RIB2), usage barrier 1 (UB1), usage barrier 2 (UB2), value barrier 1 (VB1), value barrier 2 (VB2), perceived usefulness 1 (PU1), perceived ease-of-use 1 (PEOU1) and perceived ease-of-use 2 (PEOU2). These items have high correlations with other items.

Reliability analysis, measured with Cronbach's alpha, showed mostly adequate reliability levels: PU (0.880), PEOU (0.787), PE (0.884), personal innovativeness (PI) (0.788), tradition barrier (TB) (0.723), IB (0.610), risk barrier (RB) (0.851), usage barrier (UB) (0.788), value barrier (VB) (0.622), and BI (0.861). The Cronbach's alpha coefficient should be over 0.7, however, in the instance of shorter scales, it is common to find lower values and it may be more appropriate to report the mean inter-item correlation, which at an optimal range shows a correlation of 0.2 to 0.4. (Briggs and Cheek, 1968; DeVellis, 2012; Pallant, 2016). Because Cronbach's alpha coefficient for IB and VB was 0.610 and 0.622 respectively, we also report the mean inter-item of 0.343 and 0.354 which is considered adequate internal consistency (Pallant, 2016).

4.2.3 Multiple Regression Analyses

In assessing underlying assumptions for regression analysis, the sample size was considered to be adequate: 136>(50+8(8)) (136>114). The scatterplots did not indicate any nonlinear relationships between independent and dependent variables (Appendix 11). Further, there was no indication of multicollinearity as assessed by the correlation matrix found in Appendix 12. Thus, none of the assumptions were considered violated.

The results from the bivariate analyses are reported in Table 5. TB (b=.06, p=.48) and RB (b=-.16, p=.07) were not statistically associated with BI either in crude analyses or when controlling for age, gender, and PI. Therefore, these independent variables were not included in multivariate analyses and hypotheses H7 and H8 were considered rejected. Moreover, controlling for age, gender and PI did not lead to any significant change in the beta coefficients for the other independent variables.

Table 5. Bivariate (crude) regression analysis (a) and controlling for age, gender, and PI

Moderating Factors / Independent variable	Correlation (r)	Standardized coefficients beta	P-value	Adjusted R Square
Age	-.20	-.20	.020	.03
Gender	-.006	-.006	.94	-.007
Personal Innovativeness	.03	.03	.74	-.007
Total Tradition Barrier	.06	.06	.48	-.004
Total Tradition Barrier*	.06	.05	.54	.02
Total Image Barrier	-.33	-.33	<.001	.10
Total Image Barrier*	-.33	-.33	<.001	.12
Total Risk Barrier	-.16	-.16	.07	.02
Total Risk Barrier*	-.16	-.13	.129	.03
Total Usage Barrier	.68	.68	<.001	.46
Total Usage Barrier*	.68	.68	<.001	.48
Total Value Barrier	-.30	-.30	<.001	.08
Total Value Barrier*	-.30	-.31	<.001	.10
Total Perceived Usefulness	.76	.76	<.001	.57
Total Perceived Usefulness*	.76	.75	<.001	.58
Total Perceived Ease of Use	.56	.56	<.001	.30
Total Perceived Ease of Use*	.56	.60	<.001	.34
Total Perceived Enjoyment	.78	.78	<.001	.60
Total Perceived Enjoyment*	.78	.77	<.001	.62

a. Dependent Variable: BI
*Adjusted for age, gender, and Personal Innovativeness.

Following the stepwise procedure, PE had the highest bivariate correlation with BI and was therefore the first variable to be computed in the multivariate model. PU had the second highest bivariate correlation was thus added to the estimation. This resulted in PE (b=.48, p=<.001) and PU b=.42, p=<.001). UB was then added as it had the third highest bivariate correlation with the BI. This resulted in PE (b=.43, p=<.001), PU (b=.32, p=<.001) and UB (b=.22, p=<.001). PEOU was added; this resulted in PE (b=.43, p=<.001), PU (b=.31, p=<.001), UB (b=.21, p=.002) and PEOU (b=.03, p=.60). PEOU was removed from the model as it was non-significant, and IB was added. This resulted in PE (b=.42, p=<.001), PU (b=.32, p=<.001), UB (b=.21, p=.002) and IB (b=-.05, p=.33). IB was removed as it was non-

significant, and VB was added. This resulted in PE (b=.42, p=<.001), PU (b=.31, p=<.001), UB (b=.22, p=<.001) and VB (b=-.06, p=.24). VB was removed as it was non-significant, and age (the only moderating factor showing a significant bivariate correlation with BI) was finally added, which resulted in PE (b=.43, p=<.001), PU (b=.31, p=<.001), UB (b=.21, p=<.001) and age (b=-.13, p=.006). All variables are significant in this final model.

Based upon the results of the stepwise regression process, there was some indication of interaction among the independent variables. To investigate this further, we tested different combinations of the independent variables, starting with the exclusion of UB and inclusion of PE, PU, PEOU, IB, and VB. This results in PE (b=.45, p=<.001), PU (b=.40, p=<.001), PEOU (b=.05, p=.49), IB (b=-.05, p=.32) and VB (b=-.04, p=.51). This indicated that removing UB did not improve PEOU, IB or CB, and as such it indicated that UB was important in the model. We then adjusted for age in a multivariate model with PE, PU, PEOU, IB and VB. This resulted in PE (b=.42, p=<.001), PU (b=.30, p=<.001), PEOU (b=-.002, p=.97), IB (b=-.03, p=.55), VB (b=-.04, p=.39), UB (b=.21, p=.002) and age (b=-.12, p=.008). These results also indicate that age may be a moderating factor and that some interaction is evident between age and some of the independent variables. To formally investigate potential interaction, we added interaction terms to this model. PEOU showed a high bivariate correlation with BI, but consistently did not reach statistical significance when added to the different models. Therefore, interaction terms between PEOU and the other independent variables including age were created and computed one at a time into the multivariate model (i.e., an interaction term was removed from the model before a new interaction term was added). The only significant interaction identified was between PEOU and age (i.e. PEOU*age). When computed in the multivariate model, the results were PEOU*age (b=-.31, p=.047), PEOU (b=.17, p=.11), PE (b=.42, p=<.001), PU (b=.32, p=<.001), IB (b=-.036, p=.32), VB (b=-.049, p=.483), UB (b=.18, p=.006), and age (b=.14, p=.32). These indicate small changes, however, there is no statistically significant relationships found between PEOU, IB and VB and BI, even with age is controlled for. Therefore, H3, H6 and H9 are considered rejected.

Finally, the bivariate correlation between PEOU as the independent variable and PU as the dependent variable was assessed (Table 6). PEOU had a statistically significant effect on PU (b=.55, sig=<.001). H3 was thus consider supported and PEOU may therefore influence BI indirectly through PU.

Table 6. Bivariate Regression Analysis with PEOU as independent and PU as dependent variable

Bivariate regression analysis (a)

Independent variable	Correlation (r)	Standardized coefficients beta	P Value	Adjusted R Square
Total Perceived Ease Of Use	.55	.55	<.001	.30

a. Dependent Variable: PU

The final model including PE, PU, UB and age explains a statistically significant 73% of the variance (R^2) in behavioral intention (BI) (Table 7). This is according to Pallant (2016) an

acceptable result. The model further shows that the multicollinearity assumption is not violated (i.e., all variables have a tolerance level less than .10 and VIF values are not above 10) (Pallant, 2016). Moreover, PE, PU and UB all make highly significant unique contributions to the prediction of BI, with p-values <.001. PE made the largest unique contribution, explaining 9.0% of the variance in BI while PU explained 4.0% of the variance in BI, and UB explained 2.3% of the variance in BI. These results support hypotheses H1, H4 and H5. Age did not have a significant moderating effect on the relationship between independent variables and the dependent variable (see Appendix 13 for models without age). Therefore, hypothesis 10 is rejected, however, we did discover that age was a significant predictor of BI explaining 1,7% of the variance in BI. It also improved the adjusted R^2 (Table 8). See Appendix 14 for adjusted R^2 without age. Table 9 presents a summary of the hypotheses after data analyses.

Table 7. Final Model: Standard Multiple Regression Analysis (a)

Independent variable	**Standardized coefficients beta**	**P-Value**	**Part correlation coefficients**	**Tolerance**	**VIF**
Usage Barrier	.21	< .001	.15	.52	1.91
Perceived Usefulness	.31	< .001	.20	.42	2.40
Perceived Enjoyment	.43	< .001	.30	.49	2.03
Age	-.13	.006	-.13	.99	1

a. Dependent Variable: BI

Table 8. Final Model Summary and ANOVA (a)

Model	**Adjusted R Square**	P-value
Model 2	.73	<.001

a. Dependent Variable: BI

Table 9. Summary of Hypotheses Results.

Hypotheses		Result
H1	PU → BI	**Supported**
H2	PEOU → BI	Rejected
H3	PEOU → PU	**Supported**
H4	PE → BI	**Supported**
H5	UB → BI	**Supported**
H6	VB → BI	Rejected
H7	RB → BI	Rejected
H8	TB → BI	Rejected
H9	IB → BI	Rejected
H10	Moderating factors	Rejected

4.3 Conjoint Analysis Results

4.3.1 Descriptive Statistics

The results from the descriptive statistics are reported in Table 10. There were originally 54 respondents, however, three of these respondents had answered the same across all the questions. Their responses were therefore not valid and were removed. The final sample size was thus n = 51 with 33.3 % males and 66.7 % females and the majority of respondents were in the age groups 20-29 (18%) and 30-39 (16%). Nearly all (99.3%) participants had previous experience with QR-codes.

Table 10. Descriptive Statistics

Measure	**Items**	**Frequency (n)**	**Fraction (%)**
Gender	Male	17	33.3
	Female	34	66,7
Age	≤19	1	2,0
	20-29	18	35,3
	30-39	16	31,4
	40-49	6	11,8
	50-59	8	15,7
	≥60	5	9,8
Experience w/QR- codes	Yes	41	80,4
	No	10	19.6

4.3.2 Correlation, Relative Importance, and Impact Estimates

The analyses of the data show that correlations between observed and estimated preference were significant; cognitive value (r=93, p=<.001), affective value (r=.88, p= <.001), and purchase intention (r=.87, p=<.001). Table 11 shows the importance value for the each of the attributes. As mentioned, to determine whether price or product information is most preferred is not the focus of the study.

Table 11 also show the impact estimate for each attribute level on the dependent variable. For cognitive value, p*ersonalized reviews (*.162*), static price (*.108), v*erbal information* (.075), *store availability* (.029), and *similar products* (0.12) were most preferred among the respondents. For affective value, p*ersonalized reviews (.167), static price (.127*), *verbal information* (.075), *add to wishlist* (0.65), and *similar products* (0.17) were most preferred. For purchase intention, *personalized reviews* (.124), *scarcity message* (.091), *store availability* (.082), *product testing* (0.46), and *scan and compare* (.013) were most preferred.

The impact estimate for each level provide insight into the assumptions. It was assumed that there would be a positive linear relationship to the levels for all three dependent variables; that the respondents would show a higher preference for the more digitalized and personalized levels. The assumptions were generally not supported for cognitive and affective value. There were a few exceptions, however. For *reviews*, the impact estimate for cognitive value increased from *customer reviews* (-.162) to *personalized reviews* (.162), thus supporting the assumption. Likewise, impact estimate for affective value increased from *customer*

reviews (-.167) to *personalized reviews* (.167), thus supporting the assumption. *Call-to-action* also indicated a semi-positive linear relationship for cognitive value; the impact estimate decreased from *add to wish list* (.016) to *buy now ship home* (-.045) but increased from both levels to *store availability* (.029).

Conversely, the assumptions for purchase intention were either partially or fully supported. For *price*, the impact estimate increased from static (.054) to scarcity (.091), but not to personalized price (-.145), thus, partially supporting the assumption. For *reviews*, the impact estimate increased from *customer reviews* (-.124) to *personalized reviews* (.124), thus supporting the assumption. For *product information*, the impact estimate decreased from *verbal product information* (.031) to *video content* (-.077) but increased from both levels to *product testing* (.046), thus, the assumption was partially supported. For *call-to-action,* the impact estimate decreased from *add to wish list* (.018) to *buy now and ship home* (-.100) but increased from both levels to *store availability* (.082), thus the assumption about *call-to-action* was partially supported. For *product comparison,* impact estimates increased from *similar products* (-.013) to *scan to compare* (.013). Thus, the assumption about *product comparison* was partially supported.

Table 11. Test of the impact of attribute on experiential value and purchase intention

Attribute and levels	**Experiential value**						**Purchase intention**		
	Cognitive			**Affective**					
	Impact estimate	**Std. error**	**Importance value**	**Impact estimate**	**Std. error**	**Importance value**	**Impact estimate**	**Std. error**	**Importance value**
Price			33.197			33.222			31.979
Static price	.108	.042		.127	.061		.054	.052	
Scarcity message	.056	.050		.049	.072		.091	.060	
Personalized price	-.164	.050		-.176	.072		-.145	.060	
Review			14.505			14.837			15.004
Customer reviews	-.162	.032		-.167	.046		-.124	.039	
Personalized reviews	.162	.032		.167	.046		.124	.039	
Type of Product information			22.731			22.020			19.919
Verbal information	.075	.042		.075	.061		.031	.052	
Video Content	-.040	.050		-.018	.072		-.077	.060	
Product testing	-.035	.050		-.057	.072		.046	.060	
Call-to-action			17.379			17.945			20.557
Add to Wishlist	.016	.042		.065	.061		.018	.052	
Buy now and ship home	-.045	.050		-.040	.072		-.100	.060	
Store availability	.029	.050		-.025	.072		.082	.060	
Comparison of product			12.188			11.977			10.580
Similar products	.012	.032		.017	.046		-.013	.039	
Scan and compare	-.012	.032		-.017	.046		.013	.039	
(Constant)	3.578	.037		3.632	.053		3.245	.045	

Standard error (std. error)

5 Discussion

5.1 Interview Discussion

The aim of the exploratory interviews was to examine which shopper-facing technologies are applied at a retailer of consumer electronic and to identify current challenges in the retail environment that needs to be addressed. Several interesting challenges emerged. QR-codes, as across many industries, are widely implemented. They are however, not used by the consumers of the electronic retailer in this study. This presented an interesting topic and thus QR-codes became the center focus. It also provided the opportunity to formally investigate potential barriers that might explain the slow adoption that the retailer had experienced and to combine the two perspectives of QR-code acceptance and resistance.

Moreover, it was discovered that there was no strategy behind the implementation of the QR-codes. The literature highlights the importance of having a clear purpose for the application of shopper-facing technologies to stay competitive (Grewal et al, 2019; Piotrwicz and Cuthbertson, 2014). Our findings indicate that the retailer might have implement QR-codes just for the sake of the technology, without having a clear objective. This presents another major challenge; creating a positive omnichannel CX requires a clear-cut focus on value creation. This also presented an interesting topic, especially as it was also discovered that the sales advisors had not been provided any training or directions on the use of the QR-codes, despite the physical store being considered the main competitive advantage against digital players such as Amazon. Piotrowicz and Cuthbertson (2014) emphasize the importance of adequate training of sales advisors to work with technologies as an integrated support system in stores. Yet, the retailer and the sales advisors appeared unaware of the benefits of QR-codes and how to use them to their fullest potential. Thus, investigating what QR-codes information and features can add value to the omnichannel CX and influence purchase intention became the second topic as it was believed this could help the retailer improve their QR-code strategy.

5.2 Survey Discussion

The intent of this study was to investigate why consumers currently adopt QR-codes and the variables that might influence behavioral intention (BI). In examining this, the Technology Acceptance Model (TAM) was extended with perceived enjoyment (PE) and barriers from the Innovation Resistance Theory (IRT) as well as possible moderating factors. The hypothesized relationships were tested using multiple regression analysis, and main results suggest QR-code adoption is primarily driven by PE, closely followed by perceived usefulness (PU) and usage barrier (UB). Perceived ease-of-use (PEOU) had an indirect impact on BI through PU. BI was also determined by age, however, the other variables did not have a significant relationship with BI. A discussion of the findings follows.

PE was the strongest predictor of BI ($b=.43$, $p<.001$). This is a perhaps one of the most interesting findings. It contradicts Davis et al. (1992) as well as Ryu and Murdock (2013) who finds PU to be the key antecedent of QR-code adoption. It is, conversely, consistent with Juaneda-Ayensa et al. (2016) who find performance expectancy (i.e., the provided benefits from performing an activity) to be the third strongest predictor of BI in an omnichannel environment. It is also in line with Venkatesh et al. (2012) who find hedonic motivation a more important driver than performance expectancy in consumer-use settings. Yet, Juaneda-Ayensa et al. (2016) nor Venkatesh et al. (2012) investigated QR-codes, and as such, our

study, is our knowledge, the first to suggest that intentions to use QR-codes may be primarily driven by consumers perception that QR-codes are fun and enjoyable to use, apart from any utilitarian benefits that may be derived.

A possible explanation for the presence of PE is that the influence of the TAM beliefs on BI may vary depending on the QR-codes and the shopping environment for which they are implemented (Kim et al., 2017). Shopping for electronics goods can be considered both a utilitarian and hedonic task. As mentioned, tactile information such as aesthetics is equally important to consumers as the functions of a product. A logical extension of this is that consumers enjoy the process of shopping for electronics goods, or even the electronic product itself, and may therefore enjoy using technology during the prepurchase stage. This may be particularly true for the respondents of the study who were subscribers of an electronics goods retailer's newsletter, which may be an indication of an elevated interest in technology and consumer electronics. Another possible explanation is that the effects of shopper-facing technology, which have primarily been utilitarian in nature, appear to normalize. Alexander and Kent (2020) find that consumers acknowledge their utilitarian benefits but may find that, over time, they add nothing new to the customer journey, besides being practical. At the same time, consumers are showing an increasing preference for shopper-facing technologies that emphasize fun, interactivity, and enjoyment. Perhaps the revival of QR-codes during the Covid-19 pandemic revealed that they are a fun and enjoyable way of interacting with retailers, and thus a newfound interest and understanding of their hedonic value has been generated.

