Mobile Applications
from a Value-in-Use Perspective
and their Impact on Retailing

Dissertation

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List of Abbreviations

ANOVA	=	Analysis of Variance
AVE	=	Average Variance Extracted
CA	=	Cronbach's Alpha
CR	=	Composite Reliability
DP	=	Deal Proneness
DV	=	Dependent Variable
FL	=	Factor Loading
GPS	=	Global Positioning System
H	=	Hypothesis
IV	=	Independent Variable
MANOVA	=	Multivariate Analysis of Variance
OV	=	Other-oriented Value
PLS	=	Partial Least Squares
SEM	=	Structural Equation Modeling
SV	=	Self-oriented Value
UTAUT2	=	Unified Theory of Acceptance and Use of Technology 2
WOM	=	Word-of-Mouth

„Die Bürger der drahtlosen Zeit werden überall mit ihrem „Empfänger" herumgehen, der irgendwo, im Hut oder anderswo angebracht und auf eine der Myriaden von Vibrationen eingestellt sein wird, mit der er gerade Verbindung sucht." (Robert Sloss, 1910)

1   General Introduction

1.1   Relevance

The diffusion of smartphones has not only changed our communication behavior but also enabled a new form of consumer shopping journey. Intelligent devices, such as smartphones and tablets, offer convenient mobile shopping services throughout the journey, ranging from supporting information search to linking loyalty program memberships in order to enhance customer–firm relations. In this context, apps are so-called mobile touchpoints that enable communication at any time and anywhere, which is a central phenomenon of the changed consumer journey. Modern consumers use their smartphones on the train, at the bus stop, in the office, or during a shopping trip; they search for product prices or send selfies of potential clothing purchases. Within this complex consumer journey, brands interfere and offer their branded apps as touchpoints to enhance customer relations (Bellman et al. 2011). Likewise, retail management exploits their strategic opportunity to connect with customers via these apps. Accordingly, retailer apps have also been developed to influence customers' future purchase behavior (Kim et al. 2017; Newman, Wachter, and White 2017). Reaching digitized consumers is currently one of their most compelling tasks, with the aim of allowing customer engagement that reflects the customer experience (Grewal, Roggeveen, and Nordfält 2017). Hence, the implementation of smart technology that can facilitate consumer decisions is an important objective of retail management.

Apps have been found not only to strongly affect retailer profit in terms of economic outcome (Inman and Nikolova 2017) but also to positively influence pre-economic factors such as brand attitude (Bellman et al. 2011). The determinants of initial app adoption and their effects on economic outcome such as purchase behavior remain dominant in research (Hong and Tam 2006; Kim, Chan, and Gupta 2007; Luo et al. 2014; Wang, Malthouse, and Krishnamurthi 2015), while less work has been conducted on further post-adoption behavior, such as keeping app users engaged through, e.g., supporting reuse of the app or intentions to recommend it (Kim, Lin, and Sung 2013; Kim et al. 2016; Kim, Wang, and Malthouse 2015; Xu, Peak, and Prybutok 2015). Within this discussion of how digital efforts pay off, the topic of customer experience has piqued the interest of marketers (Marketing Science Institute 2016), as a positive customer experience within the changing and complex consumer journey has been found to improve the bottom line (Lemon and Verhoef 2016; Rippé et al. 2017; Schmitt 1999; Verhoef et al. 2009). In addition, first evidence for an effect of apps on the assessment of the surrounding environment has been found in the context of crowding (Andrews et al. 2016). The experiential view of a physical environment and app engagement then offer fruitful avenues for further research in the context of mobile apps affecting retailer outcome.

Research about what drives these pre-economic and economic outcomes of the use of apps has thus far taken a technology-centric view (Hoehle and Venkatesh 2015; Hong and Tam 2006; Kim, Chan, and Gupta 2007; Kleijnen, de Ruyter, and Wetzels 2007). The value that arises from using an app depends on, e.g., the cognitive effort required and convenience. While such comparisons between costs and benefits reflect a self-oriented value (Holbrook 1994, 2006), apps may also be valued for their effects that are motivated by the responses they elicit from others. For example, a loyalty program that awards the user in the app can foster the consumer's self-esteem. Providing such other-oriented value can be significant for increasing retail experience, as interpersonal aspects are essential to the retailing environment (Bloch, Ridgway, and Dawson 1994). Knowledge of such a *value-in-use*, which depends on

the user's own perspective or other-orientation, can be quite beneficial for understanding consumer behavior effects and designing the optimal app. Despite the importance of distinguishing different value-in-use perspectives, the findings regarding the worth of such an other-oriented value are both scarce and conflicting (Pihlström and Brush 2008; Turel, Serenko, and Bontis 2007, 2010).

The present dissertation addresses the ongoing academic and practical discussion on how apps can affect retailer outcome. To understand how these effects arise and the contexts in which they are able to influence retailer outcome with a focus on the consumer viewpoint, this work applies a value-in-use perspective, which is based on Holbrook's Value Typology (1994, 2006). This dissertation contains three papers: one focuses on the engagement behavior of consumers and subsequent retailer outcome, while the other two feature the physical experience stimulated through mobile apps. Their findings highlight how retail experience plays a central role in regulating the effects of value-in-use perceptions on retailer outcome. More specifically, they reveal that the other-oriented value perspective is highly relevant for keeping app users engaged and is able to affect retail experience alongside the more commonly used self-oriented value perspective. From these results, managerial implications can be drawn on how to strategically implement apps and design them with the aim of stimulating retail experience. The findings can thus help retailers develop appropriate app design strategies while also offering empirical evidence for downstream consequences on retailer outcome. The following section presents a literature background regarding the development of the value-in-use concept.

1.2 Literature Review on the Value-in-Use Perspective

Consumption involves a subjectively experienced reality during interaction with any good or service (Hirschman and Holbrook 1986). Following philosophical paths discussing axiology

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(e.g., Hartman 1951), consumer research placed much effort into determining how the response within such a consumption experience creates a certain value for the consumer (Holbrook and Hirschman 1982; Sánchez-Fernández and Iniesta-Bonillo 2007; Sweeney and Soutar 2001). Holbrook defines *value* as "interactive relativistic preference experience," which the present dissertation applies to the app context (Hirschman and Holbrook 1986, p. 231). Value is described as interactive, as it entails a relation between the subject (person) and the object (here: the app). The comparative, personal, and situational characteristics of a consumer using an app describe the relativistic meaning of value. Furthermore, consumption is strongly linked to any positive or negative evaluation, which results in a preference experience. This preference experience can be divided into self-oriented and other-oriented perspectives: "*self-oriented value* depends on one's own response, whereas *other-oriented value* depends on the relationship of one's own self to the responses of other people or to some other significant aspect of the cosmos" (Hirschman and Holbrook 1986, p. 232). There is also a distinction made between intrinsic value – an "experience for its own sake as an end in itself" (ibid.) – and extrinsic value, "a means toward some further end" (ibid.). Related research shows a clear predominance of the self-oriented value perspective and the intrinsic–extrinsic distinction (Gallarza et al. 2017; Sánchez-Fernández and Iniesta-Bonillo 2007), e.g., hedonic and economic value. In contrast, the dual view of self- and other-oriented value perspectives remains underresearched.

Previous research has often described value as the ratio between benefits and sacrifices (Zeithaml 1988), but Holbrook (1994) decomposed value as a multi-dimensional preference experience. Applied to apps, which are described as "key interaction and service provision mechanism[s] between the smartphone and the customer" (Dube and Helkkula 2015, p. 224), this means also taking into account the co-creation of these services during their use. This view advises against dwelling on product-centered thinking, instead advocating the examination of those experiences that consumers prefer to co-create (Prahalad and

Ramaswamy 2004). Accordingly, the following adapted definition of value-in-use in the app context is applied for the rest of this dissertation:

> *Value-in-use is the evaluation of the [app] service experience, i.e., the individual judgment of the sum total of all self- and other-oriented experience outcomes. Value is defined by the user of a service during the user consumption* (adapted from Sandström et al. 2008, p. 120).

Prior research has taken a primarily self-oriented perspective to assess benefits and sacrifices from a value-in-use evaluation of mobile services (e.g., Kim, Chan, and Gupta 2007; Kleijnen, de Ruyter, and Wetzels 2007). In contrast, studies that include social value, belonging to the other-oriented value perspective, are scarce and report conflicting results. There is evidence that social value leads to an increase in loyalty intentions for mobile entertainment services (Pihlström and Brush 2008). However, Turel et al. (2007, 2010) found no effect of social value on behavioral intentions to increase SMS and ringtone use. This is also out of line with conceptual work discussing the interdependence of value-in-use dimensions and emphasizing social value; further research is clearly needed (Jung 2014). Status provision in personal technology has also been found to be a relevant aspect of acceptance (Arbore, Soscia, and Bagozzi 2014), while status consumption is substantial in the marketing domain (Eastman, Goldsmith, and Flynn 1999). Likewise, supporting app acceptance by increasing their value-in-use has been shown to grant service providers a competitive advantage (Verhoef, Kannan, and Inman 2015), as providing sufficient value-in-use strengthens consumer relations and digital competitiveness for brands and retailers. These findings support the goal of this dissertation to further research on the value-in-use of mobile applications with a focus on the perspectives of self- and other-oriented value.

1.3   Research Outline

This dissertation comprises three papers in which the effect of an app's value-in-use on retailer outcome is analyzed from various perspectives. An overview of the research areas each paper focuses on and the relation among them is depicted in Figure 1.1.

All three papers are based on Holbrook's (1994) Value Typology, which was explained in the previous section. Accordingly, it seems appropriate to apply a value-in-use perspective from the consumer's viewpoint to analyze the impact of apps as an innovative way of bundling shopping-related services. As related research emphasizes the importance of self-oriented value-in-use dimensions (such as hedonic) for driving app adoption behavior, the following papers consider the novel distinction of self- and other-oriented value-in-use in the apps.
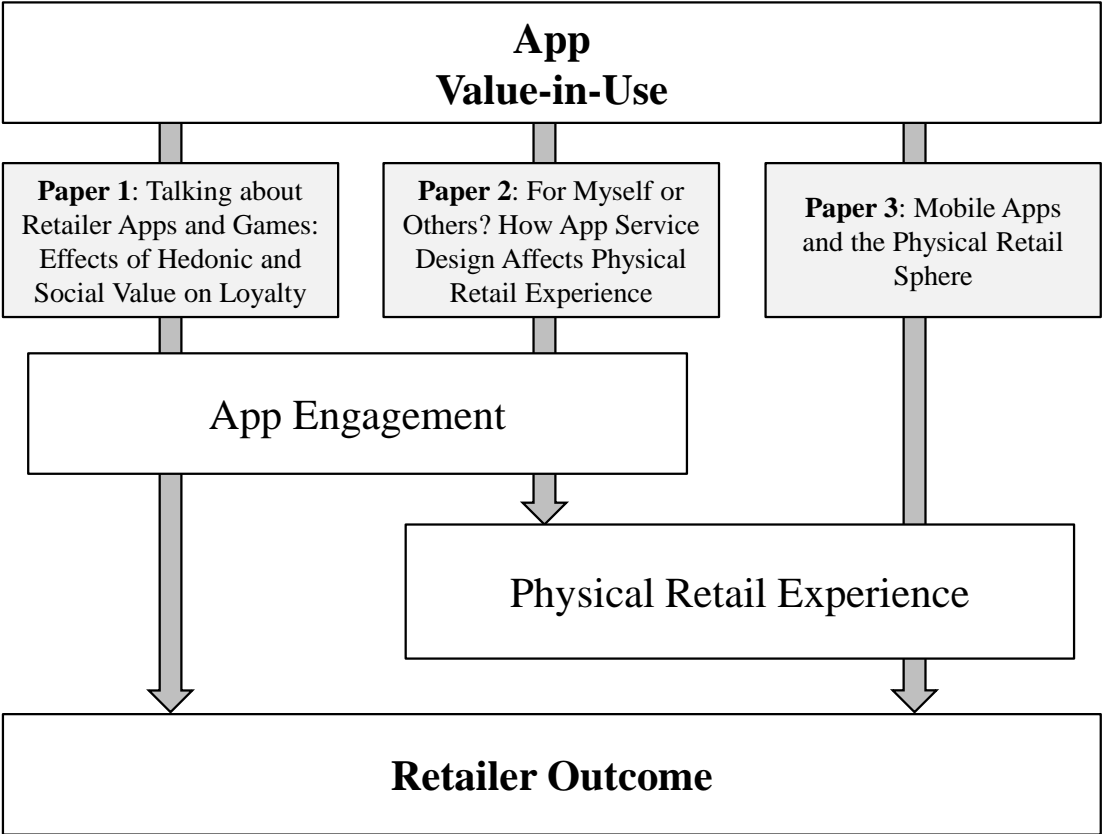
Figure 1.1: Research Framework of the Three Papers

Paper 1 compares hedonic and social value as representations of extrinsic self-oriented and intrinsic other-oriented value and its effect on post-adoption behavior. In particular, the paper emphasizes how hedonic and social value affect positive word-of-mouth about retailer apps when an advergame is offered. App word-of-mouth as a form of app engagement reveals possible post-adoption behavior on the app level. Hence, the following research question is discussed:

> *How do the social and hedonic value-in-use provided in a retailer game app lead to positive app word-of-mouth and further retailer outcome in the shape of loyalty?*

Regarding effects on the retailer level, the paper offers first evidence of the importance of social value for retailer loyalty under the premise of a positive game evaluation. This finding indicates the crucial role of the other-oriented value-in-use perspective for analyzing apps. However, as this is in conflict with related research that credits social value with only a minor or often no role in driving adoption, further research is necessary.