Consistent with the broader literature, PU showed also to be a strong independent predictor of BI ($b=.31$, $p<.001$) (Davis, 1989; Ryu and Murdock, 2013). This result indicates that consumers of electronic goods understand the utilitarian benefits of QR-codes and are driven to adopt QR-codes because of the useful functions they provide in enhancing the decision-making process (Shin et al., 2012). QR-codes are perceived to improve the prepurchase stage, increase productivity, provide meaningful content, and make it easier to find information and evaluate products. As such, it can be understood that QR-codes are useful to mitigate uncertainties and reduce hesitation (Kim and Woo, 2016), which is of particular importance to consumers of electronic goods who are interested in a complete picture to reduce the risk of dissatisfaction with a purchase (Jung et al., 2012).

The results also show that perceived ease-of-use (PEOU) has no significant direct effect on BI ($b=.03$, $p<.600$) when PE, PU, and UB (i.e., compatibility) was controlled for. PEOU does, however, have a significant effect on PU ($b=.55$, $p<.001$), which is in line with the findings of Davis et al (1989). Therefore, the more free-of-effort a QR-code is, the more useful it is perceived. A possible explanation for this is that consumers are accustomed to using their mobile device while shopping (Jung et al., 2012; Ryu and Murdock, 2014; Shankar et al., 2021) and find QR-codes easy to use, which is not a motivating factor in and of itself but makes its functionality and benefits more attractive. This is somewhat consistent with Davis et al. (1989, p. 998) in that increasing experience shifts the focus from a self-efficacy concern into an instrumental focus concerning how effort impacts performance benefits. QR-codes provide a means of gratifying consumers' desire for a convenient, easy, and frictionless omnichannel customer journey. By effortlessly scanning a QR-code to access detailed information online, consumers can enhance the resource expenditure required to experience the core benefits of products, such as learning about them and evaluating them (Grewal et al., 2019). Consumers' time and efforts can therefore be allocated to other valuable activates, as suggested by Davis (1989).

Surprisingly, UB (b=.22, p<.001) showed a strong positive effect on the intention to adopt QR-codes. This is contrary to prior IS literature which identifies the UB as one of the most common causes of consumer resistance (Ram and Seth, 1989), and by that negatively affect BI (Kaur et al., 2020; Moorthy et al., 2017; Hew et al., 2019; Joachim et al., 2017; Borraz-Mora et al., 2017). However, it is important to note that this study positioned the UB as 'compatibility', whereas most of the previous research has focused on the 'complexity' aspect of usage. Like our study, Joachim et al (2017) identified the compatibility barrier as a separate independent variable, however, found that the compatibility barrier had negative associations with usage intention of mobile services. On the other hand, Molesworth (2001) argue that compatibility can lower the UB. This indicates that the more compatible the system are with customers' existing workflows, practices, and habits (Ram and Seth, 1989), the lower the UB becomes. This is in line with our results and could explain why the UB showed a positive influence in our study; consumers might perceive QR-codes as compatible, which positively affect their intention to adopt. In certain settings, such as in restaurants, consumers were forced to use QR-codes to place orders (e.g., to comply with social distancing regulations) during the Covid-19 pandemic. This "forced" usage may have altered existing routines and could explain why consumers now perceive QR-codes as compatible with their shopping routines.

The value barrier (VB) did not have strong associations with BI (b=-.06, p<.24) when PE, PU, and compatibility was controlled for. This conflicts with prior research, which shows that the VB has a strong negative association with BI in various contexts related to digital and mobile technologies (Moorthy et al., 2017; Kaur et al., 2020; Joachim et al., 2018). QR-codes can be accessed directly through customers smartphones or free applications, without any additional costs. As these smartphones are high in cost, we highlight that consumers do not purchase them solely to use QR-codes. Therefore, the results indicate that customers might not be as price sensitive towards QR-code. Further, Moorthy et al. (2017) argue that VB appears because users are not delivered the desired experience, such as convenience, during the usage of the technology. As discussed previously, the PU was a strong positive indicator and as such are perceived to add utilitarian value, therefore the findings may indicate that the value QR-codes deliver to customers surpasses the cost.

The risk barrier (RB) did not have strong associations with BI (b=-.16, p<.07) in the crude analyses or when controlling for moderating factors. The results of this study also contradict previous research which shows that RB have negative affect on BI in several contexts, such as mobile-commerce (Moorthy et al., 2017), mobile-payment (Kuar et al., 2020), and online shopping (Lian and Yen, 2014). However, the results indicate that the respondents might not share the same concerns about information leakage and personal data violations when it comes to QR-code usage. This could be because people are not aware of the personalization potential that QR-codes hold, and the customer data that is involved. It is important to note that we did not specify the system characteristics of QR-codes, which could have raised additional concerns about privacy.

Similar results were evident for the two physiological barriers: tradition barrier (TB) and image barrier (IB). In a QR-code setting, the TB refers to the resistance that might appear when sales advisors are replaced with shopper-facing technologies in stores (Moorthy et al., 2018). Divergent from the literature (Migliore et al., 2022; Moorthy et al., 2017; Laukkanen et al., 2016; Joachim et al., 2018), the TB did not show to have negative influence on BI of QR-codes (b=.06, p<.48) in the crude analysis. On the other hand, the results are in line with Alexander and Kent's (2020) study, which showed that some customers considered shopper-facing technologies as a way of avoiding sales advisors. Sales advisors might therefore be less

important to some consumer groups during the prepurchase process if the technology touchpoint offer the answers they need. As mentioned, the respondents of this study are probably above average interested in technology and electronic goods, which could explain these results. As for the IB, our results are also inconsistent with literature that shows the IB to negatively influence BI related to mobile and digital technologies (Kaur et al., 2020; Laukkanen, 2016; Moorthy et al., 2017; Lian and Yen, 2014; Joachim et al., 2018). Our results show that the IB did not have any association with BI ($b=-.05$, $p<.33$) when PE, PU, and compatibility was controlled for, which indicate that people might not have negative impressions of QR-codes, its complexity and difficulty to use. This can be explained by the fact that QR-codes have grown to become a mature technology.

Age, gender, and experience did not moderate the relationship between BI and the motivating belief variables or barriers. This contradicts Venkatesh (2012) who find that impact of hedonic motivation on BI is particularly moderated by age and gender. However, we do note that the respondents were homogenous in that they all had experience with QR-codes. Interestingly, this might suggest that gender stereotyping in the use of technology may be misguided when a relatively experienced group is studied, especially regarding consumer electronics. Although age did not have a moderating effect, it did have a significantly small negative direct effect on BI ($b=-.13$, $p<.006$) when added to the final regression analysis model. This suggests that age is a determinant of QR-code acceptance, which is somewhat consistent with Laukkanen et al. (2007) in that resistance may differ among mature and younger consumers. As such, age should not be ignored when implementing QR-codes. With increasing age, BI goes down, which suggest that mature consumers are not as likely to adopt. That said, we did not ask respondents about their level of experience with QR-codes nor if they had experience with QR-codes as tool during the prepurchase. Finally, personal innovativeness (PI) did not have a moderating effect. This contradicts Juaneda-Ayensa et al. (2016, p. 8) and Ryu (2013) in that those consumers who are more innovative regarding shopper-facing technologies have stronger BI. It is conversely consistent with Yan et al. (2021) who suggest that PI does not have an impact when respondents have prior experience. A possible reason for lack of impact by PI is the context under focus. Although the scale used had high psychometric properties, it was nevertheless placed under the condition of QR-codes, which has become nearly ubiquitous, and its meaning might have been misunderstood.

5.3 Conjoint Analysis Discussion

The aim of this study was to investigate which QR-code information and features provides the most experiential value and influences purchase intention in consumer electronic settings to understand the impact of QR-codes on the omnichannel CX. In doing so, an experiential value and purchase intention framework was applied and an assumption about the linear relationship between the attribute levels was tested using conjoint analysis. Accordingly, we assumed that there would be higher preference for more digitalized and personalized attributes across the three dependent variables. This assumption was generally not supported for cognitive and affective value. However, there were a few exceptions (i.e., from customer *reviews* to personalized reviews for both and *add-to-wishlist* to *store availability* for cognitive). As for purchase intention, the assumption was on the other hand generally supported. Therefore, the study indicates that less digitalized and personalized information and features triggered experiential value, and the opposite for purchase intention. A discussion of possible explanations for the most salient preferences (e.g., highest impact estimates) of cognitive and

affective value follows. This is followed by a discussion of similarities and differences in experiential value and purchase intention. This represents the most interesting findings.

Personalized reviews indicated to provide the strongest impact on cognitive (.162) and affective value (.167). This is interesting; it is not a feature specifically mentioned in the QR-code or shopper-facing technology research but was sought after among the respondents during the attribute discovery. Conceptually, it makes sense that this provides cognitive value. Not only do consumers expect timely and personalized information (Alexander and Cano, 2019), but Bustamante and Rubio (2017) find that cognitive value is created when triggers encourage content creation that is meaningful to the consumers. Irrelevant information may therefore produce inaccurate mental representations and hinder creative processing. This may be particularly pressing when purchasing consumer electronics, where the risk of purchasing the wrong product may be high (Szopiński et al., 2020). This is consistent with Hoyer et al., (2020) in that customized information provide better decision-making that match consumer preferences. Moreover, to be able to search and easily navigate is an important and unique aspect of interactive media. It provides an enhanced ability to move around an environment, which, according to Childers et al. (2001), creates intrinsic attraction. The affective value created may be described as increased flexibility. This may explain why *customer reviews* was less salient when presented with an elevated alternative. This does not suggest that customer reviews are insignificant. On the contrary, research emphasize the importance of social influence on the CX (Verhoef et al., 2009), however, it may present an inflexible means of information search and product evaluation while visiting a physical store. Consumers must scan through the reviews to find relevant information, which can be inconvenient, time consuming, and cause aversion. This is consistent with Alexander and Cano (2019) who find that impractical shopper-facing technologies may cause irritation and sever any attempt at delivering emotional engagement.

Static price was the second strongest attribute level indicated to impact cognitive (.108) and affective (.127) value. This is very interesting. Consumers expect personalized and curated experiences (Brynjolfsson et al., 2013; von Briel, 2018). Mosquera et al., (2017) also suggest special offers and promotions may enhance the experience. Yet a rational reason for why the respondents indicated a preference for *static price* is that channel integration is a fundamental aspect of the omnichannel CX. Channel integration involves price consistency, which Zhang et al. (2018) emphasize is important for consumers to enjoy the same preferential in any channel and thus avoid confusion and develop consistent evaluations. This infers that dynamic and personalized pricing may hinder the creative processing. Moreover, being faced with different prices in different channels, such as dynamic pricing strategies, can create feelings of frustration rather than positive feelings and attachment (Cook, 2014). Price, however, is recognized to be one of the most difficult aspects of retailing. Consumers may associate a price too high with poor value and a price too low with low quality, poor performance, or other negative attributes about the product or service (Grewal et al., 2009). This may be particularly prevalent among consumers of electronic goods who are price sensitive and purchase less frequently (Szopiński et al., 2020). Moreover, dynamic price promotions, such as scarcity messages, may be subjected to consumers perception of price unfairness and cause aversion (Inman and Nikolova, 2017). Personalized price on the other hand presents a personalization-privacy paradox; “consumers may recognize how much data and information retailers have about them and begin to worry about their privacy” (Grewal et al., 2017, p. 2). Shankar et al. (2021, p. 18) emphasize that consumers “might react positively to non-intrusive retail technology but negatively to technologies that instigate privacy concerns”.

Verbal information was the third strongest attribute level indicated to impact cognitive (.075) and affective (.075) value. A reason for this is that it enables customers to process the information in a more convenient and efficient manner, supporting the overall thought process and by that, create cognitive value. More advanced technologies may demand more from the consumers in a time when they a merely seeking additional information and experiencing the core benefits of the product itself. As such, these technologies (e.g., video content and product testing) might disrupt the thought process and negatively influence benefit convenience (Grewal et al., 2019). In terms of affective value, the results contradict previous research which suggests dynamic messages, opposed to static ones creates stronger emotional connections. Video content and entertainment has been found to raise consumer enthusiasm (Atkinson, 2013; Ryu and Murdock, 2013). Yet, *product testing*, which may be more experimental in nature, indicated to have negative impact. Alexander and Kent (2020), found, however, that despite the enthusiasm that customers may show towards experimental technologies, they are minimally used. This may suggest that customers preferences can be influenced by unfamiliarity with the more digitalized features and their benefits. Moreover, as mentioned regarding customer reviews, impracticality and inconvenience can cause irritation amongst customers and negatively influence their emotional engagement (Alexander and Cano, 2019). Our findings might indicate that watching video content or testing products in a store are complicated and not a viable option. We also identified a similar pattern concerning *comparison of product*; *similar products* had a stronger positive impact on experiential value, than *scan and compare*. This highlights a strong pattern across the different attributes, which shows that some type of technologies is more suitable for creating a positive CX while visiting a physical store. We suggest that as consumer electronics are inherently complex products comprising a great amount of product information, simple solutions and features may make information easier to digest and prevent information overload during the customer journey.

Across the *call-to-action* attribute, the *store availability* (.029) level indicated to have the strongest positive impact on cognitive value. Thus, product availability is important during information search and evaluation. This is supported by Herhausen et al., (2015) who finds that consumers prefer retailers that offer channel integration and deliver consistent information across different channels. Moreover, in line with Zhang et al. (2018), we suggest that consumers gain some level of control and empowerment by having access to product availability across all channels, which in turn can contribute to meaningful evaluations. Also, as QR-codes make product availability information more accessible, store visitors can save the time and effort of asking sales advisors or search for this information on their own. For affective value, *add to wishlist* (0.65) showed the strongest positive impact. Wishlist functions has been identified in the literature as a way for customers to collate, curate and consider potential items for purchase. Although Lynch and Barnes (2020) emphasize that it may not lead to purchase, consumers can benefit from this tool by saving their favorites and come back later to consider different options. Thus, collecting favorites to a wishlist can be viewed by costumers as a joyful experience and cause enthusiasm (Bustamante and Rubio, 2017). Additionally, *add to wishlist* (0.16) have a slightly positive effect on cognitive value. This makes sense as this tool can enhance the creative thinking (Lynch and Barnes, 2020). *Buy now ship home* did however indicate to have a negative impact on both cognitive (-.045) and affective (-040) value. Features that trigger purchase, such as *buy now, ship home,* may be less important during the product-search and consideration phase to create experiential value. Consumers might need space to evaluate the different products and want to avoid being faced with features in which intent to push them to make a purchase.

Regarding purchase intention, several interesting findings can be discussed, particularly concerning the complexities of the omnichannel CX and the experiential value purchase intention framework. For instance, the results indicate that the more digitalized and personalized the QR-codes, the stronger the purchase intention. This is consistent with Fagerstrøm et al. (2021) who found mobile apps with digital information provided more value in grocery retailing than apps with standard information. However, this contrasts our findings for experiential value; what evoked cognitive and affective value is not the same as what induced purchase intension. Hoyer et al. (2020) emphasize that not all types of experiences are important to technological impact, which may suggest that some of the attribute levels may be more suitable to evoke purchase intention that experiential value. Yet, it presents a peculiar tradeoff; does this suggest that inducing purchase intention come at the expense of experiential value? As mentioned, consumers preferred *static price* in terms of experiential value, but for purchase intention they preferred *scarcity message* (.091) above *static price* (.054). Does this imply consumers are willing to accept potential price unfairness and aversion in favor of a better price? If so, what impact does this have on the overall CX? The respondents of the study indicated to not prefer *personalized price* (.-145), which suggests they are not willing to accept just about anything, particularly intrusive technology that may threaten privacy.

Yet, as purchase intention is considered an outcome of product information search and evaluation, the differences can also be explained by the inherent nature of the customer journey. Grewal and Roggeveen (2020) highlight that experiences from one stage or substage impact future experiences with the next stage. Thus, if consumers have already had a good experience with information search and product evaluation, their needs might differ, and they may be more inclined towards more dynamic and experimental features such as *scarcity message*, *product testing (.046)* and *scan and compare (.013)*. That is, if they have a better idea of the final product or products they are considering, they might have the better mindset for coping with more complex tasks or technologies. As emphasized by Willems et al. (2017), different technologies may be more appropriate than others depending on the stages and substages of the customer journey.

Although what indicated to trigger purchase intention was generally different from that which indicate to evoke experiential value, there were some overlaps. For instance, *personalized reviews* indicated to be equally important in terms of cognitive (.162) and affective (.167) value and purchase intention (.124). Likewise, *store availability* was important for both cognitive value (.029) and purchase intention (.082). Thus, if purchase intention is an outcome and thus resides in a different substage of the prepurchase stage, this points to the inherently complex and nonlinear nature of the omnichannel customer journey, and that consumers may need consistency in the information and features as they jump back and forth between stages (Rooderkerk and Kök, 2019).

5.4 Theoretical Implications

The exploratory interviews contribute to theory by including a retailer perspective and making it a starting point for the research inquiry. Identifying current and important challenges can advance research in areas that may lack theoretical insight.

The QR-code adoption study has important contributions. Although the extended TAM with IRT barriers and moderating factors was not validated as an effective model to predict

consumers motivation to adopt QR-codes, extending the TAM with PE and compatibility (UB) proved fruitful. Our research demonstrates the critical role of PE, PU, and compatibility in influencing QR-codes adoption for product information search and evaluation. This has important implications for retail and IS research as it supports a changing pattern in consumer behavior regarding their interaction with instore technology. The study also provides theoretical insight into the controversial role of PEOU. It may not be important in systems where consumers have prior experience, nor in setting that are both utilitarian and hedonic. This questions whether PEOU is task dependent (Gefen and Straub, 2001) and contradicts van der Heijden's (2004) theory in that PEOU should have a direct effect on BI when systems are perceived to be hedonic. Moreover, the role of compatibility should not be overlooked in adoption studies of shopper-facing technologies or QR-codes. While it was not a barrier, it was a strong motivating belief variable. Lastly, the study also added new context (e.g., consumer electronics and the prepurchase stage) to QR-code adoption literature, which has provided multiple interesting insights as discussed above.

The conjoint analysis also provided important contributions. First and foremost; our study is, to our knowledge, the first to test an experiential value and purchase intention framework in the context of shopper-facing technology. As such, it answers the research calls by Hoyer et al. (2020) and Shankar et al. (2021) for empirical research on the impacts of retail technology on the omnichannel CX. Our results indicate that some of the same triggers that evoke cognitive value also evoke affective value. Thus, they may not be mutually exclusive. It was also suggested that less digitalized and personalized information and features trigger experiential value in the prepurchase stage, while the opposite was evident for purchase intention. Theory building should thus focus on how to capture and understand the impact from one stage or substage of the customer journey to another. This may advance understanding of the impact of QR-codes in an inherently nonlinear omnichannel customer journey. Moreover, a conjoint analysis proved effective to investigate the multidimensional nature of CX and therefore provide the foundation for theory and method advancement. The TAM has received criticism in that it does not help explain acceptance in ways that guide system development, other than suggesting that system characteristics have impact on belief variables (Lee et al., 2003; Shin et al., 2012; Roy et al., 2018). Applying a conjoint analysis with a framework as done in this study may better explore system characteristics that impact certain contexts. The conjoint analysis helped identify which attributes levels (e.g., system characteristics) the respondents preferred above others and why they might add value.

5.5 Practical Implications

The explorative interviews serve some practical implications. First, the findings indicate that retailers must have a clear strategy for the implementation of QR-codes. To operate in today's competitive retail environment, shopper-facing technologies should not be implemented just for the sake of it but must deliver a distinct purpose (Grewal et al, 2019; Piotrowicz and Cuthbertson, 2014). Moreover, the interviews imply that sales advisors should gain adequate training on the usage and purpose of QR-codes, so that these two touchpoints do not work independently but rather support each other.

The QR-code adoption study has managerial implications for consumer-electronics retailers. Retailers and system developers should provide meaningful content, make QR-codes fun and enjoyable, and make sure they match consumers shopping behavior during the prepurchase stage. An important managerial implication is thus to design interactive QR-codes in which

provide both utilitarian and hedonic value, rather than being built solely for information purposes. Hedonic benefits are just as important, if not more, and QR-codes in which only facilitate utilitarian benefits will fall short. This is especially evident in a consumer electronic setting, where consumers may enjoy the process of shopping for electronic products or even interacting with shopper-facing technology. Another contribution is that retailers of consumer electronics should capitalize on the current post-pandemic popularity of QR-codes as it is an easy and cost-effective way of integrating online and offline channels in stores.

The results from the conjoint analysis have important managerial implication in that it indicates that retailers should carefully consider customer preferences of QR-code content and information. The five attributes from the conjoint study should be considered by consumer-electronics retailers, practitioners and developers that are involved in designing instore QR-codes in omnichannel CX. Especially *personalized reviews* and *static price* have a significant impact on experiential value. This can give an indication of the attributes in which facilitate a better CX during the prepurchase stage. It is also important to be aware that some attributes may hinder the creation of a good CX. A personalization-privacy paradox should be considered in relation to personalization efforts, as consumers may resist technologies in which threatens their privacy (Shankar et al., 2021). Our findings also suggest that retailers should evaluate what type of information and features that is particularly relevant when visiting a store and which ones that could be viewed as inconvenient. Alternatives to customer reviews such as customized search functions could be better suited as it guides consumers directly to relevant information. Retailers should also be aware that there are some differences in what trigger experiential value and purchase intention. What trigger a positive CX is not necessarily the same as what influences purchase intention. Retailers thus need to evaluate the objective of the technology; is it to improve the CX, increase purchase intention, or both.

5.6 Limitations and Future Perspectives

There are several limitations to this study that could affect its findings and how they may be interpreted. These limitations should be considered in future research. A major limitation is the exclusion of the social component in adoption study. Social influence was not considered in our TAM model due to scope, and because it in previous studies has been shown to not significantly impact shopper-facing technologies in an omnichannel environment (Juaneda-Ayensa et al., 2016). This could however be interesting to explore in future research, especially since both literature and the interviews highlighted the importance of sales advisors and technology working together as an integrated support system. New studies could address how these two touchpoints interact in a store setting and how they might affect motivation to adopt.

There was a limitation regarding the construct validity that should be mentioned. Although the constructs for the belief variable had been tested in the context of QR-code literature, this was not the case for the barriers. These were adapted to a different setting and translated from English to Norwegian. This could possibly influence the validity of the constructs. Also, evaluation of normality is prone to interpretation bias and could have been misinterpreted, although the generally a conservative approach was used.

Another limitation of this study concerns its external validity. This refers to the generalizability of the findings due to the sampling method and the use of only one product category. A non-probabilistic, purposive sampling method was applied, and we argue that this

method could lead to a homogeneous selection of respondents. First, the study was restricted to people from Norway. Second, we purposively selected respondents from the retailer's mailing list, which represents people with an above average interest in consumer-electronics. Therefore, the findings of this study cannot be generalized to a broader population. It is also important to highlight that the study was distributed through an online newsletter, in which only people that have some degree of technology experience could participate. This could especially affect the personal innovativeness variable. Further, this study had limitations in terms of product categories. The study was restricted to a TV and is probably not representative for all product categories. We also discovered during the pilot study that the type of phone could have an influence on the usage of QR-codes. Due to scope, we could not include this variable further, however it can be an interesting topic for further research on QR-code adoption.

It is also important to note that the study had a relatively small sample size. Therefore, the removal of the five outliers due to deviant answers could possibly influence the results. We suggest that further research should be conducted on a larger sample size in different contexts and countries to validate the results. The findings indicate that compatibility could be more suitable as a motivation belief rather than a barrier. Also, age was found as a direct determinant of BI. Moreover, all respondents except one had experience, however, we did not ask how much experience or what type of experience. We therefore suggest that further research on QR-code adoption could conduct a larger TAM study which tests compatibility and age as independent belief variables and include type and amount of experience as moderating factors.

The conjoint analysis has limitations, as well. First, measurement bias must be mentioned. Although they showed acceptable correlation, the measurement scale of cognitive and affective value has not been empirically validated and are single item measures. They were also adapted to the study with Norwegian consumers in mind. While language barriers were accounted for and the items were discussed in a pilot study with typical respondents, we recognize that the underlying meaning may have been distorted. Moreover, the experience dimensions are not limited to cognitive and affective. They include behavioral, social and sensorial dimensions; however, these were omitted due to lack of consistency in the CX theory and the lack of scales. Thus, we cannot suggest that the attribute levels create a holistic experience, which is when multiple dimensions are triggered simultaneously (Hoyer et al., 2020). To advance scientific research, we call for the development of scales that can be used both in a single-item explorative conjoint analysis as well as in a larger theoretical survey. To the best of our knowledge, neither exist. More accurate scales may also explain why the experiential value and purchase intention measures varied. Intention to purchase is often the explicit judgmental criterion in conjoint analysis, and has therefore been tested more frequently, and might be easier for respondents to understand.

Second, the conjoint analysis has some design bias; attribute discovery should have been carried out through focus groups and not elicited through individual interviews. This may have provided better representation of attribute levels of interest across a more representative population and have enabled the attribute levels to be aggregated appropriately. Fewer attributes should have been considered as it is a difficult task to consider a wide variety of attributes. This may have distorted the results to some degree as respondents may have had trouble differentiating between attribute levels. However, Hair et al., (2014) suggest that only focusing on positive factors can also distort the respondents' judgements and that a realistic choice task requires both good and bad attributes. In that sense, both positive and negative

attributes were incorporated. Moreover, the design of the stimulus cards was created to be as realistic as possible, however, the scenario was hypothetical. To further validate the results, a quasi-experiment comparing an actual instore QR-code to the prototype suggested in this study could increase ecological and external validity (Fagerstrøm and Sigurdsson, 2016; Fagerstrøm et al., 2021)

Third, sampling bias must be mentioned; the respondents were elicited through social media by the means of self-selection and snowballing. As such, the sample may have been distorted by a random sample which impacts the validity of the results. Moreover, the sample size barely made the minimum requirement for a conjoint analysis. As such, the generalizability is not great. Also due to scope demographics were merely used to assess a fair distribution of respondents in terms of age, gender, and experience, it was not used to analyze the results. Research does show that customer journeys, however, are highly heterogenous and preference for touchpoints may vary depending on age and gender, and whether they prefer personal or impersonal touchpoints. Hair et al. (2014) and Green and Srinivasan (1990) also suggest conjoint analysis should be carried out on an individual level. As such, future studies could investigate the attributes in larger populations and disaggregate the results for a better understanding.

Moreover, the use of conjoint analysis to measure multiple dimensions presented some theoretical complexities that need to be addressed, such as the differences in what indicated to evoke experiential value versus what indicated to trigger purchase intention. To our knowledge, this has not been empirically addressed in CX research. Future studies could examine the relationship between experiential value and purchase intention and answer whether creating positive experiential value leads to higher purchase intention. Examining this relationship might help retailers find equilibrium in the pursuit of increased sales and providing a good CX, as well as which QR-code attributes are more valuable for which purpose and at what stage.

Lastly, the conjoint analysis did not include a scenario analysis to examine which combination of attributes levels should be combined to best induce experiential value and purchase intention – this is another interesting objective for future research.

6 Conclusion

QR-codes remain relatively unexplored in a time where we require more insight about why consumers adopt them and what impact they have on the omnichannel CX. Therefore, the objective of this study was to take a holistic perspective on QR-codes and answer the research questions of (1) why consumers adopt or resist QR-codes, and (2) what QR-code information and features provide value and influence purchase intention in consumer electronic settings. To investigate these questions, we used (1) an explanatory cross-sectional survey using the Technology Acceptance Model extended with perceived enjoyment, functional and psychological barriers from the Innovation Resistance Theory as well as potential moderating factors (e.g., age, gender, experience, and personal innovativeness) and (2) an exploratory conjoint analysis.

The results from the survey showed that QR-code adoption is primarily driven by perceived enjoyment, perceived usefulness, compatibility, and somewhat by age. The extended TAM did not prove to be effective in explaining QR-code adoption. However, extending TAM with

perceived enjoyment, compatibility and age showed to be rather successful and further research should therefore focus on these belief variables when investigating QR-code adoption. Although prior research emphasizes utilitarian benefits, this study showed that hedonic benefits is even more important in the context of QR-codes and consumer electronics. Retailers should focus on creating fun, interactive and enjoyable QR-codes with meaningful content, and ensure they fit well with consumers existing shopping habits. Further, retailers must not overlook age as there were indications of differences in motivation across age groups. Considering that the barriers did not have an impact on consumers' behavioral intention, our findings might imply that there is a low level of resistance towards QR-codes in consumer electronic settings. However, the explorative interviews identified potential QR-code challenges such as strategic implementation and staff training, which should be empirically tested through future research.

To our knowledge, our conjoint study is the first to test an experiential value and purchase intention framework. Thus, the study adds to a stream of research that is mostly conceptual. The main finding from the conjoint analysis showed that creating a positive experience does not necessarily require highly digitalized and personalized QR-code information and features. However, a balance is needed as it was discovered that the opposite was evident for purchase intention. Retailers and researchers must therefore be aware that there might be differences in what type of QR-code information and features that create experiential value and what triggers purchase intention. For instance, *static price* and *verbal information* might provide a good experience, while *scarcity message* and *product testing* may influence purchase intention. That said, a positive experience in the prepurchase stage may influence purchase, but due to scope, the relationship between experiential value and purchase intention was not tested. Moreover, it was discovered that *personalized reviews* seemed to be important for both experiential value and purchase intention. This is plausible due to the inherently non-linear nature of the customer journey. These findings highlight the complexities of the CX experience and suggest that it is important to carefully consider the purpose for which QR-codes are implemented. This was a small study, and the findings should be verified in larger studies, however, we believe that our results contribute to mitigating the knowledge gap in this field.

References

Aggarwal, P., Jun, S. Y., and Huh, J. H. (2011). Scarcity Messages. *Journal of Advertising*, *40*(3), 19–30. https://doi.org/10.2753/JOA0091-3367400302

Albăstroiu, I., and Felea, M. (2015). Enhancing the Shopping Experience through QR Codes: The perspective of the Romanian Users. *Amfiteatru Economic*, *17*(39), 553–566.

Alexander, B., and Cano, M. B. (2019). Futurising the Physical Store in the Omnichannel Retail Environment. In W. Piotrowicz and R. Cuthbertson (Eds.), *Exploring Omnichannel Retailing: Common Expectations and Diverse Realities* (197–223). Cham: Springer International Publishing. https://doi.org/10.1007/978-3-319-98273-1_9

Alexander, B., and Kent, A. (2022). Change in technology-enabled omnichannel customer experiences in-store. *Journal of Retailing and Consumer Services*, *65*, 1–10. https://doi.org/10.1016/j.jretconser.2020.102338

Antioco, M., and Kleijnen, M. (2010). Consumer adoption of technological innovations: Effects of psychological and functional barriers in a lack of content versus a presence of content situation. *European Journal of Marketing*, *44*(11/12), 1700–1724. https://doi.org/10.1108/03090561011079846

Atkinson, L. (2013). Smart shoppers? Using QR codes and 'green' smartphone apps to mobilize sustainable consumption in the retail environment. *International Journal of Consumer Studies*, *37*(4), 387–393. https://doi.org/10.1111/ijcs.12025

Bagozzi, R. P., and Lee, K.-H. (1999). Consumer Resistance To, and Acceptance Of, Innovations. *ACR North American Advances*, *26,* 218–225. https://www.acrwebsite.org/volumes/7902/volumes/v26/NA-26/full

Barwitz, N., and Maas, P. (2018). Understanding the Omnichannel Customer Journey: Determinants of Interaction Choice. *Journal of Interactive Marketing*, *43*, 116–133. https://doi.org/10.1016/j.intmar.2018.02.001

Baxendale, S., Macdonald, E. K., and Wilson, H. N. (2015). The Impact of Different Touchpoints on Brand Consideration. *Journal of Retailing*, *91*(2), 235–253. https://doi.org/10.1016/j.jretai.2014.12.008

Bean, J. (2021). *Council Post: QR Codes Are Providing Customers With Convenience And Businesses With Data*. Forbes. https://www.forbes.com/sites/forbesbusinesscouncil/2021/10/21/qr-codes-are-providing-customers-with-convenience-and-businesses-with-data/ (Accessed 26.05.2022).

Beck, N., and Rygl, D. (2015). Categorization of multiple channel retailing in Multi-, Cross-, and Omni-Channel Retailing for retailers and retailing. *Journal of Retailing and Consumer Services*, *27*, 170–178. https://doi.org/10.1016/j.jretconser.2015.08.001

Berlyne, D. E. (1966). Curiosity and Exploration. *Science*, *153*(3731), 25–33. https://doi.org/10.1126/science.153.3731.25

Berman, B., and Thelen, S. (2018). Planning and implementing an effective omnichannel marketing program. *International Journal of Retail & Distribution Management*, *46*(7), 598–614. https://doi.org/10.1108/IJRDM-08-2016-0131

Bijmolt, T. H. A., Broekhuis, M., de Leeuw, S., Hirche, C., Rooderkerk, R. P., Sousa, R., and Zhu, S. X. (2021). Challenges at the marketing–operations interface in omni-channel retail environments. *Journal of Business Research*, *122*, 864–874. https://doi.org/10.1016/j.jbusres.2019.11.034

Borraz-Mora, J., Bordonaba-Juste, V., & Polo-Redondo, Y. (2017). Functional Barriers to the Adoption of Electronic Banking: The Moderating Effect of Gender. *Revista de Economía Aplicada*, *75*(XXV), 87–107.