Accordingly, *Paper 2* focuses on how specific app designs create value-in-use. To properly address the particular characteristics of stationary retailing, this paper introduces the experience perspective. Through this perspective, the idea of retail experience as a driver of loyalty and further retailer outcome enables a novel view on the role of apps in the so-called seamless shopping environment. This leads to the following research question:

> *How can mobile app service design engage customers in a seamless retail environment and affect physical retail experience?*

In this context, the link between value-in-use and intention to reuse the app is also emphasized to complement the relevance of self- and other-oriented value in creating app engagement. As the results reveal a strong impact on not only app engagement but also

physical retail experience, the role of experience in the effect of apps on retailer outcome is worth further investigation.

Building on this, *Paper 3* examines the entire causal chain from app value-in-use to retail experience and downstream consequences for retailer outcome. Here, a new framework on the merging process between the mobile and physical spheres is set up to organize mobile touchpoints and illustrate how the process works. The paper also highlights the pivotal role of apps as touchpoints, which enables this transformation towards a seamless retail experience. The paper analyzes the link between value-in-use and retailer outcome while also considering boundary conditions. The underlying research question is formulated as follows:

> *If touchpoints from the physical and mobile spheres can blend and result in an enhanced physical retail experience, then what drives this process?*

The major findings and contributions of all three papers are presented in Table 1.1. Moreover, the three papers contain different approaches in terms of the app context and study set-up, which can be found in a methodological overview in Table 1.2.

#	Title	Major Objective	Key Findings	Major Contributions
1	Talking about Retailer Apps and Games: Effects of Hedonic and Social Value on Loyalty	Investigate how a retailer game app affects post-adoption behavior by considering the hedonic and social value derived from its use.	(1a) Social value-in-use plays an important role in fostering app WOM and retailer loyalty. (1b) Hedonic value-in-use is a necessary trigger to enable the positive effect of social value-in-use on app WOM. (2) Social value-in-use can even leverage a low hedonic value to affect retailer loyalty when game evaluation is high.	(1) Introduction of a novel value-in-use view, which emphasizes the relevance of social value in enabling positive app word-of-mouth and moderating effects of game evaluation. (2) Provision of new strategies to foster app engagement, improve app design, and increase retailer loyalty.
2	For Myself or Others? How App Service Design Affects Physical Retail Experience	Examine how app use transcends the mobile sphere into the physical sphere and affects retail experience.	(1) A mobile app that provides self- and other-oriented value merges into the physical retail sphere. - Self-oriented value greatly affects retail experience and intention to reuse the app. - Other-oriented value also affects the overall retail experience, but only in the personalized product promotion app scenario. (2) Intention to reuse the shopping mall app is also affected by other-oriented value. - For personalization, both self- and other-oriented value drive adoption. - For interactive maps and loyalty programs, self-oriented value clearly stands out in driving adoption.	(1) Demonstration that mobile app service design can provide different types of value-in-use. (2) Focus on the role of other-oriented value as a driver of retail experience and app adoption. (3) Support of the merging of mobile service value-in-use with physical experience.
3	Mobile Apps and the Physical Retail Sphere	Explain blending between a smartphone app as an interaction hub and physical retail experiences to actually benefit brick-and-mortar stores.	(1) It is useful to distinguish among different retail spheres, such as physical, home, and mobile. The pivotal role of retail apps is to act as carriers of potential value-in-use and hubs that enhance the physical retail experience. (2) Self-oriented value and other-oriented value assessed in the app facilitate the merging process between the physical and mobile spheres. (3) Positive effects of apps on retail experience prevail when other-oriented value is increased under high deal proneness. A boost in retail experience is found especially for behavioral, intellectual, and sensory experiences. (4) App use translates directly and indirectly through retail experience into retail outcomes such as planned shopping time, spending budget, and future visit intention.	(1) Development of a new framework to classify touchpoints into superordinate spheres (e.g., physical, home, and mobile). (2) Empirical confirmation of the proposition that both self-oriented and other-oriented types of value-in-use provided via a mobile retail app design affect the physical retail experience. Moreover, both key types of customer value interact in their influence on retail experience. (3) Identification of deal proneness as a boundary condition that facilitates the effect of retail app valuation on experience. (4) Evidence that other-oriented value significantly affects retail experience in the physical consumer shopping context and enables downstream consequences for retailers.

Table 1.1: Overview of the Papers

#	Conceptual Background	Constructs	Data and Sample	App Context	Methodology
1	Customer Value Framework (Holbrook) - Hedonic value - Social value	IVs: Hedonic and social value DVs: App word-of-mouth, retailer loyalty Moderator: Game evaluation Controls: Game type, retailer familiarity	Online survey, conducted in laboratory setting including a test phase of app (n = 139)	Retailer game app (n = 77) and service app with in-app game (n = 62)	Moderated regression analysis Simple slope analysis (PROCESS)
2	Customer Value Framework (Holbrook) - Self-oriented value (economic, hedonic) - Other-oriented value (social, altruistic)	IVs: Self-oriented value, other-oriented value DVs: Overall retail experience, intention to reuse app	Online survey, conducted through online paid crowdsourcing (n = 151)	App service design scenarios (description, pictures): Interactive mall map (n = 50) Personalized product promotion (n = 51) Loyalty program (n = 50)	Structural equation modeling (PLS-SEM)
3	Experiential Customer Experience (Schmitt) - Affective experience - Behavioral experience - Intellectual experience - Relational experience - Sensory experience	<u>Pilot Study</u> DV / Mediator: Retail experience DVs: Planned shopping time, planned spending budget, future visit intention <u>Study 1</u> IVs: Self-oriented value, other-oriented value DV: Overall retail experience <u>Study 2</u> IVs: Self-oriented value, other-oriented value DVs: Overall retail experience and affective, behavioral, intellectual, relational, and sensory experience Moderator: Deal proneness Covariate: App familiarity	<u>Pilot Study</u> Online survey, conducted in shopping mall (n = 362) <u>Study 1</u> Online survey, conducted through online paid crowdsourcing (n = 202) <u>Study 2</u> Online survey, conducted through social media and shopping mall app (n = 154)	<u>Pilot Study</u> Shopping mall app (description, video, pictures) <u>Study 1</u> Shopping mall service app (description, pictures), four scenarios aggregated (same dataset as Paper 2: interactive mall map, personalized product promotion, loyalty program, additional basic scenario with no specific features) <u>Study 2</u> Shopping mall app (description, video, pictures)	<u>Pilot Study</u> MANOVA Mediation analysis (PROCESS) <u>Study 1</u> Moderated regression analysis Simple slope analysis (PROCESS) <u>Study 2</u> Moderated regression analysis Simple slope analysis (PROCESS)

*DV = Dependent Variable, IV = Independent Variable

Table 1.2: Data, Sample, and Methodology of the Papers

1.4 Abstracts

1.4.1 Paper 1

As consumers increasingly adopt retailer apps to enhance shopping convenience, their attention is also drawn to so-called advergames. But what impact do such games have on consumer behavior? Building on value-in-use theory, we take a novel approach in the field of advergame app research by examining hedonic value and social value assessed in the app. Here, enjoyment reflects the hedonic value, while self-esteem and status reflect social value assessed in the app. Whereas hedonic value appears more naturally in a game, social value is less clearly linked to retailer apps. With survey data collected in a lab, our results reveal that social value positively affects app word-of-mouth and retailer loyalty, depending on hedonic value. In addition, we identify conditions regarding how retailer loyalty is affected, even if the user is not enjoying the app. Our findings provide retailers as well as app developers with new insights for improving retailer game app design.

1.4.2 Paper 2

Companies are increasingly using mobile apps to bridge the digital and physical worlds. Such a connection can be particularly beneficial in retail environments such as shopping malls, where retailers have already begun developing apps to target consumers. Prior research has identified self-oriented value—such as economic and hedonic value—as driving the adoption of these apps. However, app services can also be valued for the response they evoke from others, resulting in social and altruistic value. We argue that app services providing self- and other-oriented value may contribute to app adoption and the physical retail experience. This paper demonstrates that mobile app service design can provide these different types of value-in-use while shedding light on how it affects retail experience. In doing so, this research

contributes to a holistic understanding of the connection between app design and physical retail experience.

1.4.3 Paper 3

This research takes a novel perspective on how a mobile app touchpoint creates value-in-use to become a hub for an enhanced physical retail experience. Through the lens of the value-in-use concept, we demonstrate how the boundaries between the physical and mobile spheres are becoming increasingly blurred. Our research contributes to the literature by illustrating how a mobile app affects the physical retail experience and revealing how the other-oriented value-in-use dimension helps explain this merging process. Using survey data from a pilot study collected in the field, we establish that the effect of the app on planned shopping time and future visits is mediated by retail experience. Study 1 examines the roles of self-oriented and other-oriented value in the blending of the physical and mobile spheres into retail experience. In Study 2, we highlight the relevance of other-oriented value (e.g., social status fostered in the app) for deal-prone consumers, as it can compensate for low self-oriented value to leverage the physical retail experience. This work also offers practical guidance for designing mobile touchpoints to affect retail experience under certain boundary conditions.

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2   Talking about Retailer Apps and Games: Effects of Hedonic and Social Value on Loyalty (Paper 1)

(with Waldemar Toporowski)[1]

Previous versions of this manuscript have been presented at the following conferences:

- 22nd Recent Advances in Retailing & Services Science Conference (2015), European Institute of Retailing and Services Studies (EIRASS), Montréal, Canada, 28.07.2015.

- 44th Academy of Marketing Science (AMS) Annual Conference, Orlando, Florida, USA, 19.05.2016.

2.1 Introduction

Advergames have garnered increasing interest amidst the widespread diffusion of apps on the market, with many retailers now offering game apps to strengthen retail brand engagement. Such games have been shown to succeed in increasing brand attitude as long as they are thematically linked to the sponsored retailer brand (Wise et al. 2008). Furthermore, apps promoting a brand identity have been found to be one of the most effective forms of advertising in recent years (Bellman et al. 2011; Fang 2017). Nevertheless, the relation between branding and game outcome remains underresearched (Berger et al. 2018; Hofacker et al. 2016), as do the effects of apps on retailer outcome (Grewal, Roggeveen, and Nordfält 2017). The experiential approach in research to predict consumer behavior, pioneered by Holbrook and Hirschman (1982), is a widely approved framework for examining and understanding consumer phenomena and thus addressing this research gap. The associated value typology then seems particularly appropriate for examining what consumers *really* value when using apps.

In this context, the motivation for playing games has been found to be divided into intrinsic and extrinsic motivational factors (Bittner and Shipper 2014; Blohm and Leimeister 2013; Kim and Ahn 2017; Ryan and Deci 2000). First, we focus on the intrinsic motivation to play game apps. Previous studies about the drivers of app use have often focused on technological drivers, such as usability and convenience (e.g., Hoehle and Venkatesh 2015; Wang, Krishnamurthi, and Malthouse 2018). However, for the cases of mobile entertainment and game content, hedonic value has been found to predict use behavior alongside economic value (Lim, Widdows, and Park 2006; Pihlström and Brush 2008; Turel, Serenko, and Bontis 2010). As enjoyment is a central objective of playing games (Holbrook et al. 1984; Kim and Ahn 2017; Robson et al. 2015), we consider hedonic value as the intrinsic motivation in the further analysis.

Second, we consider the extrinsic motivation to play game apps. Current research has found extrinsic motivation in the context of gamification rewards to be relevant for loyalty program participation (Kim and Ahn 2017). In particular, sharing challenges or completed game missions with friends and relatives to foster social esteem seems to be a reasonable motive for playing games (Yee 2006). However, social value in the form of status-enhancing features in the game app is also relevant for app engagement and should receive prominence in future research areas (Fang 2017; Pihlström and Brush 2008; Terlutter and Capella 2013; Turel, Serenko, and Bontis 2010). Empirical research applying such a social value perspective is rather scarce (Gallarza et al. 2017; Van Oerle, Lievens, and Mahr 2018). Therefore, the aim of this paper is to investigate how a retailer game app affects post-adoption behavior by considering the hedonic and social value derived from its use.

Regarding the post-adoption behavior of apps, self–brand connections offer promising opportunities to facilitate brand engagement (Berger et al. 2018). Nevertheless, app adoption and further engagement rely heavily on positive app word-of-mouth (Newman, Wachter, and White 2017; Song et al. 2014; Xu, Peak, and Prybutok 2015). Recent findings also suggest that the potential of branded apps lies in satisfied consumers who are encouraged in their loyalty behavior (Saarijärvi, Mitronen, and Yrjölä 2014; Xu, Peak, and Prybutok 2015). Accordingly, we want to analyze the impact of a retailer game app on both the app level as well as the retailer level. If retailer game apps have been demonstrated to bear great potential for retailers and marketers, then how do the social and hedonic value-in-use provided in a retailer game app lead to positive app word-of-mouth and further retailer outcome in the shape of loyalty?

We contribute to the game literature (Berger et al. 2018; Ham, Yoon, and Nelson 2016; Hofacker et al. 2016) by introducing a novel value-in-use viewpoint and contrasting intrinsic and extrinsic motivation perspectives. Building on Holbrook's theorizing (1994), our dyadic

value-in-use view emphasizes the relevance of also taking into account extrinsic motivation in the form of a perspective on others via social value. In doing so, a contribution is made to the discussion on how value theory helps explain consumer experiences (Gallarza et al. 2017; Holbrook 2006; Holbrook et al. 1984). We also contribute to the branded app and retailing literature by providing new strategies for fostering app engagement, improving app design, and ultimately strengthening retailer loyalty (Fang 2017; Kleijnen, de Ruyter, and Wetzels 2004).

We tested our framework using data from a survey collected in a lab. In the lab setting we used two different game strategies – a retailer game app and a service app with an in-app game from the actual App Store – which were randomly assigned to participants for testing. The findings reveal that both intrinsic and extrinsic value-in-use dimensions affect app word-of-mouth and retailer loyalty under certain conditions. Intrinsically, hedonic value appears to be quite important in generating app word-of-mouth while, extrinsically, social value seems to positively affect retailer loyalty – but only if game evaluation is high and the app is enjoyable. Implications for retailers and app developers are drawn based on these empirical findings.

2.2 Theoretical Background and Hypothesis Development

2.2.1 Advertising Games and Retailer Apps

Using games or game mechanisms in marketing is not a new idea, although there has been recent hype surrounding gamification in the market and academic research (Berger et al. 2018; Dale 2014; Hofacker et al. 2016; Müller-Stewens et al. 2017). There is evidence of early patents for advertising games, such as one for winning free lunch or gasoline by spinning a pointer on a cardboard turntable (US patent 1,538,967 from 1925). *Advertising games* are "specifically designed and created to promote a brand, product, service, or idea"

(Terlutter and Capella 2013, p. 96). Accordingly, the aim of such games is to deliver a powerful marketing message for the brand advertised, which may lead to further brand-related outcomes. Advergames typically require only a short playing time and allow for quick rewards. Such games are usually free of charge and might be played on a website or in an app.

Retailer apps are characterized as software that can be downloaded on any mobile device (preferably smartphones or tablets) and is marked by a retailer who places their logo prominently in the app (Bellman et al. 2011). Saarijärvi et al. (2014) point out that in food retailing, mobile services can enhance not only the daily in-store activities of customers but also their pre- or post-purchase processes. Examples for such services include shopping lists, receipt databases, product offers or promotion deals, and even mobile payment services. Accordingly, a game can coexist with those other mobile services or be developed as standalone app. Nonetheless, it is pertinent to consider the user's point of view to determine what is valued in the app.

2.2.2   Value-in-Use for Retailer Apps

The idea of co-creation in service research is well established (Lusch and Vargo 2006; Sandström et al. 2008). According this notion, a certain value only applies in a service setting when a customer is integrated into the value creation process, e.g., by using a service. In customer value theory the concept of a value is also linked directly with the consumption process. We employ such an understanding of value-in-use and refer to the concept developed by Holbrook, who defined value as "interactive relativistic preference experience" (2006, p. 715) and described it as relativistic in three senses: comparative, personal, and situational (2006). Thus, a value is highly subjective in nature and its assessment depends on the usage context. We know from motivational theories that extrinsic and intrinsic factors are considered relevant in the context of playing games (Blohm and Leimeister 2013; Ryan and

Deci 2000). Accordingly, in customer value theory, two value types seem most appropriate when comparing intrinsic and extrinsic value dimensions for the games context, namely hedonic and social value.

Hedonic value arises from one's "own pleasure in consumption experiences appreciated for their own sake as ends in themselves" (Holbrook 2006, p. 716), which could include fun derived while playing the game. It has an intrinsic motivation and is thus directly related to the game context, which aims to provide pleasure and enjoyment (Holbrook et al. 1984). In contrast, *social value* refers to "one's own consumption behavior serv[ing] as a means to shap[e] the responses of others" (Holbrook 2006, p. 716). It often reflects a status-enhancing implication toward others in peer groups (e.g., brand logo on clothing) or serves to arouse a sense of glory regarding one's own esteem-evoking product possessions (e.g., the newest iPhone lying on the desk). It is a form of social image of an extrinsic nature that the app user "wishes to project" toward others (Sánchez-Fernández and Iniesta-Bonillo 2007, p. 438).

We concentrate on hedonic and social value to emphasize not only the intrinsic/extrinsic motivational value distinction but also the dimensions of self- and other-orientation. In doing so, we disregard economic value and altruistic value – the other categories in Holbrook's suggested four-value typology matrix. The reasons for this arise from our study context: First, a gaming app from a retailer brand does not include any monetary or timesaving benefits and is usually free of charge, thus excluding economic value from further consideration. Second, altruistic value only applies for app services that are designed to assist (or support others or some other part of the cosmos); this is irrelevant in the usual gaming context.

2.2.3 Post-adoption Behavior of App Value-in-Use

App value-in-use for retailer advergames may lead to different behavioral outcomes, which can not only create benefits on the game level but also potentially benefit the retailer brand.

The impact of word-of-mouth recommendation is widely acknowledged in social media and communication research (Brown et al. 2005; Engel, Kegerreis, and Blackwell 1969; Lamberton and Stephen 2016). According to diffusion theory, the reliance of users on convincing recommendations is crucial for the spread of a technology (Wang, Shen, and Sun 2013). Based on this knowledge, we are interested in how value-in-use affects app word-of-mouth. The retailer benefits from positive word-of-mouth as the app gains in popularity – not only as the provider of such apps but also when brand attitude is increased through the app (Bellman et al. 2011). However, a negative impact on brand loyalty was found in the context of a gamified loyalty program (Kim and Ahn 2017). In light of these conflicting findings, we are interested in determining how a retailer game might affect loyalty behavior toward the retailer.

Word-of-mouth transmissions "consist of informal communications directed at other consumers about the ownership, usage, or characteristics of particular goods and services and/or their sellers" (Westbrook 1987, p. 261). In this study *app word-of-mouth* refers to the active sender perspective, which means that users communicate positive things about the app, intentionally encouraging friends and relatives to use it. Studies have identified several drivers of intention to use an app, such as usefulness, enjoyment, monetary value, and word-of-mouth received (Hoehle and Venkatesh 2015; Kim, Kankanhalli, and Lee 2016). In contrast, little research has been conducted on the specific factors that drive app word-of-mouth.

Retailer loyalty has been found to depend on consumers' subjective attitudes and includes a form of repeat patronage behavior (Dick and Basu 1994; Oliver 1999; Watson et al. 2015). One part of loyalty is the attitudinal component, which is the effect of favoring one brand or retailer over another and which Oliver describes as "a deeply held commitment" (Oliver 1999, p. 34; Wallace, Giese, and Johnson 2004). Retailer loyalty has been found to be strongly linked to satisfaction and repurchase intentions. We use the behavioral intention component of

loyalty to characterize retailer outcome of the advergame. This means that consumers intend to opt for the particular retailer, with a deep feeling of trust and pleasure derived from being their customer.

2.2.4 Hypotheses

Firms often seek to boost consumer enjoyment through gamification and providing games. For this to be successful, it is necessary to understand the mechanisms that drive continuous use and game popularity (Hofacker et al. 2016). Research on mobile services has decomposed the value-in-use and found hedonic value to be a strong driver of further adoption (Pihlström and Brush 2008; Turel, Serenko, and Bontis 2007, 2010). Furthermore, gamification literature indicates that emotions are a main source of game response and drive further recommendations (Robson et al. 2015). Based on previous findings about the crucial role of emotions in the game context (e.g., Berger et al. 2018; Müller-Stewens et al. 2017), hedonic value should have a positive influence on app word-of-mouth. This assumption is supported by empirical work on mobile apps by Xu et al. (2015), who stated that hedonic value is a direct antecedent of recommendation behavior.

As it is the nature of games to allow for social exchange and build communities to experience competition (Blohm and Leimeister 2013), we argue that social value assessed in the game app should also increase the intention to communicate positive word-of-mouth. This argument is supported by game community research, which has found social components (e.g., self-disclosure) and achievement (e.g., status) to be powerful motives for players (Yee 2006). Although there has been little research conducted on the effect of social value on games, an empirical study on mobile entertainment services found that social value strongly affects the intention to spread positive word-of-mouth (Pihlström and Brush 2008). In the context of ringtones, however, social value was found to have no influence on adoption, because

ringtones are not necessarily related to sharing (Turel, Serenko, and Bontis 2010). Nevertheless, our assumptions are supported by findings on how intrinsically and extrinsically motivated incentives work in product advertising (Bittner and Shipper 2014) as well as those of Hsu and Lin (2016), who found social influences to be relevant for app stickiness alongside intrinsic motivation. Still, positive word-of-mouth behavior strongly depends on the perceived quality of the game; the app is more likely to be recommended if the game is evaluated positively. These findings motivate our first hypotheses:

H1. There is a positive effect of (a) hedonic value and (b) social value on app word-of-mouth for a retailer app containing a game, and these effects are facilitated by a favorable game evaluation.

Prior research has suggested that games are able to produce an emotional spillover on the featured brands in the game. Gamification conceptually aims to increase loyalty (Blohm and Leimeister 2013), but empirical evidence of its success in this regard is still needed. As a retailer app itself is a brand message, promoting relevant retailer brand cues in the app may increase retailer loyalty, according to attitudinal loyalty behavior studies (Chaudhuri and Holbrook 2001; Kim, Lin, and Sung 2013; Xu, Peak, and Prybutok 2015). For example, hedonic value has repeatedly been found to be a relevant driver of brand response (Berger et al. 2018; Choi and Lee 2012; Kuo and Rice 2015; Vanwesenbeeck, Ponnet, and Walrave 2016; Waiguny, Nelson, and Marko 2013). In contrast, there has been little research on the effect of social value on brand response; further exploration is encouraged (Fang 2017; Pihlström and Brush 2008). We argue that valuing hedonic elements and further status-enhancing elements that foster hedonic and social value types in the app ultimately increases positive behavior toward the retailer brand associated with the game. These spillover effects can be more easily spread if the game is evaluated positively, as status and esteem are

strongly correlated with a well-designed and appealing game. This leads us to our second set of hypotheses:

H2. There is a positive effect of (a) hedonic value and (b) social value on retailer loyalty for a retailer app containing a game, and these effects are facilitated by a favorable game evaluation.