Bradley, C., Kohli, S., and Smith, T. R. (2021). How retailers can improve their performance in the post-COVID world [Industry Blog]. *Mckinsey & Company.*

https://www.mckinsey.com/industries/retail/our-insights/why-retail-outperformers-are-pulling-ahead (Accessed 26.05.2022).
Brakus, J. J., Schmitt, B. H., and Zarantonello, L. (2009). Brand Experience: What is It? How is it Measured? Does it Affect Loyalty? *Journal of Marketing*, *73*(3), 52–68. https://doi.org/10.1509/jmkg.73.3.052
Briedis, H., Gregg, B., Heidenreich, K., and Liu, W. W. (2021). Omnichannel: The path to value [Industry Blog]. *McKinsey & Company*. https://www.mckinsey.com/business-functions/marketing-and-sales/our-insights/the-survival-guide-to-omnichannel-and-the-path-to-value# (Accessed 26.05.2022).
Briggs, S. R., and Cheek, J. M. (1986). The role of factor analysis in the development and evaluation of personality scales. *Journal of Personality*, *54*(1), 106–148. https://doi.org/10.1111/j.1467-6494.1986.tb00391.x
Brynjolfsson, E., Hu, Y. J., and Rahman, M. S. (2013). Competing in the Age of Omnichannel Retailing. *MIT Sloan Management Review*, *54*(4), 1–7. https://sloanreview.mit.edu/article/competing-in-the-age-of-omnichannel-retailing/
Bustamante, J. C., and Rubio, N. (2017). Measuring customer experience in physical retail environments. *Journal of Service Management*, *28*(5), 884–913. https://doi.org/10.1108/JOSM-06-2016-0142
Campbell, D. T., and Fiske, D. W. (1959). Convergent and Discriminant validation by the Multitrait-Multimethod Matrix. *Psychological Bulletin*, *56*(9), 81–105.
Cao, L., and Li, L. (2015). The Impact of Cross-Channel Integration on Retailers' Sales Growth. *Journal of Retailing*, *91*(2), 198–216. https://doi.org/10.1016/j.jretai.2014.12.005
Cata, T., Patel, P. S., and Sakaguchi, T. (2013). QR Code: A New Opportunity for Effective MobileMarketing. *Journal of Mobile Technologies, Knowledge and Society*, *2013*, 1–7. https://doi.org/10.5171/2013. 748267
Cattin, P., and Wittink, D. R. (1982). Commercial Use of Conjoint Analysis: A Survey. *Journal of Marketing*, *46*(3), 44–53. https://doi.org/10.1177/002224298204600308
Chang, V., Chen, W., Xu, Q. A., and Xiong, C. (2021). Towards the Customers' Intention to Use QR Codes in Mobile Payments. *Journal of Global Information Management*, *29*(6), 1–21. https://doi.org/10.4018/JGIM.20211101.oa37
Chen, Y.-H., Hsu, I.C., and Lin, C.C. (2010). Website attributes that increase consumer purchase intention: A conjoint analysis. *Journal of Business Research*, *63*(9), 1007–1014. https://doi.org/10.1016/j.jbusres.2009.01.023
Childers, T. L., Carr, C. L., Peck, J., and Carson, S. (2001). Hedonic and utilitarian motivations for online retail shopping behavior. *Journal of Retailing*, *77*(4), 511–535. https://doi.org/10.1016/S0022-4359(01)00056-2
Cohen, J. W. (1988). *Statistical power analysis for the behavioral science* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.
Cook, G. (2014). Customer experience in the omni-channel world and the challenges and opportunities this presents. *Journal of Direct, Data and Digital Marketing Practice*, *15*(4), 262–266. https://doi.org/10.1057/dddmp.2014.16
Court, D., Elzinga, D., Mulder, S., and Vetvik, O. J. (2009). The consumer decision journey. *McKinsey & Company*.
Cremer, S., and Loebbecke, C. (2021). Selling goods on e-commerce platforms: The impact of scarcity messages. *Electronic Commerce Research and Applications*, *47*, 1–14. https://doi.org/10.1016/j.elerap.2021.101039
Davis, F. D. (1986). *A Technology Acceptance Model for Empirically Testing New End-User Information Systems: Theory and Results*. Sloan School of Management, Massachusetts Institute of Technology. (Accessed 16.02.2022)

Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, *13*(3), 319–340. https://doi.org/10.2307/249008
Davis, F. D., Bagozzi, R. P., and Warshaw, P. R. (1989). User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. *Management Science*, *35*(8), 982–1003. https://doi.org/10.1287/mnsc.35.8.982
Davis, F. D., Bagozzi, R. P., and Warshaw, P. R. (1992). Extrinsic and Intrinsic Motivation to Use Computers in the Workplace1. *Journal of Applied Social Psychology*, *22*(14), 1111–1132. https://doi.org/10.1111/j.1559-1816.1992.tb00945.x
Davis, F. D., and Venkatesh, V. (1996). A critical assessment of potential measurement biases in the technology acceptance model: Three experiments. *International Journal of Human-Computer Studies*, *45*(1), 19–45. https://doi.org/10.1006/ijhc.1996.0040
deCharms, R. (1968). *Personal causation: The internal affective determinants*. New York: Academic Press.
DeVellis, R. F. (2012). *Scale Development: Theory and applications*. Thousand Oaks, California: Sage.
Di Betta, P., and Lucera, F. (2013). Segmentation, Involvement and the Reach-Engagement Relationship: Evidence from a Qr Code Advertising Campaign. *International Journal of Mobile Marketing*, *8*(2), 30–41.
Dunphy, S., and Herbig, P. A. (1995). Acceptance of innovations: The customer is the key! *The Journal of High Technology Management Research*, *6*(2), 193–209. https://doi.org/10.1016/1047-8310(95)90014-4
Einhorn, H. J., and Hogarth, R. M. (1981). Behavioral Decision Theory: Processes of Judgment and Choice. *Journal of Accounting Research*, *19*(1), 1–31. https://doi.org/10.2307/2490959
Fagerstrøm, A., Eriksson, N., and Sigurdsson, V. (2021). The Use of Mobile Apps to Facilitate Customers' Choice-Making When Grocery Shopping. In Y.-D. Zhang, T. Senjyu, C. So-In, and A. Joshi (Eds.), *Smart Trends in Computing and Communications: Proceedings of SmartCom 2020* (Vol. 182, 39–47). Springer Singapore. https://doi.org/10.1007/978-981-15-5224-3_4
Fagerstrøm, A., and Sigurdsson, V. (2016). The Experimental Analysis of Consumer Choice. In G. R. Foxall (Ed.), *The Routledge Companion to Consumer Behavior Analysis*. Routledge: London and New York.
Field, A. (2018). *Discovering Statistics Using IBM SPSS Statistics* (5th ed.). SAGE Publications.
Fishbein, M. (1967). Attitude and the Prediction of Behavior. In Fishbein, M. (Ed.) *Readings in attitude theory and measurement.* New York: Wiley.
Fishbein, M., and Ajzen, I. (1975). *Belief, Attitude, Intention and Behavior: An Introduction to Theory and Reseach*. Reading, MA: Addison-Wesley.
Følstad, A., and Kvale, K. (2018). Customer journeys: A systematic literature review. *Journal of Service Theory and Practice*, *28*(2), 196–227. https://doi.org/10.1108/JSTP-11-2014-0261
Gallino, S., and Moreno, A. (2014). Integration of Online and Offline Channels in Retail: The Impact of Sharing Reliable Inventory Availability Information. *Management Science*, *60*(6), 1434–1451. https://doi.org/10.1287/mnsc.2014.1951
Gefen, D., and Straub, D. W. (2000). The Relative Importance of Perceived Ease of Use in IS Adoption: A Study of E-Commerce Adoption. *Journal of the Association for Information Systems*, *1*(1). https://doi.org/10.17705/1jais.00008
Gentile, C., Spiller, N., and Noci, G. (2007). How to Sustain the Customer Experience: An Overview of Experience Components that Co-create Value with the Customer. *European Management Journal*, *25*(5), 395–410. https://doi.org/10.1016/j.emj.2007.08.005
Gerea, C., Gonzalez-Lopez, F., and Herskovic, V. (2021). Omnichannel Customer Experience and Management: An Integrative Review and Research Agenda. *Sustainability*, *13*(5), 2824. https://doi.org/10.3390/su13052824

Green, P. E., Krieger, A. M., and Wind, Y. (2001). Thirty Years of Conjoint Analysis: Reflections and Prospects. *INFORMS Journal on Applied Analytics*, *31*(3), S56–S73. https://doi.org/10.1287/inte.31.3s.56.9676
Green, P. E., and Srinivasan, V. (1978). Conjoint Analysis in Consumer Research: Issues and Outlook. *Journal of Consumer Research*, *5*(2), 103–123. https://doi.org/10.1086/208721
Green, P. E., and Srinivasan, V. (1990). Conjoint analysis in marketing: New developments with implications for research and practice. *Journal of Marketing*, *54*(4), 3–19. https://doi.org/10.1177/002224299005400402
Green, P. E., and Wind, Y. (1975). New way to measure consumers' judgments. *Harvard Business Review*, *53*(4), 107–117.
Grewal, D., Levy, M., and Kumar, V. (2009). Customer Experience Management in Retailing: An Organizing Framework. *Journal of Retailing*, *85*(1), 1–14. https://doi.org/10.1016/j.jretai.2009.01.001
Grewal, D., Noble, S. M., Roggeveen, A. L., and Nordfalt, J. (2019). The future of in-store technology. *Journal of the Academy of Marketing Science*, *48*(1), 96–113. https://doi.org/10.1007/s11747-019-00697-z
Grewal, D., and Roggeveen, A. L. (2020). Understanding Retail Experiences and Customer Journey Management. *Journal of Retailing*, *96*(1), 3–8. https://doi.org/10.1016/j.jretai.2020.02.002
Grewal, D., Roggeveen, A. L., and Nordfält, J. (2017). The Future of Retailing. *Journal of Retailing*, *93*(1), 1–6. https://doi.org/10.1016/j.jretai.2016.12.008
Hair, J. F., Black, W. C., Babin, B. J., and Anderson, R. E. (2014). *Multivariate Data Analytics* (7th ed.). Pearson Education Limited.
Hansen, R., and Sia, S. K. (2015). Hummel's Digital Transformation Toward Omnichannel Retailing: Key Lessons Learned. *MIS Quarterly Executive*, *14*(2), 51–66.
Heidenreich, S., and Handrich, M. (2015). What about Passive Innovation Resistance? Investigating Adoption-Related Behavior from a Resistance Perspective. *Journal of Product Innovation Management*, *32*(6), 878–903. https://doi.org/10.1111/jpim.12161
Herhausen, D., Binder, J., Schoegel, M., and Herrmann, A. (2015). Integrating Bricks with Clicks: Retailer-Level and Channel-Level Outcomes of Online–Offline Channel Integration. *Journal of Retailing*, *91*(2), 309–325. https://doi.org/10.1016/j.jretai.2014.12.009
Herhausen, D., Kleinlercher, K., Verhoef, P. C., Emrich, O., and Rudolph, T. (2019). Loyalty Formation for Different Customer Journey Segments. *Journal of Retailing*, *95*(3), 9–29. https://doi.org/10.1016/j.jretai.2019.05.001
Hew, J.-J., Leong, L.-Y., Tan, G. W.-H., Ooi, K.-B., and Lee, V.-H. (2019). The age of mobile social commerce: An Artificial Neural Network analysis on its resistances. *Technological Forecasting and Social Change*, *144*, 311–324. https://doi.org/10.1016/j.techfore.2017.10.007
Higgins, L. M., McGarry Wolf, M., and Wolf, M. J. (2014). Technological change in the wine market? The role of QR codes and wine apps in consumer wine purchases. *Wine Economics and Policy*, *3*(1), 19–27. https://doi.org/10.1016/j.wep.2014.01.002
Holbrook, M. B., and Hirschman, E. C. (1982). The Experiential Aspects of Consumption: Consumer Fantasies, Feelings, and Fun. *Journal of Consumer Research*, *9*(2), 132–140.
Holbrook, M. B., and Moore, W. L. (1981). Feature Interactions in Consumer Judgments of Verbal versus Pictorial Presentations. *Journal of Consumer Research*, *8*(1), 103–113.
Hoyer, W. D., Kroschke, M., Schmitt, B., Kraume, K., and Shankar, V. (2020). Transforming the Customer Experience Through New Technologies. *Journal of Interactive Marketing*, *51*, 57–71. https://doi.org/10.1016/j.intmar.2020.04.001
Hubert, M., Blut, M., Brock, C., Backhaus, C., and Eberhardt, T. (2017). Acceptance of Smartphone-Based Mobile Shopping: Mobile Benefits, Customer Characteristics, Perceived

Risks, and the Impact of Application Context. *Psychology & Marketing*, *34*(2), 175–194. https://doi.org/10.1002/mar.20982
Inman, J. J., and Nikolova, H. (2017). Shopper-Facing Retail Technology: A Retailer Adoption Decision Framework Incorporating Shopper Attitudes and Privacy Concerns. *Journal of Retailing*, *93*(1), 7–28. https://doi.org/10.1016/j.jretai.2016.12.006
Janis, I. L., and Mann, L. (1977). *Decision making: A psychological analysis of conflict, choice, and commitment*. Free Press.
Joachim, V., Spieth, P., and Heidenreich, S. (2018). Active innovation resistance: An empirical study on functional and psychological barriers to innovation adoption in different contexts. *Industrial Marketing Management*, *71*, 95–107. https://doi.org/10.1016/j.indmarman.2017.12.011
Juaneda-Ayensa, E., Mosquera, A., and Sierra Murillo, Y. (2016). Omnichannel Customer Behavior: Key Drivers of Technology Acceptance and Use and Their Effects on Purchase Intention. *Frontiers in Psychology*, *7*, 1117. https://www.frontiersin.org/article/10.3389/fpsyg.2016.01117
Jung, J.-H., Somerstein, R., and Kwon, E. S. (2012). Should I Scan or Should I Go?: Young Consumers' Motivations for Scanning Qr Code Advertising. *International Journal of Mobile Marketing*, *7*(3), 25–37.
Kaur, P., Dhir, A., Singh, N., Sahu, G., and Almotairi, M. (2020). An innovation resistance theory perspective on mobile payment solutions. *Journal of Retailing and Consumer Services*, *55*, 102059. https://doi.org/10.1016/j.jretconser.2020.102059
Kim, H.-Y., Lee, J. Y., Mun, J. M., and Johnson, K. K. P. (2017). Consumer adoption of smart in-store technology: Assessing the predictive value of attitude versus beliefs in the technology acceptance model. *International Journal of Fashion Design, Technology and Education*, *10*(1), 26–36. https://doi.org/10.1080/17543266.2016.1177737
Kim, T. (2022). Best Buy's Offerings Look Too Much Like Amazon's. *Bloomberg.Com*. https://www.bloomberg.com/opinion/articles/2022-03-03/best-buy-s-offerings-look-too-much-like-amazon-s (Accessed 26.05.2022).
Kim, Y. G., and Woo, E. (2016). Consumer acceptance of a quick response (QR) code for the food traceability system: Application of an extended technology acceptance model (TAM). *Food Research International*, *85*, 266–272. https://doi.org/10.1016/j.foodres.2016.05.002
King, W. R., and He, J. (2006). A meta-analysis of the technology acceptance model. *Information & Management*, *43*(6), 740–755. https://doi.org/10.1016/j.im.2006.05.003
Laricchia, F. (2022). *Consumer electronics retailers—Statistics & facts*. Statista. https://www.statista.com/topics/7179/consumer-electronics-retailers/ (Accessed 26.05.2022).
Laukkanen, P., Sinkkonen, S., and Laukkanen, T. (2008). Consumer resistance to internet banking: Postponers, opponents and rejectors. *International Journal of Bank Marketing*, *26*(6), 440–455. https://doi.org/10.1108/02652320810902451
Laukkanen, T. (2016). Consumer adoption versus rejection decisions in seemingly similar service innovations: The case of the Internet and mobile banking. *Journal of Business Research*, *69*(7), 2432–2439. https://doi.org/10.1016/j.jbusres.2016.01.013
Laukkanen, T., Sinkkonen, S., Kivijärvi, M., and Laukkanen, P. (2007). Innovation resistance among mature consumers. *Journal of Consumer Marketing*, *24*(7), 419–427. https://doi.org/10.1108/07363760710834834
Lee, S. (2013). An integrated adoption model for e-books in a mobile environment: Evidence from South Korea. *Telematics and Informatics*, *30*(2), 165–176. https://doi.org/10.1016/j.tele.2012.01.006

Lee, Y., Kozar, K. A., and Larsen, K. R. T. (2003). The Technology Acceptance Model: Past, Present, and Future. *Communications of the Association for Information Systems*, *12*. https://doi.org/10.17705/1CAIS.01250

Lee, Z. W. Y., Chan, T. K. H., Chong, A. Y.-L., and Thadani, D. R. (2019). Customer engagement through omnichannel retailing: The effects of channel integration quality. *Industrial Marketing Management*, *77*, 90–101. https://doi.org/10.1016/j.indmarman.2018.12.004

Legris, P., Ingham, J., and Collerette, P. (2003). Why do people use information technology? A critical review of the technology acceptance model. *Information & Management*, *40*(3), 191–204. https://doi.org/10.1016/S0378-7206(01)00143-4

Lemon, K. N., and Verhoef, P. C. (2016). Understanding Customer Experience Throughout the Customer Journey. *Journal of Marketing*, *80*(6), 69–96. https://doi.org/10.1509/jm.15.0420

Lian, J.-W., and Yen, D. C. (2014). Online shopping drivers and barriers for older adults: Age and gender differences. *Computers in Human Behavior*, *37*, 133–143. https://doi.org/10.1016/j.chb.2014.04.028

Liébana-Cabanillas, F., Ramos de Luna, I., and Montoro-Ríos, F. J. (2015). User behaviour in QR mobile payment system: The QR Payment Acceptance Model. *Technology Analysis & Strategic Management*, *27*(9), 1031–1049. https://doi.org/10.1080/09537325.2015.1047757

Luo, X., Li, H., Zhang, J., and Shim, J. P. (2010). Examining multi-dimensional trust and multi-faceted risk in initial acceptance of emerging technologies: An empirical study of mobile banking services. *Decision Support Systems*, *49*(2), 222–234. https://doi.org/10.1016/j.dss.2010.02.008

Lynch, S., and Barnes, L. (2020). Omnichannel fashion retailing: Examining the customer decision-making journey. *Journal of Fashion Marketing and Management: An International Journal*, *24*(3), 471–493. https://doi.org/10.1108/JFMM-09-2019-0192

Mani, Z., and Chouk, I. (2018). Consumer Resistance to Innovation in Services: Challenges and Barriers in the Internet of Things Era. *Journal of Product Innovation Management*, *35*(5), 780–807. https://doi.org/10.1111/jpim.12463

Marangunić, N., and Granić, A. (2015). Technology acceptance model: A literature review from 1986 to 2013. *Universal Access in the Information Society*, *14*(1), 81–95. https://doi.org/10.1007/s10209-014-0348-1

McColl-Kennedy, J. R., Zaki, M., Lemon, K. N., Urmetzer, F., and Neely, A. (2019). Gaining Customer Experience Insights That Matter. *Journal of Service Research*, *22*(1), 8–26. https://doi.org/10.1177/1094670518812182

Migliore, G., Wagner, R., Cechella, F. S., and Liébana-Cabanillas, F. (2022). Antecedents to the Adoption of Mobile Payment in China and Italy: An Integration of UTAUT2 and Innovation Resistance Theory. *Information Systems Frontiers*. https://doi.org/10.1007/s10796-021-10237-2

Mohr, J., Sengupta, S., and Slater, S. (2005). *Marketing High Technology Products and Innovations* (3rd ed.). Upper Saddle River, NJ: Pearson Prentice Hall.