The relationships mentioned are illustrated in Figure 2.1.
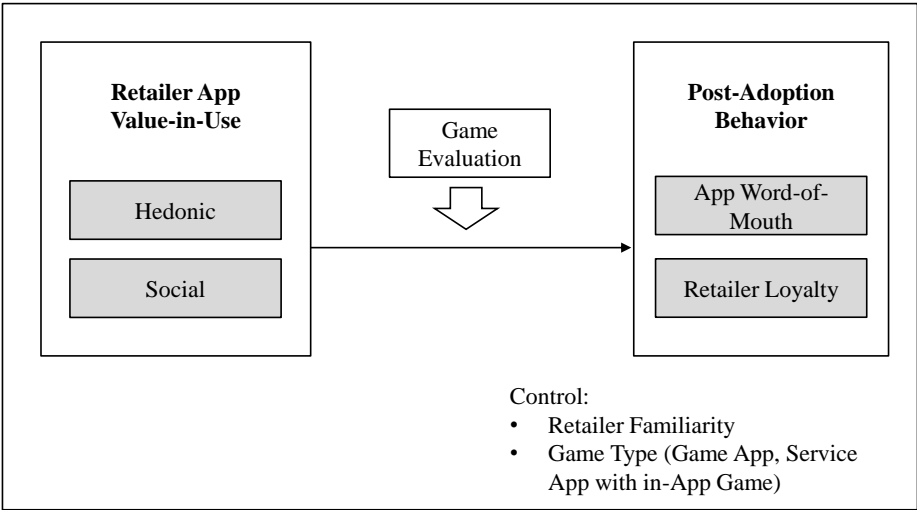
Figure 2.1: Conceptual Framework

2.3   Research Design

We conducted a study in a lab to test the framework. The results demonstrate that a retailer app offering a game increases intention both for spreading app word-of-mouth and for retailer loyalty. These relationships are moderated by game evaluation as illustrated in Figure 2.1.

2.3.1   Study Design

Participants were recruited on campus and via social media in return for a chance to win a voucher or smartphone equipment. The lab was located on campus in a simply furnished room (tables and chairs, no distractions) within a student learning center, where participants were

asked to use a prepared iPad for the online survey and a second one for the pre-installed app stimuli (see Appendix Figure 2.5). Controlling for experience using smartphones and/or tablets, we randomly assigned respondents to one of two apps. In both conditions, the respondents were first asked to answer some basic questions about their app usage and familiarity with the retailer. This was followed by a period of at least three minutes to test the app. Actually using the app while taking the survey is likely to make the app experience on the tablet more salient to the respondents, thus helping to ensure quality responses. Next, participants answered questions relating to their app value-in-use, app word-of-mouth, and retailer loyalty intentions.

We selected the app stimuli for this study from actual retailer apps in the App Store, deciding upon two grocery retailer apps. These were chosen because food retailing falls into the low-involvement category and most people can easily identify with the consumer perspective for such an app. Food retailers offer various mobile services for everyday activities, such as recipes, promotions, and games. We employed two kinds of game implementation strategies that are available on the app market: the game-centric approach (the game is the retailer game app) and the tool-centric approach (the game is part of a retailer app including other mobile services, such as a shopping list, recipes, and news). Hence, our two stimuli are a retailer game app and a retailer service app with an in-app game, which we also use as our control variable in the analysis. As both firms are well-known regional retailers, we also control for retailer familiarity.

In total we collected 158 respondent surveys, 139 of which tested the games sufficiently and could be used for analysis. The other 19 respondents were excluded from the analysis because they failed to notice the game in the service app stimuli and were therefore unable to evaluate it. A total of 77 respondents used the game app, while 62 respondents used the service app

with an in-app game. Regarding sample demographics, 40.3% of the respondents were women, and the majority (64.7%) were between 20 and 25 years old.

2.3.2 Measures

We measured *hedonic value* using a scale from Sweeney and Soutar (2001) that Pihlström and Brush (2008) adapted for the app context. Likewise, *social value* was measured using established scales (Shim and Eastlick 1998; Sweeney and Soutar 2001) adjusted for this context by Pihlström and Brush (2008). *App word-of-mouth* and *retailer loyalty* were each measured with three items adapted from Zeithaml et al. (1996). We used a 7-point Likert scale (1 = "strongly disagree," 7 = "strongly agree") to measure each of the constructs. Our control variable *retailer familiarity* (unfamiliar / familiar, knowledgeable / not knowledgeable) was measured on a semantic differential 7-point scale (Machleit et al. 1993), as was game evaluation ("*How did you like the game?*" 1 = "very good," 7 = "very bad"). The independent variable constructs were mean-centered before the analysis. Appendix Table 2.2 displays the items and assessed reliability measures.

2.4 Results

2.4.1 Hypothesis Testing

For each of the two dependent variables, we used separate moderated regression analysis models to test the effects of social value and hedonic value on app word-of-mouth and retailer loyalty (see Table 2.1), moderated by game evaluation. The results indicate a significant three-way interaction effect of hedonic value, social value, and game evaluation on both app word-of-mouth ($\beta = -.20$, $t = -2.130$, $p = .035$) and retailer loyalty ($\beta = -.26$, $t = -1.993$, $p = .048$).

In addition, we found a direct effect of our control variable retailer familiarity on retailer loyalty under the moderation of game evaluation ($\beta = .26$, $t = 3.124$, $p = .002$), which signals that customers tend to be loyal to their familiar retailers. The results are robust under control for game type (see Table 2.1, last two columns); an additional analysis regarding game type is discussed later.

Variable	App Word-of-Mouth		Retailer Loyalty		App Word-of-Mouth (incl. Game Type)		Retailer Loyalty (incl. Game Type)	
	β	p	β	p	β	p	β	p
Hedonic Value-in-Use (HED)	.48	<.001	.14	.259	.47	<.001	.10	.387
Social Value-in-Use (SOC)	.41	<.001	.33	.001	.37	<.001	.24	.019
Game Evaluation (GEV)	.25	.002	.06	.600	.27	.001	.08	.451
Interaction HED × SOC	.24	.016	.15	.270	.23	.019	.13	.319
Interaction HED × GEV	.03	.714	−.15	.148	.03	.727	−.15	.129
Interaction SOC × GEV	−.07	.487	.18	.202	−.08	.427	.16	.242
Interaction HED × SOC × GEV	−.20	.035	−.26	.048	−.18	.053	−.22	.081
Retailer Familiarity	<.00	.990	.26	.002	−.04	.576	.19	.026
Game Type[*]					−.12	.060	−.24	.006
Adj. R^2	.552		.140		.561		.184	

[*]Game App = 1, Service App with in-App Game = 0

Table 2.1: Regression Analysis Results

We conducted a simple slope analysis with 10,000 bootstrap samples in PROCESS with model type 3 (Hayes 2013). The results of the moderation by game evaluation (see Figure 2.2) reveal that in case of high hedonic value, social value has a positive and significant effect on app word-of-mouth under both high game evaluation (b = .51, $t = 5.532$, $p < .001$) and low game evaluation (b = 1.01, $t = 4.580$, $p < .001$). In contrast, social value displays no significant effect on app word-of-mouth under low hedonic value, whether under high game evaluation (b = .25, $t = .977$, $p = .331$) or low game evaluation (b = .08, $t = .394$, $p = .694$). Our findings suggest that the effect of social value on app word-of-mouth is strengthened by high hedonic value, regardless of how the game is evaluated. However, under low hedonic value the positive effect of social value on app word-of-mouth diminishes. Hence, H1a is supported and H1b is supported partially.
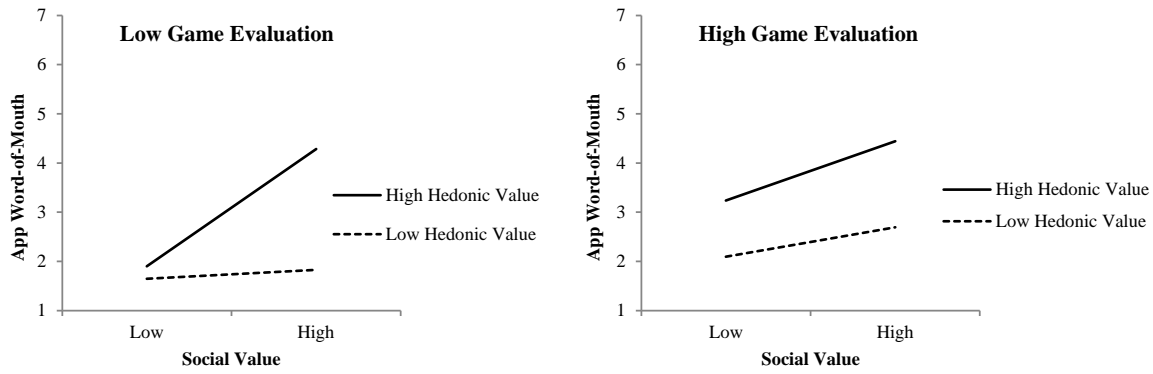
Figure 2.2: App Word-of-Mouth by Social and Hedonic Value-in-Use, and Game Evaluation

Further simple slope analysis results (see Figure 2.3) show that under high hedonic value and high game evaluation, social value has a significant positive effect on retailer loyalty ($b = .50$, $t = 4.254$, $p < .001$). In addition, we found a marginal significant positive effect of social value on retailer loyalty under high hedonic value with low game evaluation ($b = .53$, $t = 1.870$, $p = .064$). For low hedonic value we found a marginally significant positive effect of social value on retailer loyalty under high game evaluation ($b = .56$, $t = 1.695$, $p = .093$) but not under low game evaluation ($b = -.22$, $t = -.879$, $p = .381$). These findings indicate that social value assessed in the app has a positive effect on retailer loyalty in the case of high hedonic value, thus supporting H2. More surprisingly, the effect does not diminish for low hedonic value as long as the game evaluation is high. This suggests that social value can even leverage retailer loyalty when hedonic value is low, provided that the game is evaluated favorably. Hence, H2a is supported and H2b is supported partially.
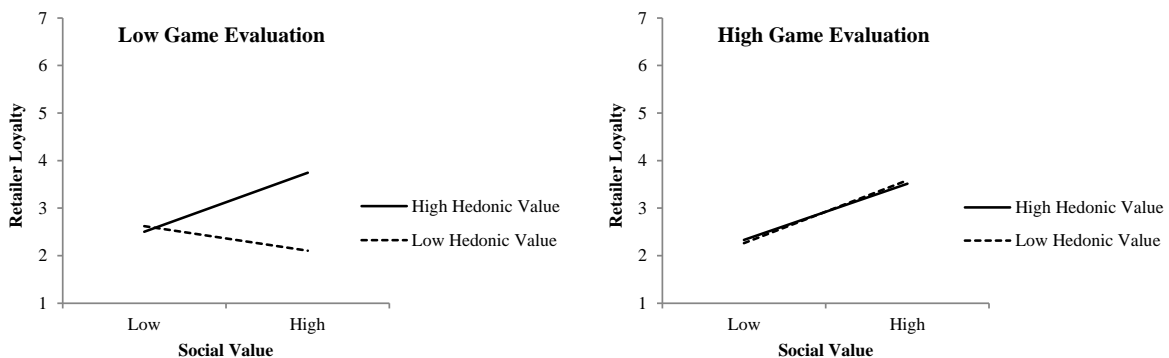
Figure 2.3: Retailer Loyalty by Social and Hedonic Value-in-Use, and Game Evaluation

2.4.2 Additional Analysis

Because the direct influence of game type (retailer game app, service app with in-app game) was significant in the main analysis, additional regression analyses (see Appendix Table 2.3) were conducted to control for it. The results show strong significant positive effects of social value ($\beta = .20$, $t = 2.249$, $p = .026$) and hedonic value ($\beta = .70$, $t = 6.966$, $p < .001$) on app word-of-mouth, providing support for H1. Additionally, we found a marginally significant positive interaction effect of social value and game type on app word-of-mouth ($\beta = .17$, $t = 1.946$, $p = .054$) and a marginally significant negative interaction effect of hedonic value and game type on app word-of-mouth ($\beta = -.21$, $t = -1.809$, $p = .073$). Hence, the provision of a game app seems to strengthen the effect of social value and attenuate the effect of hedonic value on app word-of-mouth.

Our results yielded a positive and significant three-way interaction effect of social value, hedonic value, and game type on retailer loyalty ($\beta = -.28$, $t = -2.243$, $p = .027$). Further simple slope analysis results under the control of game type (see Figure 2.4) yielded a significant positive effect of social value on retailer loyalty under high hedonic value for the retailer game app ($b = .49$, $t = 2.606$, $p = .010$) and a marginally significant positive effect for the retailer service app with an in-app game ($b = .24$, $t = 1.750$, $p = .083$). In addition, we found a significant positive effect of social value on retailer loyalty under low hedonic value for the game app ($b = .96$, $t = 3.383$, $p = .001$) but not for the service app ($b = -.27$, $t = -1.428$, $p = .156$). These findings indicate that in a retailer game app, social value influences retailer loyalty regardless of the hedonic value assessed. Again, this finding holds only partially for the service app with the in-app game, as the effect of social value on retailer loyalty is only seen in the case of high hedonic value. Furthermore, the strong increase in retailer loyalty under low hedonic value and high social value demonstrated for the retailer game app exceeds the results seen for the service app, though the opposite outcome can be

drawn when hedonic value is high. It might then be more profitable to offer an in-app game in an overall service app, as the risk of not winning people over (low/low value situation) seems to have less of an impact for service apps. The superiority of the service app is also supported by a means check, as the results show a significantly higher assessment of social value $(T(100.3) = 3.616; p < .001)$ in the app (see Appendix Table 2.4).

In addition, we found a direct effect of our control variable retailer familiarity on retailer loyalty under the moderation of game type ($\beta = .22$, $t = 2.728$, $p = .007$), which indicates that customers tend to be loyal to their familiar retailer.
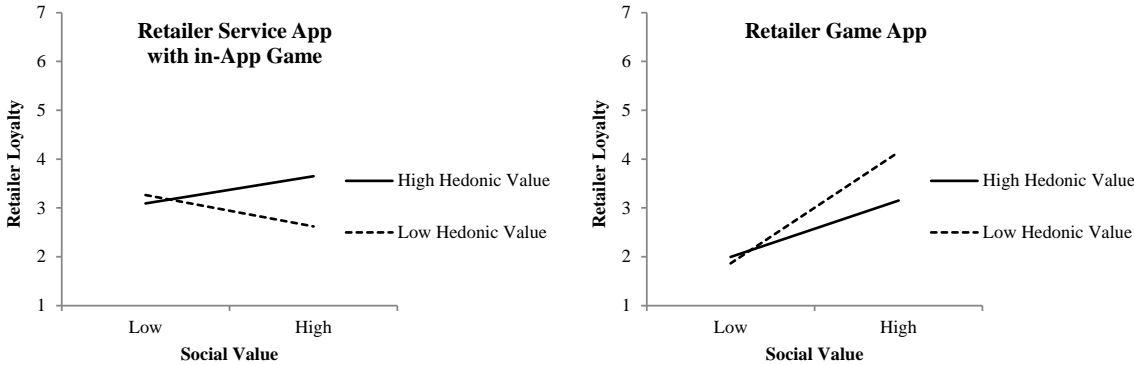
Figure 2.4: Retailer Loyalty by Social and Hedonic Value-in-Use, and Game Type

2.5 Discussion

The aim of this study was to gain insights into the mechanisms of hedonic value and social value that affect post-adoption consumer behavior. Our results suggest a strong influence of social value on app word-of-mouth under high hedonic value. More importantly, this strengthening of social value works independently of game evaluation. In contrast, under low hedonic value, the positive effect of social value on app word-of-mouth diminishes. This indicates that hedonic value must be fulfilled by the app – otherwise the provision of social value makes no difference regarding game outcomes. Moreover, our results reveal that social value also has a positive effect on retailer loyalty under high hedonic value. A surprising

finding is that this effect does not diminish in the case of low hedonic value as long as the game evaluation is high. This suggests that there is a leverage effect of social value on retailer loyalty for a low hedonic value, provided that the game is evaluated favorably.

In comparing the game app type, we found that offering a standalone game app seems to strengthen the effect of social value on app word-of-mouth; at the same time, it attenuates the effect of hedonic value. These findings are also supported on the retailer outcome level, with results indicating that for retailer game apps social value influences retailer loyalty independent of the hedonic value assessed. We recognize a similar pattern for the moderations by game evaluation. For the service app with in-app game, the effect on retailer loyalty again holds only in the case of high hedonic value. Nevertheless, the enormous increase in the effect of social value on retailer loyalty under low hedonic value exhibited in the retailer game app scenario seems to exceed the effects of the service app. However, the risk of losing loyalty in a retail game app that does not foster social value is greater; in an overall comparison, the retailer app with an in-app game might therefore be a better decision for retailers. These insights suggest that standalone advergame apps are more effective, but only when social value is cultivated appropriately.

2.5.1 Theoretical Implications

Our empirical study demonstrates that a retailer app containing a game enhances the intentions to spread positive word-of-mouth and exhibit retailer loyalty. These findings provide an explanation for why branded apps and the use of game dynamics are seen as profitable for firms (Bellman et al. 2011; Berger et al. 2018; Xu, Peak, and Prybutok 2015). From a theoretical perspective, we highlight the relevance of social value for creating app word-of-mouth and retailer loyalty. Furthermore, we show that social value is able to strongly affect app word-of-mouth and retailer loyalty, but only under the constraints of high hedonic

value or high game evaluation. In doing so, we clarify the role of value-in-use for app engagement and retailer outcome. We corroborate the results of previous studies that have found a positive relation between hedonic aspects in the app and recommendation behavior (Pihlström and Brush 2008; Xu, Peak, and Prybutok 2015).

This research contributes to the literature on advergames and gamification (Berger et al. 2018; Fang 2017; Ham, Yoon, and Nelson 2016; Hofacker et al. 2016) as well as retailing and customer value theory (Arbore, Graziani, and Venturini 2014; Kleijnen, de Ruyter, and Wetzels 2007; Sandström et al. 2008; Xu, Peak, and Prybutok 2015) in three important ways.

First, we introduce a novel value-in-use view that emphasizes the importance of social value-in-use in generating positive app word-of-mouth. In doing so, we extend current approaches that focus on intrinsic motivation by distinguishing the hedonic and utilitarian perspectives for consumer–brand connections within games (Berger et al. 2018; Kuo and Rice 2015; Vanwesenbeeck, Ponnet, and Walrave 2016; Waiguny, Nelson, and Marko 2013) and directly address substantial research gaps regarding the relevance of extrinsic social value in the game context (Holbrook et al. 1984). To the best of our knowledge, this is the first empirical demonstration of the conceptual argument that a retailer app with an integrated game can affect intention to spread positive app word-of-mouth by providing social and hedonic value-in-use.

Second, our empirical research provides evidence that the value-in-use provided in a branded retailer app also affects retailer loyalty. This extends previous work highlighting the effects that informational apps have on brand attitude (Bellman et al. 2011). Adding to the literature of branded apps, we empirically demonstrate the importance of an initial provision of hedonic value and leveraging further effects of social value for app recommendation and loyalty behavior (Fang 2017; Kim and Ahn 2017; Xu, Peak, and Prybutok 2015).

Third, we offer boundary conditions in terms of the effects of value-in-use on retailer loyalty. Specifically, we find support for our hypothesis that high game evaluation facilitates the effect of social retailer game app valuation on retailer loyalty. This result remains robust under the provision of high hedonic value. Indeed, with increasing social value, we find a boost in retailer loyalty – which compensates for low hedonic value as long as game evaluation is high. Though game evaluation and hedonic value might seem necessarily linked, a well-designed game can still fail to engage users (Berger et al. 2018).

2.5.2 Implications for Practice

This empirical research study provides several insights for retailers and app developers. In direct comparison, hedonic value seems to be of major importance for the post-adoption behavior of a value-in-use. Retail management should still encourage the development of features within the app and game design that enhance enjoyment, such as fun elements and an emotionally attaching game story. However, our findings suggest that social value only helps to enhance app word-of-mouth and retailer loyalty under high hedonic value and positive game evaluation. Furthermore, positive game evaluation and prominent retailer brand placement in the app only generate a positive brand memory if brand–game congruity is attained (Terlutter and Capella 2013). Indeed, a significant managerial implication is that retailers should be aware of the relevance of game mechanisms that encourage achievements and collaborative game experience (e.g., shared missions, rankings, badges, and awards) in order to foster positive outcomes.

Moreover, we offer a strategic decision aid for determining whether retailers should implement a game within their retail (service) app or develop a standalone game app. In particular, our study demonstrates the greater significance of social value and lower relevance of hedonic value-in-use for retailer game apps. Hence, social value strongly affects app word-

of-mouth, which is important for customer attraction. Whereas prior research has generally been quite positive about advergames and gamification (Hofacker et al. 2016), we point out a dark side: if a retailer cannot offer a game app with sufficient status-enhancing features (i.e., social value), intention to spread app word-of-mouth might decrease. This risk of losing reputation appears greater for standalone game apps than for retail service apps with an in-app game, as they can win over customers with other services. On the other hand, our study reveals a positive influence on retailer loyalty, as long as game evaluation and hedonic value are high. As improving retailer loyalty offers potential for customer retention, game apps can extend huge benefits when social value is kept in the strategic mindset.

2.5.3 Limitations and Future Research

The limitations of our empirical study may offer valuable avenues for future research. Our sample concentrates on a target group of young app users but could be expanded to a wider range of app users, as the retail customer segments belong to all age groups. Furthermore, we do not cover dynamic and competitive components of grocery retailing, which could be addressed in field studies comparing the long-term aspects of loyalty. In addition, external validity is limited by the use of a single retail context and the reliance on self-reports. Future research should implement actual use situations and provide a comparison of specific game app design elements that can foster social value in games across various retail sectors. Moreover, our choice of stimuli has highlighted the existence of different retailer strategies for implementing games. Future research might therefore opt to focus on a specific game and differentiate game elements within the app to determine appropriate game design elements for retailer games.

In summary, we offer a new perspective to examine retailer apps, specifically games. This study is among the first to address the link between social value-in-use, app word-of-mouth,

and retailer loyalty. The findings have implications for not only retailers but also app developers. Taken together, the results of this study provide a detailed view on the experiential aspects of advergames and apps in retailing.

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2.7 Appendix
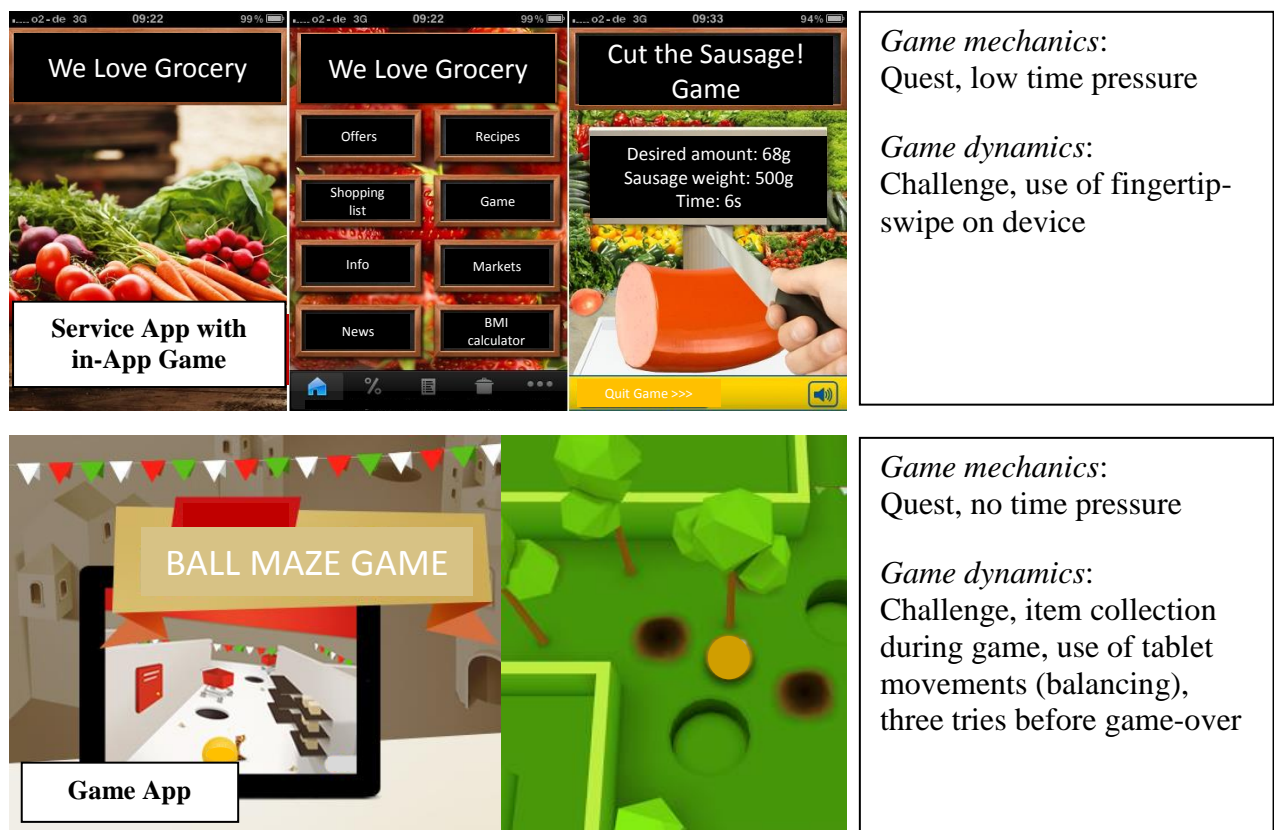
Figure 2.5: Game Stimuli