Molesworth, M., and Suortti, J.-P. (2002). Buying cars online: The adoption of the web for high-involvement, high-cost purchases. *Journal of Consumer Behaviour*, *2*(2), 155–168. https://doi.org/10.1002/cb.97

Moon, J.-W., and Kim, Y.-G. (2001). Extending the TAM for a World-Wide-Web context. *Information & Management*, *38*(4), 217–230. https://doi.org/10.1016/S0378-7206(00)00061-6

Moore, K. (2021). *The Ultimate Guide to QR Codes for Retail Businesses*. Shopify. https://www.shopify.com/retail/qr-codes-retail

Moorthy, K., Ling, C. S., Fatt, Y. W., Yee, C. M., Yin, E. C. K., Yee, K. S., and Wei, L. K. (2017). Barriers of Mobile Commerce Adoption Intention: Perceptions of Generation X in

Malaysia. *Journal of Theoretical and Applied Electronic Commerce Research*, *12*(2), 37–53. https://doi.org/10.4067/S0718-18762017000200004
Morgan, B. (2021). *Customers Don't Want The Technology Experiences Offered By Stores*. Forbes. https://www.forbes.com/sites/blakemorgan/2021/07/19/customers-dont-want-the-technology-experiences-offered-by-stores/ (Accessed 26.05.2022).
Mosquera, A., Pascual, C. O., and Ayensa, E. J. (2017). Understanding the customer experience in the age of omni-channel shopping. *Icono14*, *15*(2), 4.
Neslin, S. A., Grewal, D., Leghorn, R., Shankar, V., Teerling, M. L., Thomas, J. S., and Verhoef, P. C. (2006). Challenges and Opportunities in Multichannel Customer Management. *Journal of Service Research*, *9*(2), 95–112. https://doi.org/10.1177/1094670506293559
Oates, B. J. (2006). *Researching Information Systems and Computing* (1st ed.). UK: SAGE Publications.
Okazaki, S., Li, H., and Hirose, M. (2012). Benchmarking the Use of QR Code in Mobile Promotion: Three Studies in Japan. *Journal of Advertising Research*, *52*(1), 102–117. https://doi.org/10.2501/JAR-52-1-102-117
Okazaki, S., Navarro, A., Mukherji, P., and Plangger, K. (2019). The curious versus the overwhelmed: Factors influencing QR codes scan intention. *Journal of Business Research*, *99*, 498–506. https://doi.org/10.1016/j.jbusres.2017.09.034
Orlikowski, W. J., and Baroudi, J. J. (1991). Studying Information Technology in Organizations: Research Approaches and Assumptions. *Information Systems Research*, *2*(1), 1–28. https://doi.org/10.1287/isre.2.1.1
Ozkaya, E., Ozkaya, H. E., Roxas, J., Bryant, F., and Whitson, D. (2015). Factors affecting consumer usage of QR codes. *Journal of Direct, Data and Digital Marketing Practice*, *16*(3), 209–224. https://doi.org/10.1057/dddmp.2015.18
Pallant, J. (2016). *SPSS Survival Manual: A Step by Step Guide to Data Analysis Using IBM SPSS* (6th ed.). Open University Press.
Pallant, J. (2020). *SPSS Survival Manual: A Step by Step Guide to Data Analysis Using IBM SPSS* (7th ed.). Open University Press.
Pantano, E., and Naccarato, G. (2010). Entertainment in retailing: The influences of advanced technologies. *Journal of Retailing and Consumer Services*, *17*(3), 200–204. https://doi.org/10.1016/j.jretconser.2010.03.010
Parasuraman, A. (2000). Technology Readiness Index (Tri): A Multiple-Item Scale to Measure Readiness to Embrace New Technologies. *Journal of Service Research*, *2*(4), 307–320. https://doi.org/10.1177/109467050024001
Parasuraman, A., and Colby, C. L. (2015). An Updated and Streamlined Technology Readiness Index: TRI 2.0. *Journal of Service Research*, *18*(1), 59–74. https://doi.org/10.1177/1094670514539730
Pine, B., and Gilmore, J. H. (1998). Welcome to the Experience Economy. *Harvard Business Review*, *76*(4), 97–105.
Pinsonneault, A., and Kraemer, K. (1993). Survey Research Methodology in Management Information Systems: An Assessment. *Journal of Management Information Systems*, *10*(2), 75–105. https://doi.org/10.1080/07421222.1993.11518001
Piotrowicz, W., and Cuthbertson, R. (2014). Introduction to the Special Issue Information Technology in Retail: Toward Omnichannel Retailing. *International Journal of Electronic Commerce*, *18*(4), 5–16. https://doi.org/10.2753/JEC1086-4415180400
Poddar, A., Donthu, N., and Wei, Y. (2009). Web site customer orientations, Web site quality, and purchase intentions: The role of Web site personality. *Journal of Business Research*, *62*(4), 441–450. https://doi.org/10.1016/j.jbusres.2008.01.036
Radner, R., and Rothschild, M. (1975). On the allocation of effort. *Journal of Economic Theory*, *10*(3), 358–376. https://doi.org/10.1016/0022-0531(75)90006-X

Ram, S. (1987). A Model of Innovation Resistance. *ACR North American Advances*, *NA-14*. https://www.acrwebsite.org/volumes/6688/volumes/v14/NA-14/full
Ram, S., and Sheth, J. N. (1989). Consumer Resistance to Innovations: The Marketing Problem and its solutions. *Journal of Consumer Marketing*, *6*(2), 5–14. https://doi.org/10.1108/EUM0000000002542
Rapp, A., Baker, T. L., Bachrach, D. G., Ogilvie, J., and Beitelspacher, L. S. (2015). Perceived customer showrooming behavior and the effect on retail salesperson self-efficacy and performance. *Journal of Retailing*, *91*(2), 358–369. https://doi.org/10.1016/j.jretai.2014.12.007
Rejón-Guardia, F., and Luna-Nevarez, C. (2017). "Showrooming" in Consumer Electronics Retailing: An Empirical Study. *Journal of Internet Commerce*, *16*(2), 174–201. https://doi.org/10.1080/15332861.2017.1305812
Rigby, D. K. (2011). The Future of Shopping. *Harvard Business Review*, 18.
Rodríguez-Torrico, P., San José Cabezudo, R., and San-Martín, S. (2017). Tell me what they are like and I will tell you where they buy. An analysis of omnichannel consumer behavior. *Computers in Human Behavior*, *68*, 465–471. https://doi.org/10.1016/j.chb.2016.11.064
Rogers, E. M. (1983). *Diffusion of Innovations* (3rd ed.). New York: The Free Press.
Roggeveen, A. L., Grewal, D., Townsend, C., and Krishnan, R. (2015). The Impact of Dynamic Presentation Format on Consumer Preferences for Hedonic Products and Services. *Journal of Marketing*, *79*(6), 34–49. https://doi.org/10.1509/jm.13.0521
Rooderkerk, R. P., and Kök, A. G. (2019). Omnichannel Assortment Planning. In S. Gallino and A. Moreno (Eds.), *Operations in an Omnichannel World* (51–86). Springer International Publishing. https://doi.org/10.1007/978-3-030-20119-7_4
Roy, S. K., Balaji, M. S., Quazi, A., and Quaddus, M. (2018). Predictors of customer acceptance of and resistance to smart technologies in the retail sector. *Journal of Retailing and Consumer Services*, *42*, 147–160. https://doi.org/10.1016/j.jretconser.2018.02.005
Ryu, J. S. (2013). Mobile Marketing Communications in the Retail Environment: A Comparison of Qr Code Users and Non-Users. *International Journal of Mobile Marketing*, *8*(2), 19–29.
Ryu, J. S., and Murdock, K. (2013). Consumer acceptance of mobile marketing communications using the QR code. *Journal of Direct, Data and Digital Marketing Practice*, *15*(2), 111–124. https://doi.org/10.1057/dddmp.2013.53
Sago, B. (2011). The Usage Level and Effectiveness of Quick Response (QR) Codes for Integrated Marketing Communication Purposes among College Students. *International Journal of Integrated Marketing Communications*, *3*(2), 7–17.
Santos, S., and Gonçalves, H. M. (2021). The consumer decision journey: A literature review of the foundational models and theories and a future perspective. *Technological Forecasting and Social Change*, *173*, 121117. https://doi.org/10.1016/j.techfore.2021.121117
Schmitt, B. (1999). Experiential Marketing. *Journal of Marketing Management*, *15*(1–3), 53–67. https://doi.org/10.1362/026725799784870496
Shankar, V., Kalyanam, K., Setia, P., Golmohammadi, A., Tirunillai, S., Douglass, T., Hennessey, J., Bull, J. S., and Waddoups, R. (2021). How Technology is Changing Retail. *Journal of Retailing*, *97*(1), 13–27. https://doi.org/10.1016/j.jretai.2020.10.006
Shin, D.-H., Jung, J., and Chang, B.-H. (2012). The psychology behind QR codes: User experience perspective. *Computers in Human Behavior*, *28*(4), 1417–1426. https://doi.org/10.1016/j.chb.2012.03.004
Silverman, D. (2020). *Interpreting Qualitative Data* (6th ed.). Thousand Oakes, CA: SAGE Publications Ltd.
Sundström, M., Radon, A., and Wallström, S. (2015). Don't Forget Consumer Value – Investigating Consumer Attitudes toward QR-codes. *International Journal of Innovation in Management*, *3*(2), 57–66.

Szopiński, T. S., Bachnik, K., and Nowacki, R. (2020). Cross-channel information search and patterns of consumer electronics purchasing. *Economic Research-Ekonomska Istraživanja*, *33*(1), 2806–2824. https://doi.org/10.1080/1331677X.2019.1691037
Tabachnick, B. G., and Fidell, L. S. (2013). *Using Multivariate Statistics* (6th ed.). Boston: Person Education.
Talke, K., and Heidenreich, S. (2014). How to Overcome Pro-Change Bias: Incorporating Passive and Active Innovation Resistance in Innovation Decision Models. *Journal of Product Innovation Management*, *31*(5), 894–907. https://doi.org/10.1111/jpim.12130
Tanner, S. A., McCarthy, M. B., and O'Reilly, S. J. (2019). Digital labelling in the retail environment: A domain-specific innovativeness perspective. *International Journal of Retail & Distribution Management*, *47*(12), 1336–1352. https://doi.org/10.1108/IJRDM-08-2018-0175
Teo, T. S. H., and Pok, S. H. (2003). Adoption of WAP-enabled mobile phones among Internet users. *Omega*, *31*(6), 483–498. https://doi.org/10.1016/j.omega.2003.08.005
Trivedi, R., Teichert, T., and Hardeck, D. (2019). Effectiveness of pull-based print advertising with QR codes: Role of consumer involvement and advertisement appeal. *European Journal of Marketing*, *54*(1), 145–167. https://doi.org/10.1108/EJM-06-2018-0383
Tueanrat, Y., Papagiannidis, S., and Alamanos, E. (2021). Going on a journey: A review of the customer journey literature. *Journal of Business Research*, *125*, 336–353. https://doi.org/10.1016/j.jbusres.2020.12.028
van der Heijden, H. (2004). User Acceptance of Hedonic Information Systems. *MIS Quarterly*, *28*(4), 695–704. https://doi.org/10.2307/25148660
Venkatesh, V., and Davis, F. D. (2000). A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. *Management Science*, *46*(2), 186. https://doi.org/10.1287/mnsc.46.2.186.11926
Venkatesh, V., Thong, J. Y. L., and Xu, X. (2012). Consumer Acceptance and Use of Information Technology: Extending the Unified Theory of Acceptance and Use of Technology. *MIS Quarterly*, *36*(1), 157–178. https://doi.org/10.2307/41410412
Verhoef, P. C., Kannan, P. K., and Inman, J. J. (2015). From Multi-Channel Retailing to Omni-Channel Retailing: Introduction to the Special Issue on Multi-Channel Retailing. *Journal of Retailing*, *91*(2), 174–181. https://doi.org/10.1016/j.jretai.2015.02.005
Verhoef, P. C., Lemon, K. N., Parasuraman, A., Roggeveen, A., Tsiros, M., and Schlesinger, L. A. (2009). Customer Experience Creation: Determinants, Dynamics and Management Strategies. *Journal of Retailing*, *85*(1), 31–41. https://doi.org/10.1016/j.jretai.2008.11.001
von Briel, F. (2018). The future of omnichannel retail: A four-stage Delphi study. *Technological Forecasting and Social Change*, *132*, 217–229. https://doi.org/10.1016/j.techfore.2018.02.004
Vroom, V. H. (1964). *Work and Motivation*. Oxford, England: Wiley.
Warshaw, P. R., and Davis, F. D. (1985). Disentangling behavioral intention and behavioral expectation. *Journal of Experimental Social Psychology*, *21*(3), 213–228. https://doi.org/10.1016/0022-1031(85)90017-4
Webster, J., and Watson, R. T. (2002). Analyzing the Past to Prepare for the Future: Writing a Literature Review. *MIS Quarterly*, *26*(2), xiii–xxiii. JSTOR.
White, R. W. (1959). Motivation reconsidered: The concept of competence. *Psychological Review*, *66*(5), 297–333. https://doi.org/10.1037/h0040934
Willems, K., Smolders, A., Brengman, M., Luyten, K., and Schöning, J. (2017). The path-to-purchase is paved with digital opportunities: An inventory of shopper-oriented retail technologies. *Technological Forecasting and Social Change*, *124*, 228–242. https://doi.org/10.1016/j.techfore.2016.10.066

Wilson, M. (2021). *Forrester: Physical stores to account for 72% of U.S. retail sales in 2024*. Chain Store Age. https://chainstoreage.com/forrester-physical-stores-account-72-us-retail-sales-2024 (Accessed 26.05.2022).
Woo, E. (2021). QR Codes Are Here to Stay. So Is the Tracking They Allow. *The New York Times*. https://www.nytimes.com/2021/07/26/technology/qr-codes-tracking.html (Accessed 26.05.2022).
Workman, J. E., and Studak, C. M. (2006). Fashion consumers and fashion problem recognition style. *International Journal of Consumer Studies*, *30*(1), 75–84. https://doi.org/10.1111/j.1470-6431.2005.00451.x
Wu, J.-H., and Wang, S.-C. (2005). What drives mobile commerce?: An empirical evaluation of the revised technology acceptance model. *Information & Management*, *42*(5), 719–729. https://doi.org/10.1016/j.im.2004.07.001
Yan, L.-Y., Tan, G. W.-H., Loh, X.-M., Hew, J.-J., and Ooi, K.-B. (2021). QR code and mobile payment: The disruptive forces in retail. *Journal of Retailing and Consumer Services*, *58*, 102300. https://doi.org/10.1016/j.jretconser.2020.102300
Zaltman, G., and Wallendorf, M. (1983). *Consumer behavior, basic findings and management implications*. New York: John Wiley & Sons.
Zhang, M., Ren, C., Wang, G. A., and He, Z. (2018). The impact of channel integration on consumer responses in omni-channel retailing: The mediating effect of consumer empowerment. *Electronic Commerce Research and Applications*, *28*, 181–193. https://doi.org/10.1016/j.elerap.2018.02.002

Appendices

Appendix 1 – Interview Guide

INTERVIEW 1 - head of brand and digital

Omnichannel and customer journey

1. What comes to your mind when we say omnichannel retailing?
2. Do you have an omnichannel customer experience strategy per today?
3. What is the strategy behind the customer journey?
4. What is the goal?
5. What channels do you use, and what are the different points of contact in the customer journey?
6. How do you differentiate yourself from the digital competitors?
7. What kind of instore technology do you use?

QR-Code and Instore technology

8. Mobile can bridge the gap between online and physical store, what do you think about this?
9. Why do you use QR-codes instore?
10. Have employees received adequate training or information about the benefits / opportunities of using QR-codes? If so, what kind, and if not, why not?
11. Statistics on the usage of QR-codes - do you have an overview of how many customers use the QR-codes?
12. What was the strategy behind the use of QR-codes on the TV surfaces and price displays?
13. Why do you think customers will use them at all?

INTERVIEW 2 – In store staff

1. Do customers use the QR-codes in the store?
2. Have you received any training on the use of QR-codes? If so, what kind of training?