	Item	Overall		Service App with Game		Game App	
		FL	CA	FL	CA	FL	CA
Hedonic Value-in-Use	I think using this app is enjoyable.	.93	.90	.94	.89	.93	.91
	I feel good when I use this app.	.87		.85		.90	
	The app gives me pleasure.	.93		.93		.94	
Social Value-in-Use	Using this app helps me to feel accepted.	.93	.90	.94	.92	.93	.85
	Using this app makes a good impression on other people.	.89		.91		.83	
	Using this app gives a sense of belonging.	.93		.94		.89	
App Word-of-Mouth	I say positive things about the app to other people.	.89	.89	.90	.90	.87	.87
	I recommend the app to someone who seeks my advice.	.91		.90		.91	
	I encourage friends and relatives to install the app.	.93		.93		.92	
Retailer Loyalty	I consider myself to be loyal to [retailer].	.92	.83	.90	.83	.92	.79
	[Retailer] would be my first choice.	.87		.91		.81	
	I take pleasure in being a customer of [retailer].	.81		.79		.80	
Retailer Familiarity	*How well do you know the [retailer] brand?*						
	Unfamiliar – familiar	.88	.70	.92	.79	.86	.63
	Not knowledgeable – knowledgeable	.88		.92		.86	
Game Evaluation	*How did you like the game (in the app)?*						
	Very good – very bad						

Note: FL = Factor Loading, CA = Cronbach's Alpha

Table 2.2: Item List

Variable	App Word-of-Mouth		Retailer Loyalty	
	β	p	β	p
Social Value-in-Use (SOC)	.20	.026	−.02	.868
Hedonic Value-in-Use (HED)	.70	<.001	.15	.230
Game Type[*] (GT)	−.10	.169	−.16	.060
Interaction SOC × EMO	.08	.358	.22	.039
Interaction SOC × GT	.17	.054	.42	<.001
Interaction HED × GT	−.21	.073	−.23	.102
Interaction SOC × HED × GT	.00	.994	−.28	.027
Retailer Familiarity	−.04	.532	.22	.007
Adj. R^2	.521		.255	

[*]Game App = 1, Service App with in-App Game = 0

Table 2.3: Regression Analysis Results for Game Type Moderation

Variable	Game App		Service App with Game		t-Test	
	M	SD	M	SD	T	p
Social Value	1.76	.95	2.54	1.46	3.616	0.000
Emotional Value	4.19	1.41	4.53	1.28	1.499	0.136
App Word-of-Mouth	2.54	1.22	3.29	1.51	3.181	0.002
Retailer Loyalty	2.39	1.04	3.37	1.38	4.592	0.000
Game Evaluation	3.75	1.42	3.65	1.79	−0.397	0.692
Retailer Familiarity	5.82	1.26	6.31	1.00	2.541	0.012

Table 2.4: Means and t-Test

Acknowledgements

3 For Myself or Others? How App Service Design Affects Physical Retail Experience (Paper 2)

(with Steffen Jahn and Waldemar Toporowski)[2]

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3.1   Introduction

With customers demanding mobile retail services to make their shopping more convenient, companies provide these technologies and thus create a cyberphysical retail experience (Hauser et al. 2017; Pamuru, Khern-am-nuai, and Kannan 2017). Retailers have begun to develop apps to target consumers and increase sales (Andrews et al. 2016; Inman and Nikolova 2017). In this vein, mobile apps bridge the mobile and physical worlds.

Prior research has identified drivers of retail app acceptance and adoption, which include factors such as convenience, enjoyment, and aesthetics (Dacko 2017; Kim, Chan, and Gupta 2007; Kleijnen, de Ruyter, and Wetzels 2007). Despite being armed with this knowledge, many retailers struggle with low app use rates and determining how best to engage their users. In this paper, we examine how app use transcends the mobile sphere into the physical sphere and affects retail experience. A favorable, intense experience is not merely a desired outcome of mobile service provision (Pamuru, Khern-am-nuai, and Kannan 2017)—it is also a vital part of the customer journey (Lemon and Verhoef 2016). We provide an app value-in-use perspective and link it with physical retail experience to address the question of how mobile app service design can engage customers in a seamless retail environment.

Value-in-use is a multifaceted concept that reflects how consumers evaluate their interactions with marketplace offerings (Grönroos and Voima 2013; Holbrook 1994). Designing apps in a way that provides the 'right' value-in-use can be particularly beneficial for retail fusions by helping to create a seamless retail experience and strengthen customer relations. Still, little is known about how this seamless connection between the mobile and physical realms evolves and what customers value in such app services. Notably, the drivers of app adoption mentioned above (i.e., convenience, enjoyment, and aesthetics) reflect self-oriented value, as the app service provides value directly to the users themselves (Holbrook 1994). Yet app

services can also be valued indirectly for the effects they have on others or the response they evoke from them (Arbore et al. 2014; Holbrook 1994). In this case, it is appropriate to speak of other-oriented value (Holbrook 1994).

Although conceptual work has discussed other-oriented value (Jung 2014), empirical IS research is only beginning to consider aspects such as status provision in personal technology adoption (Arbore et al. 2014) or altruistic value in mobile service consumption (Lee and Han 2017), and the results are mixed. The marketing literature, however, provides robust evidence for the benefits of providing other-oriented value (Han, Nunes, and Drèze 2010). We therefore argue that app services that provide other-oriented value may contribute to app adoption and the physical experience. For example, the adoption of a shopping mall app may be fueled by services that increase the status of its user, as would the physical retail experience inside the shopping mall. Although some retail apps provide a Facebook connection, they generally use this channel to provide self-oriented value (e.g., via deals and coupons) and miss the opportunity to foster other-oriented value (e.g., via facilitating impression management or community interaction).

This research contributes to a holistic understanding of the connection between app design, app adoption, and physical retail experience in several ways. First, using survey data, this paper demonstrates that mobile app service design can provide different types of value-in-use. Second, we shed light on the role of other-oriented value as a driver of retail experience and app adoption. Third, this research is among the first to examine the effect of mobile service value-in-use on physical experience.

3.2 Theoretical Background

3.2.1 Mobile Services and Value-in-Use

To assess the user benefits of mobile services, research increasingly takes a value-in-use perspective (Kim, Chan, and Gupta 2007; Kleijnen, de Ruyter, and Wetzels 2007; Turel, Serenko, and Bontis 2007, 2010). Value-in-use can be defined as "a relativistic (comparative, personal, situational) preference characterizing a subject's experience of interacting with some object" (Holbrook and Corfman 1985, p.40)—in this case, a mobile retail app. In his widely used *typology of customer value*, Holbrook (1994, 2006) distinguishes key types of value along two dimensions: self-oriented vs. other-oriented value and extrinsic vs. intrinsic value (see Table 3.1).

	Extrinsic Motivation	*Intrinsic Motivation*
Self-oriented Perspective	**Economic Value** Using the app is a means toward self-oriented ends and involves efficiency and convenience.	**Hedonic Value** Using the app is enjoyed for its own sake as a source of pleasure (e.g., fun, happiness).
Other-oriented Perspective	**Social Value** Using the app elicits status-relevant responses from others and increases self-esteem; it is suitable for impression management.	**Altruistic Value** Using the app deals with obligations or duties pursued as ends in themselves to support and help other people or a community.

Table 3.1: Key Types of Customer Value (adapted from Holbrook 2006)

A retail app provides economic value if its services are perceived as useful and contain information that allows for efficient shopping. For example, mobile targeting provides economic value as it reduces search costs (Ghose, Goldfarb, and Han 2013); in this vein, a shopping mall app could offer an interactive map or display relevant product promotions. Hedonic value could be triggered through customized product offers or enjoyable app content, such as advertisements for favorite brands (e.g., videos, posts, and news), a mall kids club app

game, or the announcement of mall events. In another example, a so-called mood menu determines what food court visitors should eat based on their recent music playback history. Social value–enhancing features in a retail app could include loyalty programs that award app users "gold" status or social media connections for publicly sharing purchases. Finally, altruistic value could be realized through a community feature for discussing shopping-related contexts and offering tips and recommendations. The app might also provide users with a GPS functionality that can assist in meeting up with friends or family in the mall or help locate something (with features like "find me" or "find a store").

3.2.2 Downstream Consequences of App Service Design

While research on user response to app service elements typically stays within the mobile sphere (Arbore et al. 2014; Pihlström and Brush 2008; Turel, Serenko, and Bontis 2007, 2010), one can think of downstream consequences within the physical sphere. For example, some apps can become important touchpoints within the customer journey (Lemon and Verhoef 2016) and thus affect the physical retail experience in a store or mall. Retail experience can be defined as the "internal and subjective response customers have to any direct or indirect contact with a company" (Meyer and Schwager 2007, p. 117), whereby direct contact is usually initiated by the customer. If the customer decides to download a retail app and use it to communicate with the app provider, there is potential for an altered retail experience. Retail experience encompasses affective, behavioral, intellectual, relational, and sensory attributes (Naylor et al. 2008; Schmitt 1999). While affective experience refers to feelings and emotions toward the retail environment, behavioral experience means being stimulated to take physical action. The intellectual component can enhance knowledge about the surrounding environment. Lastly, relational experience is characterized by communality, whereas sensory retail experience includes triggering visual sense, smell, or touch.

3.2.3 Conceptual Model and Hypotheses

The main premise of this research is that using a mobile retail app's various services leads to some form of value-in-use, with respective consequences for future app use and physical retail experience (see Figure 3.1). While previous studies have considered an overall value construct based on the assumption that value is assessed for the individual components (Kleijnen, de Ruyter, and Wetzels 2007; Turel, Serenko, and Bontis 2007, 2010), we distinguish between the value-in-use derived for oneself (i.e., self-oriented value) and that derived via the response from others (i.e., other-oriented value).
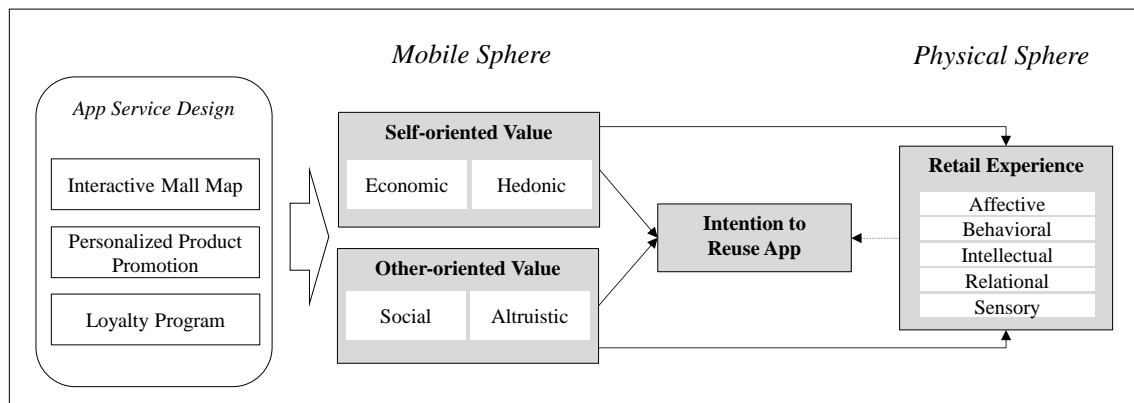
Figure 3.1: Research Model

There is abundant evidence that providing economic and hedonic value, the key types reflecting *self-oriented value*, makes mobile services more attractive and generates favorable user response (e.g., Turel, Serenko, and Bontis 2010). Moreover, the UTAUT2 framework (Venkatesh, Thong, and Xu 2012) considers performance expectancy and hedonic motivation—which correspond to economic and hedonic value, respectively—as drivers of technology acceptance. Conversely, reflecting negative economic value provision, inconvenience is a barrier to mobile technology use (Kim, Chan, and Gupta 2007; Kleijnen, de Ruyter, and Wetzels 2007). In terms of hedonic value, particularly hedonic digital artifacts such as ringtones, it has been found that playfulness and aesthetics drive behavioral intentions to reuse the service (Turel, Serenko, and Bontis 2010). Likewise, gamification elements that

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provide hedonic value have been shown to foster IS engagement (Liu, Santhanam, and Webster 2017).