Appendix 2 – Measurement Scale

Scale (Cronbach's alpha)	Statement (item)	Source
Personal innovativeness (0.788)	Other people come to me for advice on new technologies / *Andre kommer til meg for å få råd om nye teknologier*	Parasuraman and Colby, 2015; Roy et al., 2018
	I can usually figure out new high-tech products and services without the help from others / *Jeg kan vanligvis ta i bruk nye teknologiske produkter og tjenester uten hjelp fra andre*	Parasuraman and Colby, 2015; Roy et al., 2018
	In general, I am among the first in my circle of friends to acquire new technology when it appears / *Generelt er jeg blant de første i min omgangskrets som anskaffer seg ny teknologi når den dukker opp på markedet*	Parasuraman and Colby, 2015; Roy et al., 2018
	I keep up with the latest technological developments in my area of interest / *Jeg holder meg oppdatert på teknologisk utvikling innenfor mitt interessefelt*	Parasuraman and Colby, 2015; Roy et al., 2018
Tradition barrier (0.723)	Human contact in providing instore services in an electronic goods retailer makes the process enjoyable / *Menneskelig kontakt i forbindelse med betjening av meg som kunde i en elektronikkbutikk gjør kjøpsprosessen fornøyelig*	Mani and Chouk, 2018
	I like interacting with sales advisors in store of an electronic goods retailer / *Jeg liker å samhandle med salgsrådgivere i elektronikk butikker*	Mani and Chouk, 2018
	Personal attention by the sales advisor is not important to me when shopping at an electronic goods retailer **(r)** / *Personlig oppmerksomhet fra salgsrådgiveren er ikke viktig for meg når jeg handler elektronikk **(r)***	Mani and Chouk, 2018
Image barrier (0.610) (inter-item correlation: 0.343)	I have such an image that QR-codes are difficult to use in the context of information search and product evaluation of electronic goods / *Jeg har en oppfatning at QR-koder er vanskelig å bruke til informasjonssøk og vurdering av ulike elektroniske produkter*	Laukkanen et al., 2007
	I have a very positive image of QR-codes for the use of information search and product evaluation in the context of electronic goods **(r)** / *Jeg har et veldig positivt inntrykk av QR-koder i forbindelse med informasjonssøk og vurdering av ulike elektroniske produkter* **(r)**	Laukkanen et al., 2007
	In my opinion, new technology is often too complicated to be useful / *I min mening, er ny teknologi ofte for vanskelig til at det er nyttig*	Laukkanen et al., 2007
Risk barrier (0.851)	The risk that an unauthorized third party can oversee my instore behavior is high when using QR-codes for information search and product consideration at an electronic goods retailer / *Risikoen for at en uautorisert tredjepart kan overvåke oppførselen min i butikk er høy ved bruk av QR-koder for informasjon søk og produktvurdering hos en elektronikkbutikk*	Mani and Chouk, 2018
	The risk of the retailer abusing my usage information and data is high when using QR-codes for information search and product consideration at an electronic goods retailer / *Risikoen for at forhandleren misbruker bruksinformasjon og datane mine er høy ved bruk av QR-koder for informasjon søk og produktvurdering hos en elektronikkbutikk*	Mani and Chouk, 2018

	I am concerned that my private information using QR-codes can be disclosed when I search for information and consider consumer electronic products / *Jeg er bekymret for at mine private data blir lekket ved bruk av QR-koder når jeg søker etter informasjon og vurderer elektroniske produkter hos en elektronikkbutikk*	Lee, 2013
Usage barrier (0.788)	The use of QR-codes for information search and product consideration fits well with my lifestyle and existing routines / *Bruk av QR-koder for informasjonssøk og produktvurdering passer godt med mine daglige rutiner*	Liébana-Cabanillas et al., 2015
	The use of QR-code use is consistent with the way I like to search for information and consider different products / *Bruken av QR-koder er i samsvar med måten jeg liker å søke etter informasjon og vurdere ulike produkter*	Liébana-Cabanillas et al., 2015
	I would use QR-codes over other kinds of information search and product consideration tool, including sales advisors and the internet, when buying electronic products / *Jeg ville brukt QR-koder over andre typer informasjonssøk og produktvurderingsverktøy, inkludert salgsrådgivere og internett/mobilen, når jeg handler elektronikk*	Liébana-Cabanillas et al., 2015
Value barrier (0.622) (inter-item correlation: 0.354)	I think the equipment (i.e., a mobile device and/or an app) cost associated with the use of QR-codes is expensive / *Jeg synes at kostnadene for utstyr (dvs. mobilenheter og/eller en app) knyttet til bruk av QR-koder er dyrt*	Wu and Wang, 2005
	I think the use of QR-code is costly / *Jeg mener bruken av QR-kode er kostbart*	Mani and Chouk, 2018
	QR-codes do not offer any superior functions or advantages compared to other means of conducting information search and product evaluation / *QR-koder tilbyr ingen fordelaktige funksjoner sammenlignet med andre måter å finne produkt informasjon og evaluere forskjellige produkt alternativer*	Laukkanen et al., 2007
Percieved usefulness (0.880)	Using QR-codes improves my prepurchase fase (i.e., information search and product consideration) when buying electronic goods / *Bruk av QR-koder forbedrer førkjøpsfasen (dvs informasjonssøk og vurdering av produktalternativer) når jeg handler elektroniske produkter*	Davis, 1986; Venkatesh and Davis, 2000
	Using QR-codes increases my productivity (I spend less time) in the process of information search and product consideration / *Bruk av QR-koder reduserer tiden jeg bruker i forbindelse med informasjonssøk og vurdering av produktalternativer*	Davis, 1986; Venkatesh and Davis, 2000
	I find QR-codes to be useful for information search and product evaluation when considering electronic products / *Totalt sett mener jeg at QR-koder er nyttige for informasjonssøk og vurdering av produkt alternativer i en førkjøpsprosess av elektroniske produkter*	Davis, 1986; Venkatesh and Davis, 2000
	Using QR-codes makes it easier to search for and find product information and consider different products alternatives / *Bruk av QR-koder gjør det lettere å søke etter og finne produkt informasjon og vurdere ulike produkter når jeg vurderer elektroniske produkter*	Davis, 1986; Gefen and Straub, 2000
Percieved ease-of-use (0.787)	My interaction with QR-codes when searching for information and evaluating products is clear and understandable / *Min samhandling*	Davis, 1986; Gefen and Straub, 2000; Venkatesh and Davis, 2000

	med QR-koder i forbindelse med informasjonssøk og vurdering av produkt alternativer oppleves som tydelig og forståelig	
	I find QR-codes to be easy to use when searching for information and evaluating product / *Jeg synes QR-koder er enkle å bruke når jeg søker etter informasjon og vurderer ulike produkter*	Davis, 1986; Gefen and Straub, 2000; Venkatesh and Davis, 2000
	QR-codes are intuitive and it easy to get them to do what I want them to do / *QR-koder er intuitive, og jeg synes det er enkelt å få de til å gjøre det jeg vil at de skal gjøre*	Davis, 1986; Gefen and Straub, 2000; Venkatesh and Davis, 2000
	Learning to operate QR-codes is easy for me / *Jeg synes det er lett å lære hvordan man bruker QR-koder*	Davis, 1986; Gefen and Straub, 2000
Percieved enjoyment (0.884)	I think it is fun to use QR-codes / *Jeg synes det generelt er gøy å bruke QR-koder*	Davis 1993, Childers et al., 2001; Venkatesh et al., 2012
	Interacting with QR-codes for information search and evaluating product alternatives is enjoyable / *Prosessen med å bruke QR-koder i forbindelse med informasjonssøk og vurdering av produktalternativer er fornøyelig*	Childers et al., 2001; Venkatesh et al., 2012
	I think it is boring to use QR-codes in the context of information search and product consideration **(r)** / *Det er kjedelig å bruke QR-koder i forbindelse med informasjonssøk og vurdering av produktalternativer* **(r)**	Childers et al., 2001
Behavioral intention (0.861)	I intend to use QR-codes for information search and consideration in the context of electronic goods in the near future / *Hvis jeg får sjansen, så tenker jeg å bruke QR-koder i forbindelse med informasjonssøk og vurdering av produktalternativer når jeg handler elektronikk i nær fremtid*	Venkatesh and Davis, 2000; Venkatesh et al., 2012
	I will use QR-codes to find out more about products and evaluating different alternatives when buying electronic goods / *Jeg vil fortsette å bruke QR-koder til å finne informasjon om produkter og vurdere produktalternativer når jeg handler elektroniske produkter*	Venkatesh and Davis, 2000; Venkatesh et al., 2012

Note: (r) = reversed coded items

Appendix 3 – Survey Consent Form

Thank you for participating in the survey. It takes about 5-7 minutes, and in this writing we provide you with information about the goals of the research project and what participation will mean for you.

Purpose of the Study
You will help us to complete our Master's Thesis at Kristiania University College, which about how QR-codes in physical stores can improve your customer journey. We are therefore interested in your opinions about using QR-codes for finding information about products and evaluating different products.

What participation means to you
You have been invited to participate because you subscribe to company X's newsletters - a company that has agreed to help us collect data. The questionnaire is open until Sunday April 3rd, 2022. All questions must be answered, but we do not collect sensitive data and participation is completely voluntary. You cannot be recognized or identified in our project. We only ask for your e-mail so we can contact you if you win one of the three gift cards worth NOK 1,000 that company X will give three random participants. We will only use the information about you for the purpose told about here, and after the winners have been contacted during week 14 2022, we will delete all contact information. We treat the information about you confidentially and in accordance with the GDPR. All data will be deleted when the project ends / the assignment is approved, which according to the plan is 17.06.2022. Until then, the data is stored electronically in Nettskjema.no - Norway's most secure solution for data collection for research.

You can end the survey at any time, but to be in the drawing of a gift card, it must be completed. You can, however, withdraw your participation before week 15, 2022 without providing a reason by sending an email to kikj001@student.kristiania.no. Your answers and personal information will then be deleted, and it will not have any negative consequences for you or us.

Who is responsible?
Responsible for this project are Margrete Nodeland and Kimberley Kjeldsen (students at Kristiania University College) and Asle Fagerstrøm (supervisor and faculty at Kristiania University College). Only us have access to and will process the data collected.

Declaration of consent
We process information about you based on your consent. Check the box if you have understood the purpose of the project and want to continue with the questionnaire. If you have any questions, you can contact us by e-mail at kikj001@student.kristiania.no

On behalf of Kristiania University College, NSD - Norwegian Center for Research Data AS has assessed that the processing of personal data in this project is in accordance with privacy regulations.

Appendix 4 – Codebook

SPSS variable name	Full variable name	Coding instructions	Measurement scale
Id	Identification number	Identification number	Scale
Age	Age	1=>19, 2=20-29, 3=30-39, 4=40-49, 5=50-59, 6=60-69, 7=<70	Ordinal
Gender	Gender	1=Male, 2=Female, 3=wish not to reply	Nominal
Experience	Prior QR Experience	1=yes, 2=no	Nominal
PI1 to PI4	Personal innovativeness		Scale
TB1 to TB3	Tradition barrier		Scale
IB1 to IB3	Image barrier		Scale
RB1 to RB3	Risk barrier		Scale
UB1 to UB3	Usage barrier		Scale
VB1 to VB3	Value barrier		Scale
PU1 to PU4	Perceived usefulness		Scale
PEOU1 to PEOU4	Perceived ease of use		Scale
PE1 to PE3	Perceived enjoyment		Scale
BI1 to BI2	Behavioral intention		Scale
RTB3	Reversed TB3		Scale
RIB2	Reversed IB2		Scale
RPE3	Reversed PE3		Scale
TPI	Total Personal innovativeness		Scale
TTB	Total Tradition barrier		Scale
TIB	Total Image barrier		Scale
TRB	Total Risk barrier		Scale
TVB	Total Value barrier		Scale
TPU	Total Perceived usefulness		Scale
TPEOU	Total Perceived ease of use		Scale
TPE	Total Perceived enjoyment		Scale
TBI	Total Behavioral intention		Scale

Appendix 5 – Conjoint Analysis Consent Form

General information:
Please read this page so that you can find out more about the research and decide if you wish to take part in our study.

Title of Project:
Instore shopping and QR-codes

Researchers behind the study:
Our names our Margrete Nodeland and Kimberley Kjeldsen. We are Graduate students at Kristiania University. This study is a part of our Master thesis. If you have any questions regarding the study, you can contact us at kikj001@student.kristiania.no.

Purpose of the research:
The aim of this study is to gain a better understanding of what type of information and services people are looking for when using QR-codes for product information and product evaluation in physical retail stores.

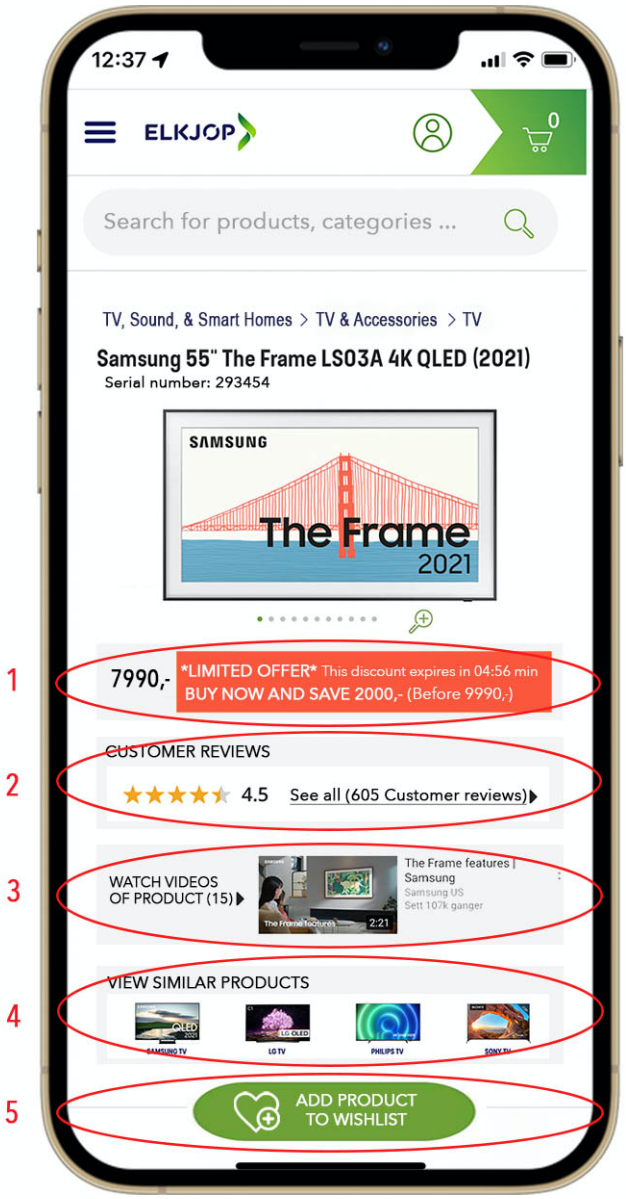
What your participation involves:
Your participation will involve evaluating 20 hypothetical scenarios and answering three questions pertaining to each scenario. The survey should take approximately 15 minutes.

Confidentiality:
This study is completely anonymous. No sensitive or personally identifiable information will be collected.

Disclaimer:
You are free to decide whether you want to participate in this research. If you decide not to participate, you may withdraw at any time without negative consequences. Please close this window if you would like to withdraw from participating in the survey. By proceeding, you confirm that your participation is voluntary and at your own discretion. By clicking the "next page" button below you agree that you have read and understood this information and give consent to take part in this survey.

We thank you in advance for participating in the study.

Appendix 6 – An Example Stimulus Card



Appendix 7 – Conjoint Analysis Interview Guide

Note: these interviews were conduct subsequently to survey pilot and the respondents were presented with the following information:

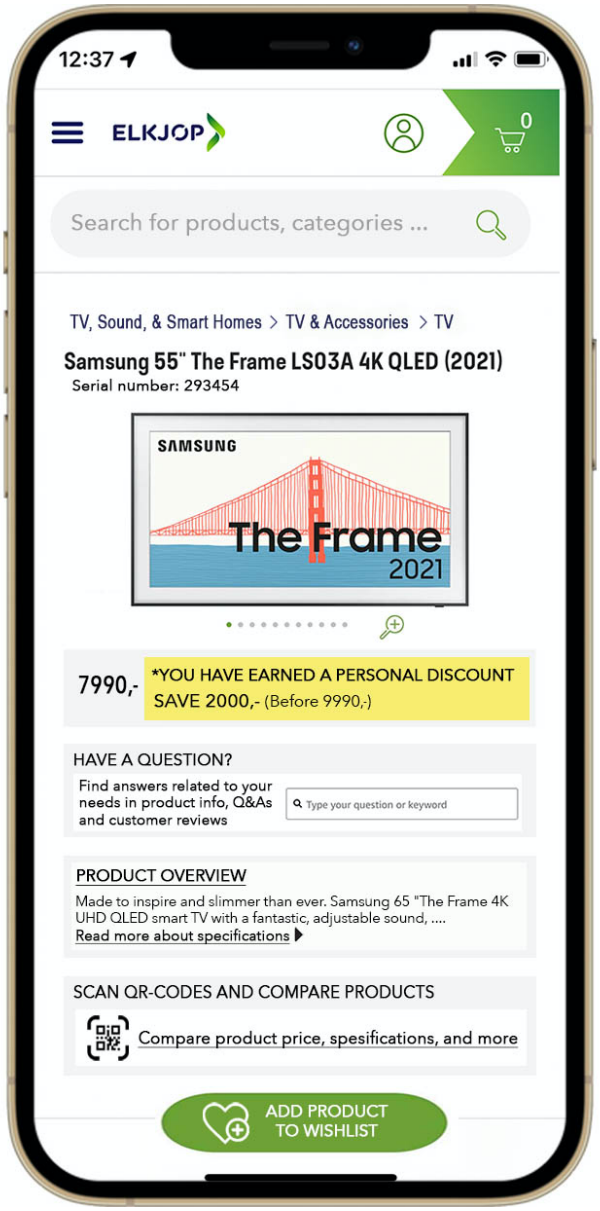
Thank you very much for participating in the survey. The survey is completely anonymous and takes about 10 minutes. We greatly appreciate your participation. You will be helping us complete our Master Thesis, which is about retailers' use of technology to improve the customer journey. Below are questions related to how the use of QR-codes can help you as a customer through the prepurchase phase of the customer journey. The phase in which you know you need something but need more information about the product to be able to compare the product with similar or related products before you decide to either complete or postpone the purchase.

When answering the questions, it is important that you relate to a decision-making process, such as purchasing a new TV. Scan the QR-code with your mobile camera and follow the link that appears. Look at the content and think about what you get out of the information before answering the questions we will ask.

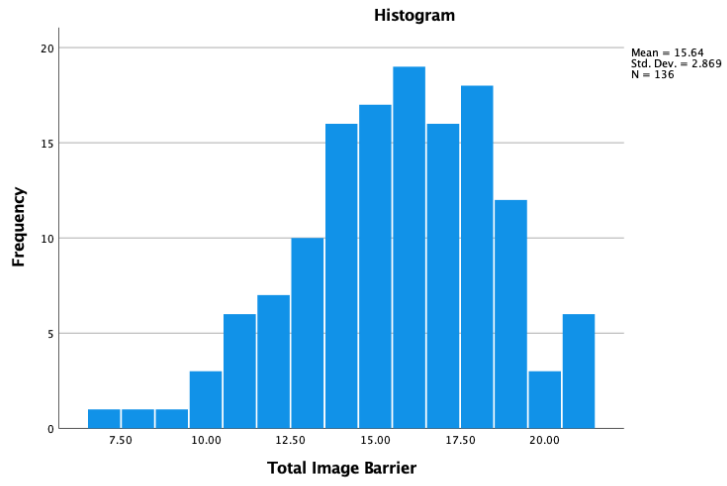
The customers were asked the following questions:

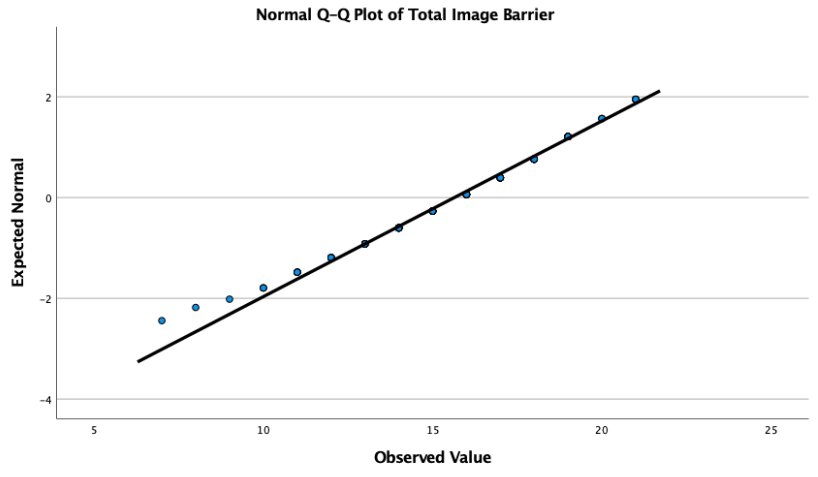
1. What type of information, content and attributes are important for you when you scan a QR-code for product information and product evaluation?
2. What do you think would make this QR-codes more useful and is there anything that could make it more useful?
3. What would make you more enthusiastic about using this QR-code (i.e., what would make you enjoy using it more)?

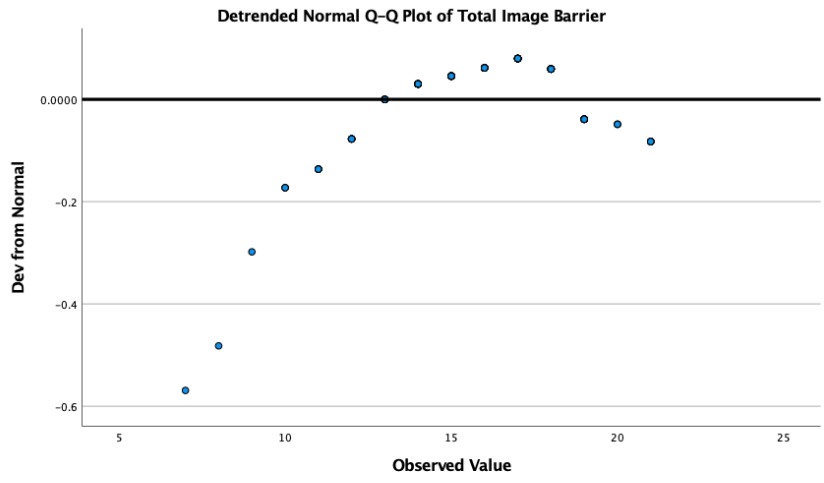
Appendix 8 – Stimulus Card

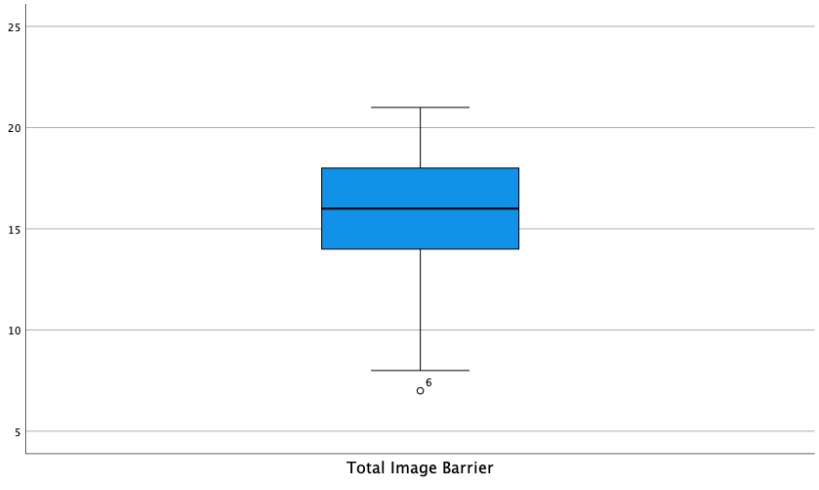


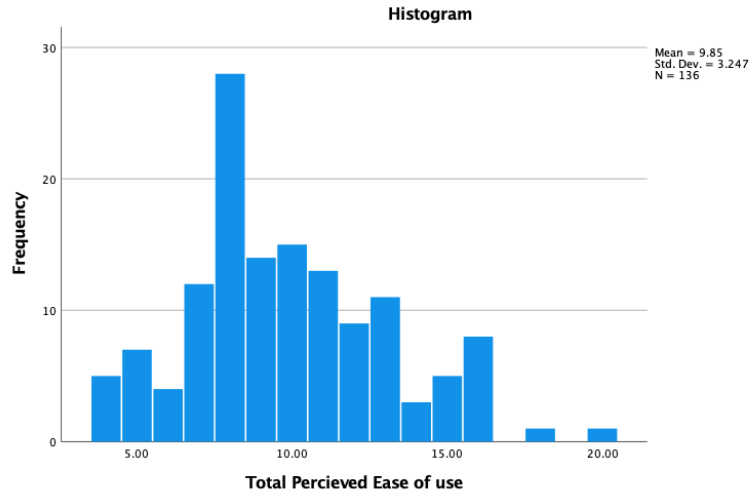
Appendix 9 – Histograms, Normal and Detrenched Normal QQ-plots, and boxplots for IB and PEOU

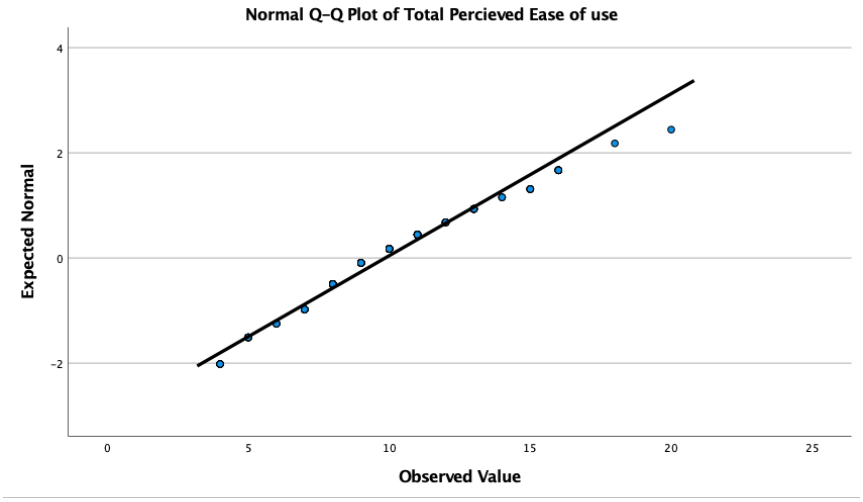


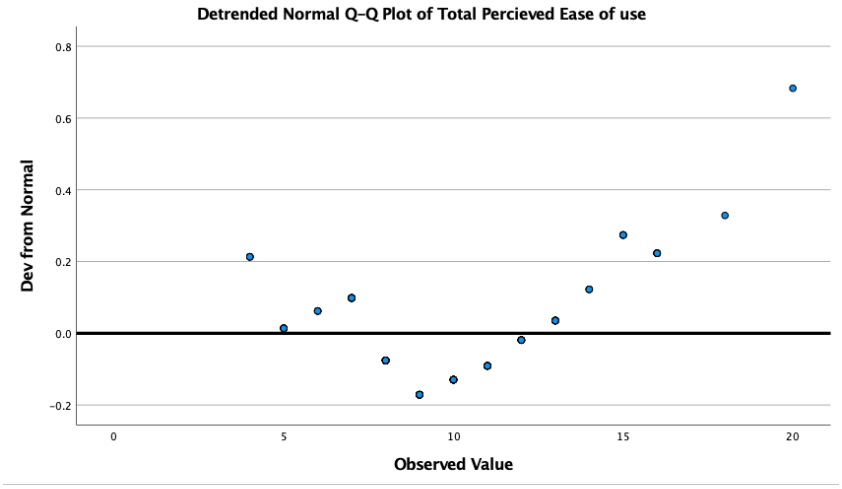


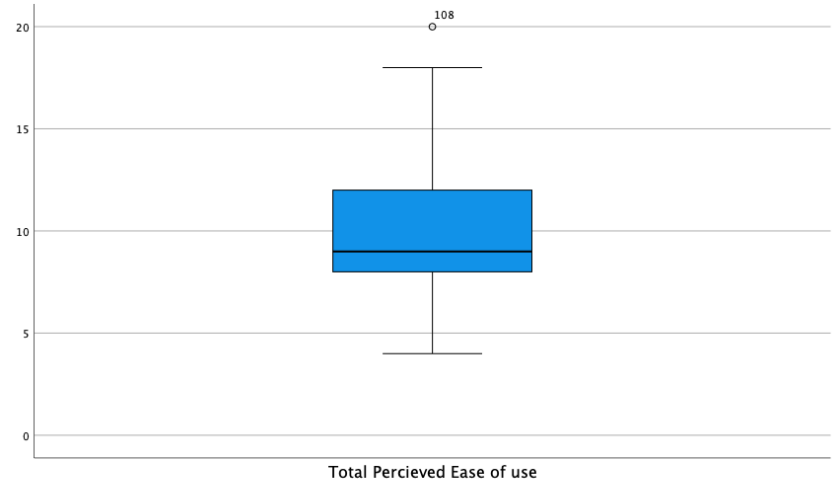



25
20
15
10
5
6
Total Image Barrier

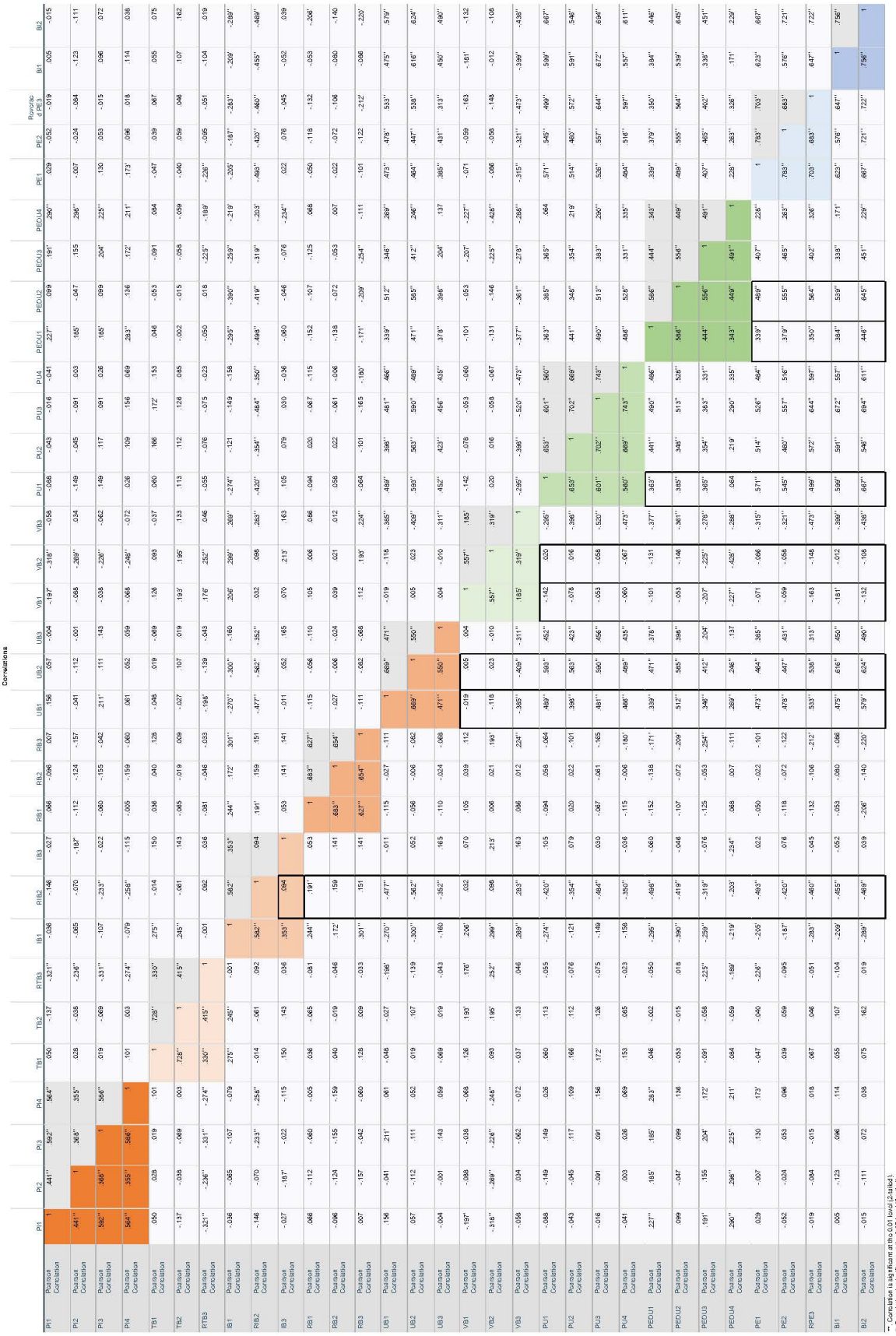

Histogram
Mean = 9.85
Std. Dev. = 3.247
N = 136
Frequency
30
20
10
0
5.00
10.00
15.00
20.00
Total Percieved Ease of use


Normal Q-Q Plot of Total Percieved Ease of use
Expected Normal
4
2
0
-2
0
5
10
15
20
25
Observed Value


Detrended Normal Q–Q Plot of Total Percieved Ease of use
Dev from Normal
0.8
0.6
0.4
0.2
0.0
-0.2
0
5
10
15
20
Observed Value

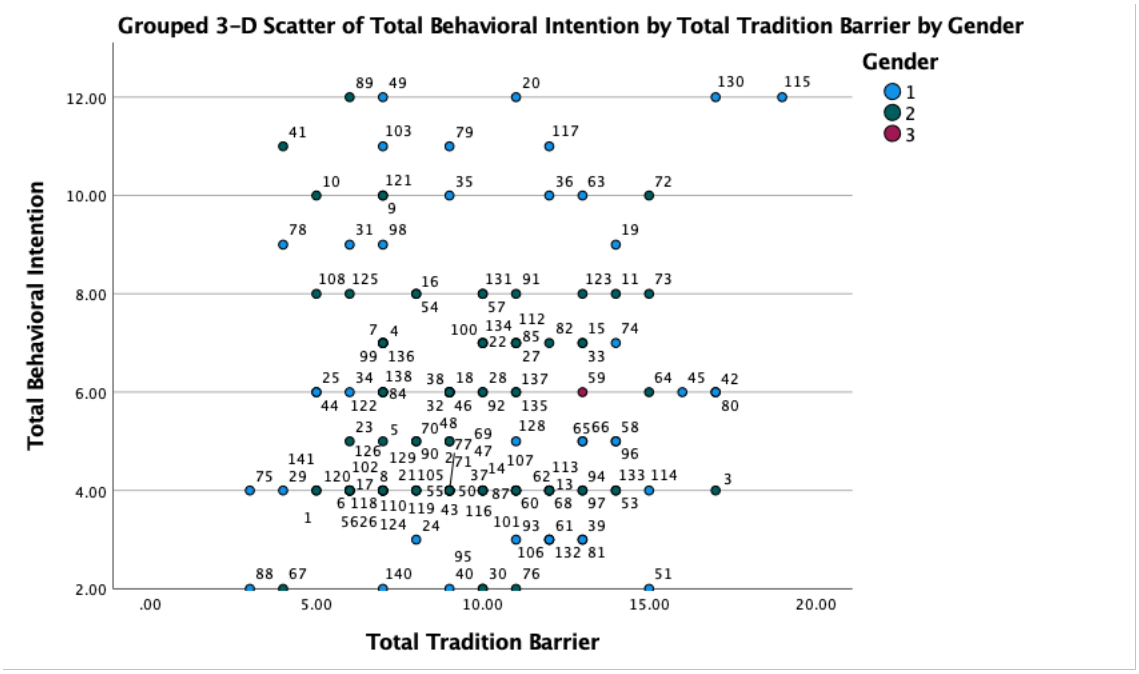

108
20
15
10
5
0
Total Percieved Ease of use

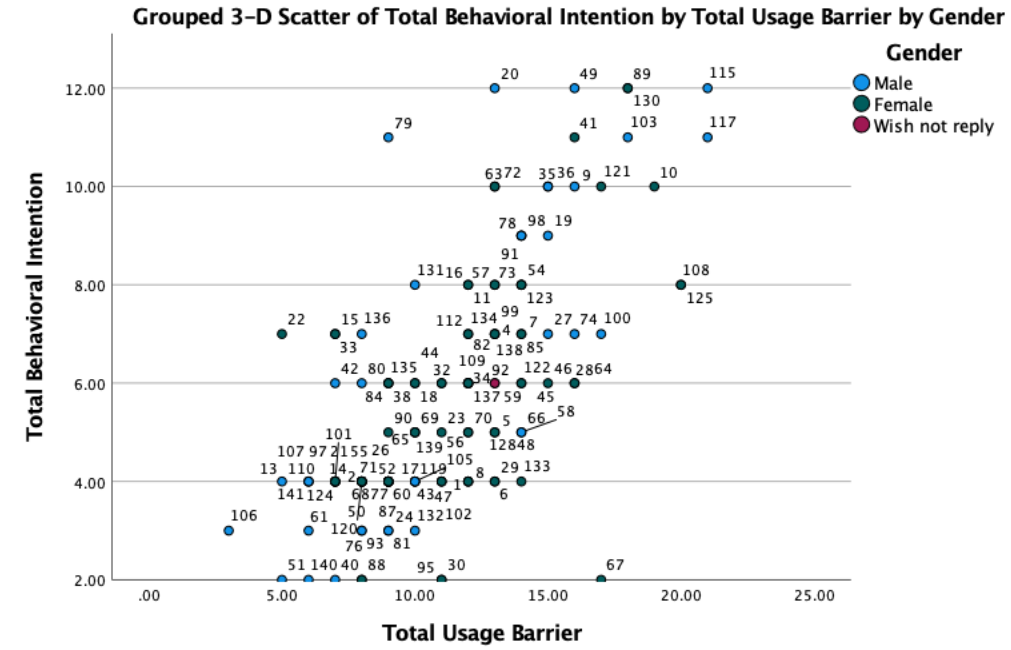
Appendix 10 - Inter-items Correlations Matrix