Other-oriented value comprises social and altruistic value, which refer to social status and a sense of belonging (Holbrook 1994, 2006). Receiving positive responses from others is valuable as it can improve self-esteem, while helping others or sensing community is valuable because of people's need to belong (Baumeister and Leary 1995). It is therefore not surprising that status and belongingness have been shown to affect behavior across several domains, such as luxury consumption (Han, Nunes, and Drèze 2010) and group identification (Baumeister and Leary 1995). However, IS research is only beginning to employ this perspective (Arbore et al. 2014; Salo and Frank 2017; Turel, Serenko, and Bontis 2007, 2010). For example, Turel, Serenko, and Bontis (2007) examined social value alongside performance/quality value, emotional value and value-for-money. The authors found that social value did not affect overall perceived value, while the remaining value types (which all reflect self-oriented value) exerted positive and significant effects. Likewise, Salo and Frank (2017) studied reactions to critical app incidents—unusually positive or negative experiences—and found them to be independent of whether shoppers were alone or with others. However, the likelihood of quitting an app entirely following a negative critical incident was higher when shoppers were alone (64.3% vs. 44.4%). In their examination of social value, Arbore et al. (2014) found that self-identity was the second most important factor driving personal technology adoption, surpassed only by usefulness. In further support of the general idea that other-oriented value provision can benefit mobile service providers, there is evidence that social value increases mobile loyalty intentions for entertainment service users, apparently because such content is likely to be shared (Pihlström and Brush 2008). This leads to the first hypothesis:

H1. The app user's assessment of (a) self-oriented value and (b) other-oriented value in a shopping mall app is positively related to the intention to reuse the app in the mobile sphere.

The effects of mobile sphere evaluation (i.e., retail app value-in-use) on physical sphere experience have rarely been studied. However, transformational advertising appeals that project the experience consumers will have during consumption have been shown to improve the overall retail experience (Naylor et al. 2008). Environmental psychology provides a general framework of how environmental stimuli are linked to behavioral responses through emotional experience (Mehrabian and Russell 1974). In our case, the app serves as such an environmental stimulus, providing design and content cues. Accordingly, a mall visitor can use the app during a shopping visit and be stimulated by design cues such as the mall logo, touch-enabled features in the app, and visual and textual content cues. The interactivity and amount of time spent with the content can then spill over to the affective retail experience. When a mall visitor sees advertising in the mall for a loyalty program and the app also promotes collecting points through a store walk-in, the app users experience an interaction between the mobile and physical environments, with consequences for their behavioral experience (e.g., walking, buying). This suggests that a favorable perception of the app services—manifested in high self-oriented and/or other-oriented value—has a behavioral outcome in terms of shopping more or trying something new. In more general terms, app users in a physical retail environment could experience the mall differently and with greater intensity, depending on their value-in-use assessment of the app content. More specifically, a loyalty program can evoke intellectual analysis or behavioral response, such as tweeting and texting, additionally altering the relational experience. Mall map–elicited self-oriented value can affect sensory and behavioral retail experience, and specialized offers attached to favorite brands would increase the affective experience. Through this changing retail experience, there develops an effect of the mobile sphere on the physical one. First indications of the influence of mobile consumption on physical surroundings can be found in the context of geo-tracking,

where Fang et al. (2015) found that mobile promotions affect consumer purchase decisions, which in turn led to movie visits in the physical sphere. Taken together, we formulate the following hypothesis:

H2. The app user's assessment of (a) self-oriented value and (b) other-oriented value in a shopping mall app is positively related to the retail experience in the physical sphere.

Beyond the effects of value-in-use on intention to reuse the app (mobile sphere) and physical retail experience (physical sphere), physical experience might also affect one's intention to reuse the app. In this vein, the physical sphere would feed back into the mobile sphere. Evidence for this possibility is provided in a study showing that when Chinese subways are more crowded, passengers turn inwards and tend to focus more on their phones to protect them from the surrounding encroachments (Andrews et al. 2016). In a more favorable environment, a positive physical experience that can be attributed to previous app stimulation might increase intention to reuse the app. This leads to the final hypothesis:

H3. The retail experience in the physical sphere is positively related to the intention to reuse the app.

3.3 Research Method

In step 1, we conducted a web content analysis to identify retail app service design elements, while in step 2 we tested the influence of these design elements on physical retail experience and intention to reuse the app. In step 3, we plan to undertake a field study to fully exploit the benefits of a mixed-method approach (Venkatesh, Brown, and Bala 2013).

3.3.1 Identification of App Service Design in a Shopping Mall Context

We refer to shopping mall app design, as the physical experience in a shopping mall context provides a useful field of application for a value-in-use approach that considers both self-oriented and other-oriented value. To determine the relevant app service elements, we performed a review of relevant IS and marketing literature as well as existing shopping mall apps. The typical elements used in app design are visual content elements (e.g., pictures) and textual fragments, which both belong to the content layer of app design (Yoo, Henfridsson, and Lyytinen 2010). With respect to the service layer, there is a wide range of possible app features, though some of the most widespread include personalization, Facebook connection, interactivity, and mobile messages. The website content analysis of shopping mall apps yielded a list of service elements; an extract of the most relevant findings is displayed in Figure 3.2. The combination of content elements, app features, and traditional mall services form the app service design elements.

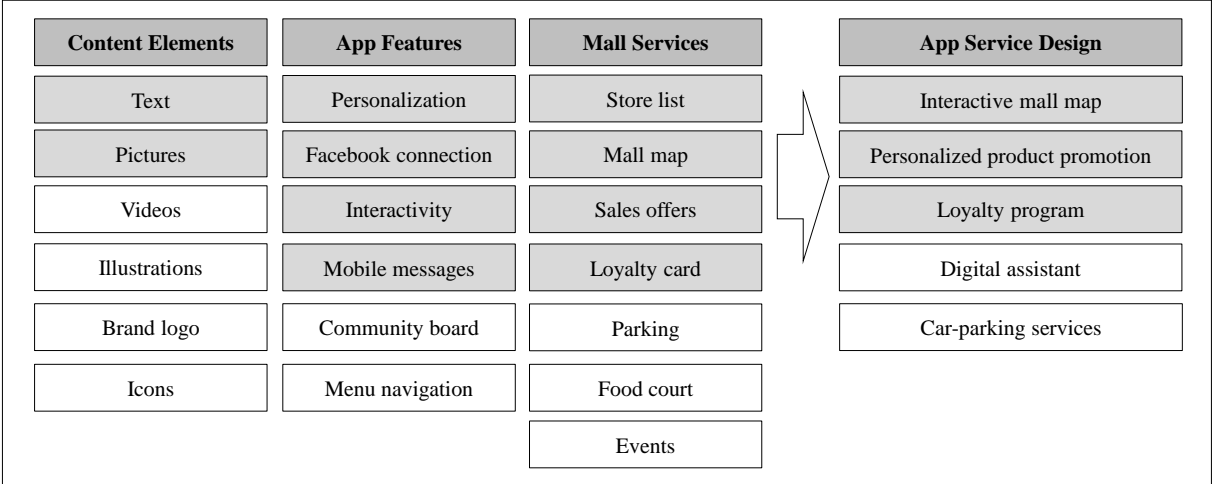| Content Elements	App Features	Mall Services	App Service Design
Text	Personalization	Store list	Interactive mall map
Pictures	Facebook connection	Mall map	Personalized product promotion
Videos	Interactivity	Sales offers	Loyalty program
Illustrations	Mobile messages	Loyalty card	Digital assistant
Brand logo	Community board	Parking	Car-parking services
Icons	Menu navigation	Food court	
		Events	

Figure 3.2: Overview of App Design in a Shopping Mall Context

We chose the three app service design elements—interactive mall map, personalized product promotion, and loyalty program—for our empirical study because they are included in most retailer-provided shopping mall apps on the market (i.e., Malltip, Shopzy, sMall, GGP malls,

Simon, and MallMate) and are also value-added services for app users, as they offer more value than the physical-only services.

3.3.2 Study Design

In our study participants were recruited from the Clickworker platform in return for nominal payment. Each respondent received a description of the shopping scenario in a newly opened Mall of America along with pictures of the shopping mall. We asked participants to imagine they had just arrived in the mall to start shopping and were using the mall app. This was followed by a verbal description of the shopping mall app as well as screenshots. Respondents were randomly assigned to one of three conditions of typical app service designs (interactive mall map, personalized product promotion, and loyalty program) in order to evaluate different app services. For each service, we provided two screenshots of the app and a short description of the highlighted functionality. Furthermore, each participant saw a specific mobile message depending on his or her condition (e.g., "Check in and collect reward points to show your friends what you shopped!" for the loyalty program). Participants first answered questions about the app, followed by questions about their mall experience (items were always presented in randomized order). Next, the participants evaluated app value-in-use (the order was chosen to minimize response bias). The survey concluded with some demographic questions.

3.3.3 Sample and Measurement

The sample consisted of 151 eligible respondents. The sample demographics indicate that 102 female respondents (67.5%) took part in the survey and a typical respondent was 32 years old (median 30). *Self-oriented value* was measured as economic value (using a scale from Pihlström and Brush [2008]; $\alpha = .94$) and hedonic value (using a scale based on Sweeney and

Soutar [2001] and Nysveen, Pedersen, and Thorbjørnsen [2005]; $\alpha = .93$). Examples of such items include "*The mobile shopping mall app ... is an efficient way to manage my time*" (economic value) and "*... would be entertaining*" (hedonic value). The two subscales were combined to form a measure of self-oriented value ($\alpha = .84$). *Other-oriented value* was measured as social value (Sweeney and Soutar 2001; $\alpha = .92$) and altruistic value (Price, Feick, and Guskey 1995; $\alpha = .93$). These value dimensions are illustrated in the following example items: "*The mobile shopping mall app ... would make a good impression on other people*" (social value) and "*... would induce me to help other people*" (altruistic value). The two subscales were combined to form a measure of other-oriented value ($\alpha = .92$). *Retail experience* was measured as a five-dimensional second-order construct based on Schmitt (1999) and consists of affective ($\alpha = .70$), behavioral ($\alpha = .86$), intellectual ($\alpha = .74$), relational ($\alpha = .90$), and sensory ($\alpha = .87$) dimensions. Intention to reuse the app ($\alpha = .92$) was adapted from Taylor and Todd (1995). All constructs were measured on seven-point Likert scales (ranging from 1 = "strongly disagree" to 7 = "strongly agree"). As indicated by average variance extracted (all > .66) and construct correlations ($r_{max} = .81$), all scales exhibit high convergence validity and discriminant validity (Fornell and Larcker 1981). A table with the items and their psychometric properties can be found in the Appendix (Table 3.4).

3.4   Preliminary Results

Before testing the hypotheses, we examined the means of all model constructs both in the complete sample and across the three scenarios in the survey. The mean values of all constructs can be found in Table 3.2. This table indicates that the app services generally affect user perceptions of other-oriented value, particularly when compared to self-oriented value. Of the three conditions, the loyalty program condition seems most effective in increasing perceptions of both self-oriented and other-oriented value. Likewise, this condition seems

superior in terms of generating a physical retail experience and intention to reuse the app. This pattern is a first indication that app service design might have consequences for a physical retail experience, in addition to affecting the mobile sphere.

	Complete Sample		Interactive Mall Map		Personalized Product Promotion		Loyalty Program	
	Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.
Self-oriented Value	2.65	1.42	2.74	1.38	2.35	1.57	2.88	1.26
Other-oriented Value	4.14	1.49	4.20	1.26	3.90	1.64	4.33	1.53
Retail Experience	3.34	1.58	3.34	1.47	3.03	1.75	3.65	1.48
Intention to Reuse	2.87	1.59	2.91	1.46	2.39	1.55	3.32	1.66

Table 3.2: Means and Standard Deviations

We used partial least squares structural equation modeling (PLS-SEM) to test the hypotheses and conducted the analysis in SmartPLS (Ringle, Wende, and Becker 2015). PLS was selected because, unlike covariance-based SEM, it does not require large sample sizes for analysis and is relatively common in the mobile service research field (Kroschke and Steiner 2017; Turel, Serenko, and Bontis 2010). Results for the complete sample as well as each of the three conditions (interactive mall map, $n = 50$; personalized product promotion, $n = 51$; and loyalty program, $n = 50$) are presented in Table 3.3. The overall model fits the data well with R-squared values of .466 for retail experience and .456 for intention to reuse the app.

In support of Hypothesis 1a, self-oriented value strongly affects intention to reuse the app in the complete sample ($\beta = .468$; $p < .001$) and across all three conditions ($\beta = .630/.426/.482$; $p \leq .001/.075/.005$). Moving beyond existing research, we find an overall significant effect of other-oriented value on intention to reuse the app ($\beta = .322$; $p < .001$). Furthermore, other-oriented value significantly affects intention to reuse the app in the mall map ($\beta = .319$; $p = .009$) and product promotion conditions ($\beta = .428$; $p = .001$). However, we find no

significant effect of other-oriented value on intention to reuse the app in the loyalty program condition. Hence, there is partial support for Hypothesis 1b.