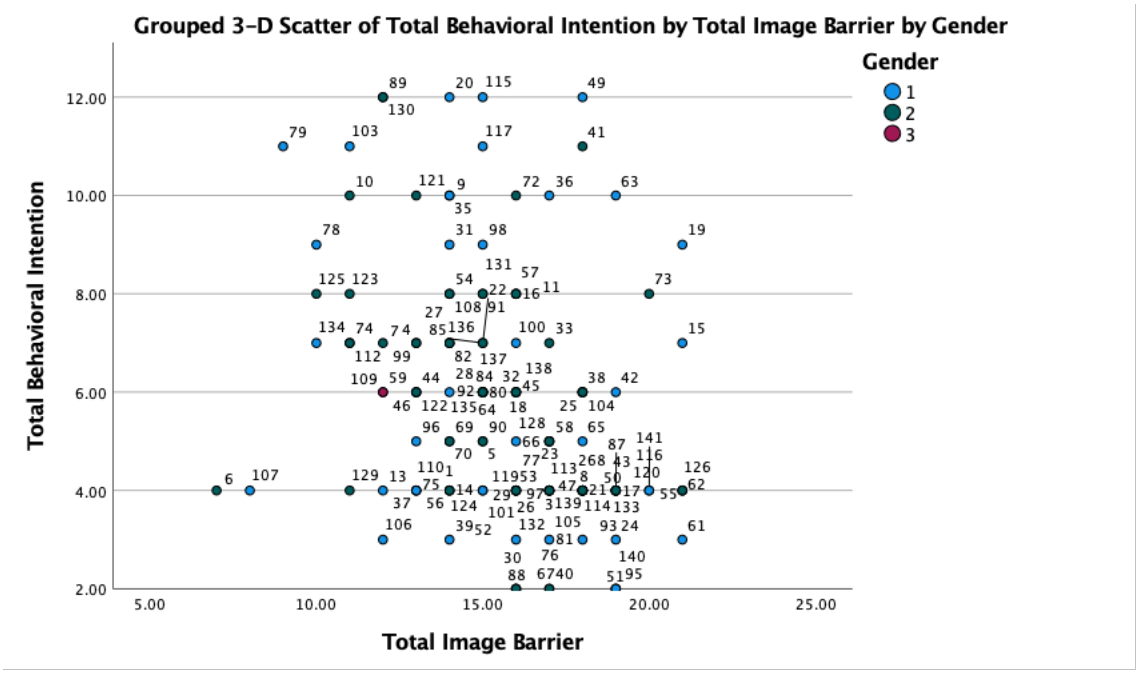


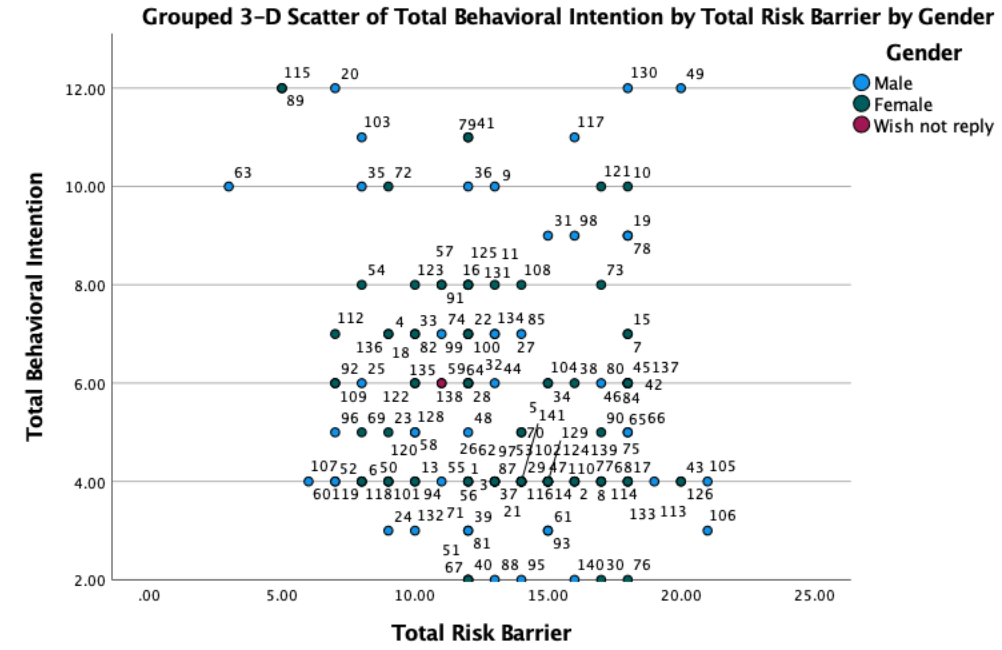
Title: **Adoption and Impact of QR-codes in an Omnichannel Customer Experience; The Perspective of Consumer Electronics**
Student number: 871183, 865236

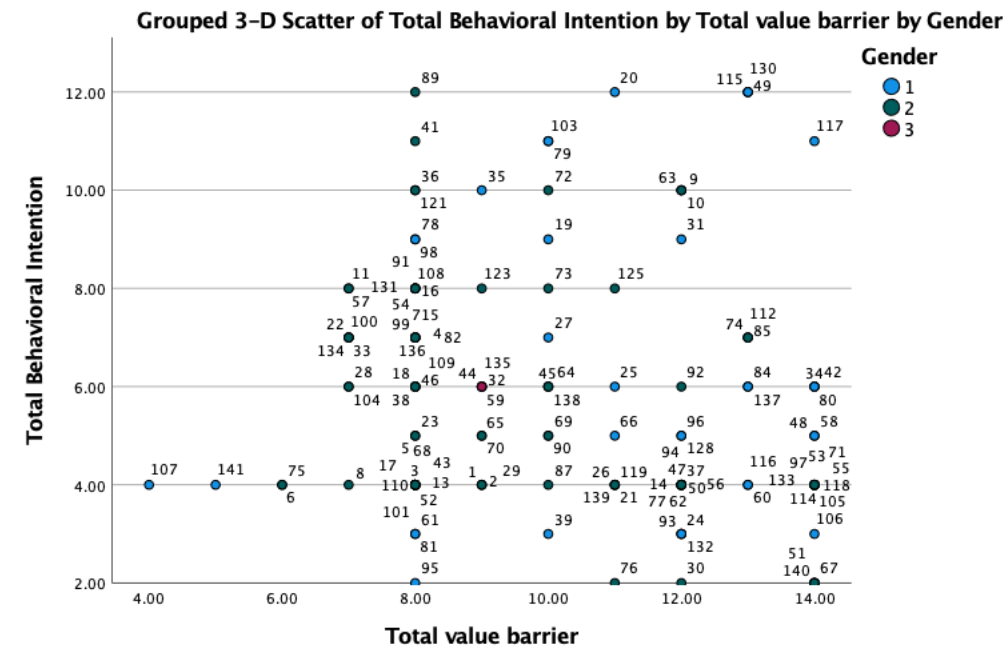
Appendix 11 – Scatterplots

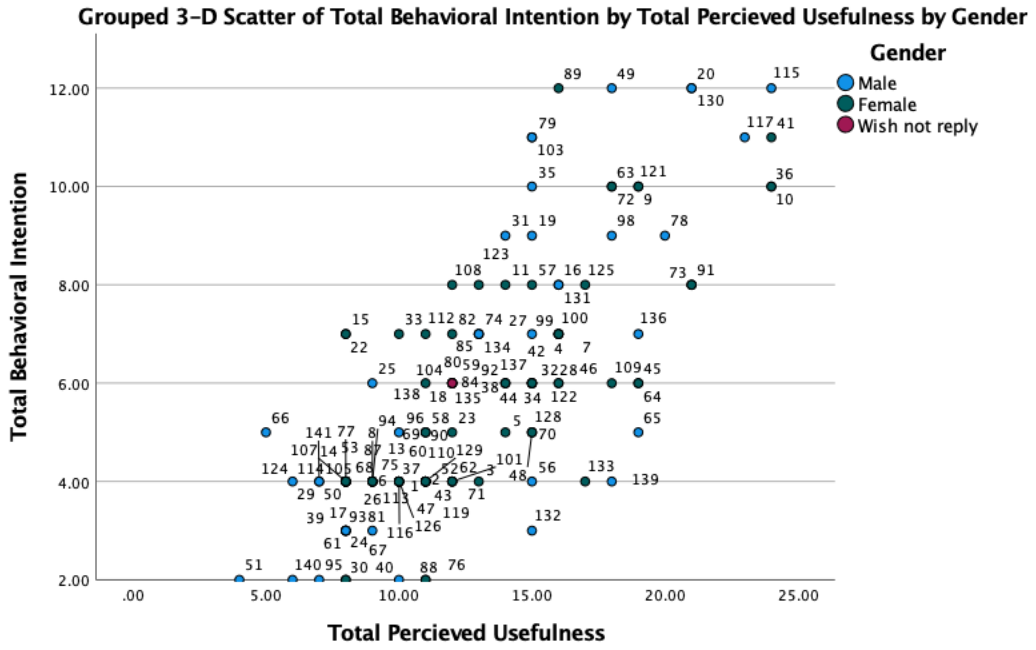


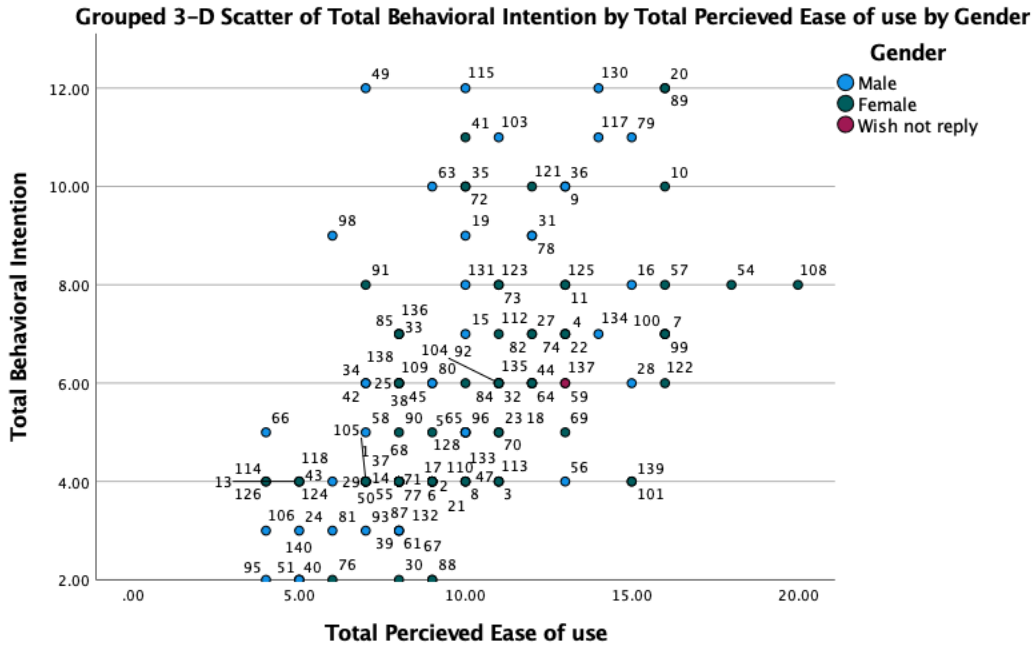

Grouped 3-D Scatter of Total Behavioral Intention by Total Usage Barrier by Gender
Gender
Male
Female
Wish not reply
Total Behavioral Intention
Total Usage Barrier
12.00
10.00
8.00
6.00
4.00
2.00
.00
5.00
10.00
15.00
20.00
25.00

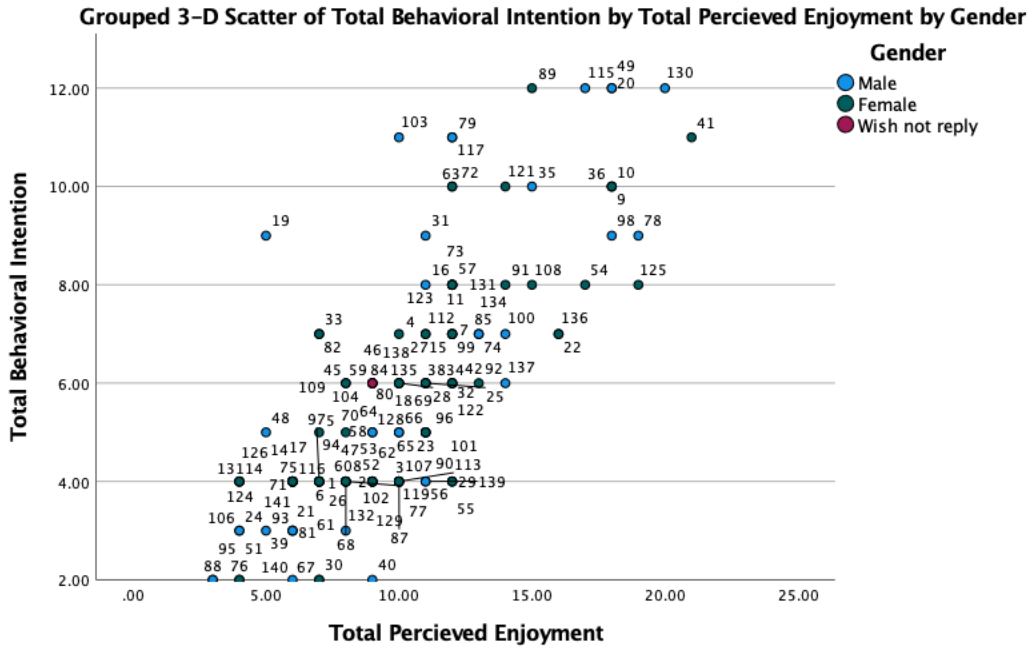

Grouped 3-D Scatter of Total Behavioral Intention by Total Image Barrier by Gender
Gender
1
2
3
Total Behavioral Intention
Total Image Barrier
12.00
10.00
8.00
6.00
4.00
2.00
5.00
10.00
15.00
20.00
25.00


Grouped 3-D Scatter of Total Behavioral Intention by Total Risk Barrier by Gender
Gender
Male
Female
Wish not reply
Total Behavioral Intention
Total Risk Barrier
12.00
10.00
8.00
6.00
4.00
2.00
.00
5.00
10.00
15.00
20.00
25.00


Grouped 3-D Scatter of Total Behavioral Intention by Total value barrier by Gender
Gender
1
2
3
Total Behavioral Intention
Total value barrier
12.00
10.00
8.00
6.00
4.00
2.00
4.00
6.00
8.00
10.00
12.00
14.00


Grouped 3-D Scatter of Total Behavioral Intention by Total Percieved Usefulness by Gender
Gender
Male
Female
Wish not reply
Total Behavioral Intention
Total Percieved Usefulness
12.00
10.00
8.00
6.00
4.00
2.00
.00
5.00
10.00
15.00
20.00
25.00


Grouped 3-D Scatter of Total Behavioral Intention by Total Percieved Ease of use by Gender
Gender
Male
Female
Wish not reply
Total Behavioral Intention
Total Percieved Ease of use
12.00
10.00
8.00
6.00
4.00
2.00
.00
5.00
10.00
15.00
20.00


Grouped 3-D Scatter of Total Behavioral Intention by Total Percieved Enjoyment by Gender
Gender
Male
Female
Wish not reply
Total Behavioral Intention
Total Percieved Enjoyment
12.00
10.00
8.00
6.00
4.00
2.00
.00
5.00
10.00
15.00
20.00
25.00

Appendix 12 – Correlation Matrix

		PI	TB	IB	RB	UB	VB	PU	PEOU	PE	BI
PI	Pearson's r	1	-.190*	-.183*	-.100	.102	-.225**	.038	.290**	.044	.029
	P-value		.027	.032	.247	.236	.009	.662	.001	.613	.736
TB	Pearson's r	-.190*	1	.154	-.013	-.064	.224**	.077	-.086	-.052	.061
	P-value	.027		.073	.877	.460	.009	.375	.322	.546	.478
IB	Pearson's r	-.183*	.154	1	.263**	-.320**	.319**	-.262**	-.426**	-.320**	-.332**
	P-value	.032	.073		.002	.001	.001	.002	.001	.001	.001
RB	Pearson's r	-.100	-.013	.263**	1	-.089	.134	-.079	-.164	-.129	-.158
	P-value	.247	.877	.002		.304	.120	.358	.057	.135	.067
UB	Pearson's r	.102	-.064	-.320**	-.089	1	-.203*	.669**	.549**	.588**	.682**
	P-value	.236	.460	.001	.304		.018	.001	.001	.001	.001
VB	Pearson's r	-.225**	.224**	.319**	.134	-.203*	1	-.263**	-.389**	-.272**	-.296**
	P-value	.009	.009	.001	.120	.018		.002	.001	.001	.001
PU	Pearson's r	.038	.077	-.262**	-.079	.669**	-.263**	1	.550**	.691**	.759**
	P-value	.662	.375	.002	.358	.001	.002		.001	.001	.001
PEOU	Pearson's r	.290**	-.086	-.426**	-.164	.549**	-.389**	.550**	1	.568**	.556**
	P-value	.001	.322	.001	.057	.001	.001	.001		.001	.001
PE	Pearson's r	.044	-.052	-.320**	-.129	.588**	-.272**	.691**	.568**	1	.778**
	P-value	.613	.546	.001	.135	.001	.001	.001	.001		.001
BI	Pearson's r	.029	.061	-.332**	-.158	.682**	-.296**	.759**	.556**	.778**	1
	P-value	.736	.478	.001	.067	.001	.001	.001	.001	.001	

*. Correlation is significant at the p-value 0.05

**. Correlation is significant at the p-value 0.01

Appendix 13 – Final Model: Standard Multiple Regression Analysis without Age (a)

Independent variable	Standardized coefficients beta	P-Value	Part correlation coefficients	Tolerance	VIF
Usage Barrier	.22	< .001	.16	.52	1.91
Perceived Usefulness	.32	< .001	.20	.42	2.40
Perceived Enjoyment	.43	< .001	.30	.49	2.03

a. Dependent Variable: BI

Appendix 14 – Final Model Summary and ANOVA Adjusted without Age

Model Summary / ANOVA

Model	Adjusted R Square	P-Value
Model 2	.72	<.001

Dependent Variable: BI