	Complete Sample		Interactive Mall Map		Personalized Product Promotion		Loyalty Program	
	Std. coeff.	*p*-value	Std. coeff.	*p*-value	Std. coeff.	*p*-value	Std. coeff.	*p*-value
Self-oriented Value → Intention to Reuse	**.468**	**< .001**	**.630**	**< .001**	.426	.075	**.482**	**.005**
Other-oriented Value → Intention to Reuse	**.322**	**< .001**	**.319**	**.009**	**.428**	**.001**	.193	.132
Self-oriented Value → Retail Experience	**.630**	**< .001**	**.742**	**< .001**	**.554**	**< .001**	**.669**	**< .001**
Other-oriented Value → Retail Experience	.123	.076	−.037	.762	**.286**	**.003**	−.012	.932
Retail Experience → Intention to Reuse	.029	.721	−.098	.491	−.015	.936	.078	.615

Table 3.3: PLS Analysis Results of Hypothesis Testing

Regarding downstream effects on physical experience, we find significant effects of self-oriented value on retail experience (β = .630; *p* < .001) for the complete sample. Across all three conditions, the significant effect of self-oriented value pertains to retail experience (β = .742/.554/.669; *p*s < .001). Thus, the data supports Hypothesis 2a. Other-oriented value has a marginally significant effect on retail experience in the complete sample (β = .123; *p* = .076) and a significant effect in the product promotion condition (β = .286; *p* = .003) but not in the remaining two conditions (mall map and loyalty program). Hence, Hypothesis 2b is only partly confirmed.

We find no feedback effect of retail experience on intention to reuse the app. Accordingly, we find no support for Hypothesis 3. Instead, the self-oriented and other-oriented value generated through mobile app use only has a direct effect on intention to reuse the app. This is confirmed by mediation analysis with PROCESS (Hayes 2013) that indicates non-significant indirect effects through physical retail experience (for self-oriented value: .005, 95%

confidence interval = [−.023, .046]; other-oriented value: .018, 95% confidence interval = [−.076, .143]).

3.5   Limitations, Next Steps, and Expected Contribution

The most important finding of this study is that a mobile app that provides self- and other-oriented value merges into the physical retail sphere. As expected, self-oriented value greatly affected retail experience and intention to reuse such a shopping mall app. Notably, other-oriented value also affected the overall retail experience, but only in the personalized product promotion app scenario. This finding suggests that primarily self-oriented mobile services can have particularly profound downstream consequences if users also derive other-oriented value from using the app.

The results demonstrate that the other-oriented value perspective (social and altruistic value) adds to our understanding of app service design in the context of adoption and physical retail experience. We empirically examined a value-in-use approach that goes beyond the deterministic traditional paradigm of user adoption. Our approach contributes to this literature by integrating different research streams (e.g., Arbore et al. 2014; Kim, Chan, and Gupta 2007) with the hope of creating a mindset of appreciating other-oriented value as important for the success of apps. Although in our study other-oriented value did not affect retail experience in all scenarios, an analysis of the five experience dimensions may allow for downstream effects, such as cross-channel purchase and spending (Jahn et al. 2018). A significant managerial implication is that retailers and app developers should keep track of the social features of apps. While shopping mall app providers have begun to offer digital assistants, our study highlights the need for more innovative other-related services, such as community boards or bonus point allocation among friends. Although these services are not

directly tied to increased sales, in the long run they can nonetheless contribute to a retailer's bottom line.

Moreover, an implication for app development is that app engagement in the form of intention to reuse a specific app is not only driven by economic and hedonic value but also affected by other-oriented value, such as when a personalized service is used for impression management. Our results reveal that the personalization is likewise driven by self- and other-oriented value, unlike the interactive map and loyalty program, where self-oriented value clearly stands out. Depending on the strategic development of retail app design, shopping expertise and branding should be used to foster the individual status perception.

The limitations of our study include use of a single research context and reliance on self-reports. Therefore, a next step is to conduct a field study that also involves a control group to address the external validity of the results obtained in this study. The field study will also feature app service design elements that have pronounced value provision profiles (e.g., design elements that provide intense altruistic value and less intense economic value). Another avenue for future research is establishing a longitudinal study to implement actual use in the model and examine feedback effects of the physical sphere on the mobile sphere over time. The non-significant feedback effect in this study might have been an artefact of study design; multiple observations of actual behavior are therefore a more valid approach. Longitudinal studies would also help address the question of which app services engage and retain users in the long run.

In summary, we aimed to examine how app use transcends the mobile sphere into the physical sphere and affects retail experience. Central to this process are two key types of value-in-use: self-oriented and other-oriented value. While previous studies suggest a dominance of self-oriented value provision in IS (Kim, Chan, and Gupta 2007; Kleijnen, de Ruyter, and Wetzels 2007), we highlight the role of other-oriented (social and altruistic) value. By identifying the

value drivers of (i) physical retail experience and (ii) app adoption, it is possible to draw

implications for future app engagement.

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3.7 Appendix

Construct	Items	FL	CR	AVE
Self-oriented value	*The mobile shopping mall app ....*			
Economic value	... makes my life easier (orientation in the mall, assortment).	0.95	0.96	0.90
	… would save time and money.	0.94		
	… is an efficient way to manage my time.	0.95		
Hedonic value	… would make me feel good.	0.90	0.95	0.83
	… is one that I would enjoy.	0.93		
	… would be entertaining.	0.90		
	… would be exciting.	0.92		
Other-oriented value	*The mobile shopping mall app ....*			
Social value	… would help me to feel acceptable.	0.92	0.94	0.80
	… would make a good impression on other people.	0.89		
	… would give its owner social approval.	0.86		
	… would improve the way I am perceived.	0.91		
Altruistic value	… would induce me to help other people.	0.94	0.96	0.88
	… would induce me to share what I have.	0.92		
	… would induce me to give to others.	0.95		
Intention to reuse	*To what extent do you agree with the following statements?*			
	If available, I would download this app and use it.	0.94	0.95	0.86
	I intend to use this app to inform or orientate while shopping.	0.91		
	I intend to use this app frequently in the near future.	0.93		
Retail experience	*Please indicate how you perceive shopping in the mall.*			
Affective	Shopping in this mall induces positive feelings and sentiments.	0.92	0.87	0.77
	Shopping in this mall is emotional inspiring.	0.83		
Behavioral	I engage in physical actions when I visit this mall (shopping in several floors and shops).	0.90	0.91	0.78
	I engage in physical behaviors when I go shopping in this mall (unplanned buying, shop variety).	0.85		
	Shopping in this mall is action oriented (motivates to shop).	0.90		
Intellectual	I engage in a lot of thinking (e.g. opening hours, shop variety, price comparison) when I encounter shopping in this mall.	0.86	0.95	0.66

	Shopping in this mall stimulates my curiosity (new products, shops, sales).	0.88		
	Shopping in this mall stimulates my problem solving.	0.68		
Relational	As a customer of the mall I feel like I am part of a community.	0.96	0.95	0.90
	I feel like I am part of the shopping mall family.	0.94		
Sensory	Shopping in this mall makes a strong impression on my senses (hear, see, smell, feel).	0.94	0.94	0.89
	I find shopping in this mall interesting in a sensory way.	0.95		

Table 3.4: Item List

4   Mobile Apps and the Physical Retail Sphere (Paper 3)

(with Steffen Jahn and Waldemar Toporowski)[3]

A previous version of this manuscript has been presented at the following conference:

- 45th Academy of Marketing Science (AMS) Annual Conference, San Diego, California, USA, 26.05.2017.

4.1   Introduction

While technological innovation is a source of retailer profit (Inman and Nikolova 2017), digitalization is often blamed for brick-and-mortar store closings. Especially shopping malls have become "abandoned monoliths of merchandise" (Bell 2016), with retailers searching for compelling ways to counteract this trend. One option is to expand digital business models to become less dependent on brick-and-mortar sales (Kannan and Li 2017; Lamberton and Stephen 2016). Another option is to improve the physical retail experience through store design (Jahn et al. 2018) or to enrich the customer journey in a way that coordinates digital and physical touchpoints (Lemon and Verhoef 2016). In this vein, the omni-channel literature increasingly explores phenomena such as showrooming and webrooming, in which customers use physical (digital) touchpoints for search and digital (physical) touchpoints for purchase (Gensler, Neslin, and Verhoef 2017; Lemon and Verhoef 2016).

While the omni-channel literature is largely concerned with the unidirectional flow of action (digital to physical or physical to digital), we go one step further and propose a sphere view of retail touchpoints that consist of multidirectional flows. In particular, we distinguish among the physical, home, and mobile spheres, with special emphasis on the mobile sphere. Equipped with nothing more than a smartphone, consumers can navigate through a city or mall in search of product information and deals, with opportunities to purchase online or in a nearby store. In this way, a smartphone becomes more than just another touchpoint; it becomes an interaction hub in which the physical and mobile spheres blend. With this blending, consumers may attain enhanced physical retail experiences, thus opening the opportunity for mobile services to actually benefit brick-and-mortar stores.

We contribute to retailing literature by introducing a novel framework that considers how mobile touchpoints transcend from the mobile sphere to the physical retailing sphere. To date, only a few studies have examined the impact of mobile touchpoints on retail experience,

despite calls for holistic insights into consumer behavior within those touchpoints (Baxendale, Macdonald, and Wilson 2015). Because offline retailing stakes are high, providing a seamless retail experience could be a key element in improving customer relations; yet the blending of the physical and mobile spheres is still underresearched (Inman and Nikolova 2017; Lemon and Verhoef 2016; Shankar et al. 2016; Verhoef, Kannan, and Inman 2015). As such, this article contributes to a holistic understanding by closing this important research gap. Specifically, we demonstrate that a mobile shopping mall app affects the physical retail experience, planned shopping time, and future visit intention. To the extent that an improved retail experience increases firm performance (Babin, Darden, and Griffin 1994; Kumar, Anand, and Song 2017; Verhoef, Kannan, and Inman 2015), experience-enhancing effects of retail apps have managerial relevance.

If touchpoints from the physical and mobile spheres can blend and result in an improved physical retail experience, the question is, what drives this process? We also contribute to the literature by highlighting the role of app value-in-use in enhancing the physical retail experience. Specifically, we argue that some mobile app services are valuable in the physical world and thus enhance the physical retail experience. Prior research has taken a value-in-use perspective to assess user-perceived benefits of mobile services (e.g., Kim, Chan, and Gupta 2007; Kleijnen, de Ruyter, and Wetzels 2007). However, that work relies on overall measures of cost–benefit ratios (Kim, Chan, and Gupta 2007) or usefulness (Kleijnen, de Ruyter, and Wetzels 2007) to conceptualize value. Building on Holbrook's (1994, 2006) theorizing, we distinguish between self-oriented and other-oriented value to conceptualize how mobile app services extend into the physical sphere. While cost–benefit ratios and usefulness reflect self-oriented value (Holbrook 1994), apps may also be valued for their effects on others or the responses they elicit from them. For example, use of a shopping mall app may increase the status of the user or help her connect with other shoppers. Providing other-oriented value can be particularly important for retail experience because of the role of interpersonal aspects in

retailing (Bloch, Ridgway, and Dawson 1994; Holbrook 2006). In addition to these value-in-use effects, we treat deal proneness (Lichtenstein, Netemeyer, and Burton 1990) as a moderator. By adding deal proneness as boundary condition, we explicitly address a main target group of retailer apps. Our managerial contribution is to provide further support for app design decisions and to find appropriate segment targeting strategies within stationary retailing.

We test our framework using data from shopping mall visitors and conduct three studies. A pilot study in a shopping mall demonstrates the effect of apps on retailer outcomes. Study 1 examines app-use-based self-oriented value and other-oriented value and their impact on physical retail experiences. Study 2 analyzes how deal proneness moderates the process, specifically examining retail experience dimensions (affective, behavioral, intellectual, relational, and sensory) separately. The findings reveal that apps offering self-oriented value affect retail experience, and this effect can be enhanced by providing other-oriented value. Furthermore, depending on whether consumers are deal prone or not—in the minor provision of self-oriented value—other-oriented versus self-oriented value can boost retail experience especially for behavioral, intellectual, and sensory experiences.

4.2   Conceptual Background

4.2.1   Touchpoints in Retailing Spheres

Retailers are able to build an increasing number of connections with their customers as never before, leading to "a quantum leap into an unknown shopping realm" (Grewal, Roggeveen, and Nordfält 2017, p. 1). These connections end in multiple touchpoints in which retailers can reach customers and manage their connections. Such touchpoints are part of a (predominantly) company-owned channel, which aims to enable interactive and integrative communications between firms and consumers (Ailawadi and Farris 2017; Verhoef, Kannan,

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and Inman 2015). Many other touchpoints exist, and we suggest organizing them under three retail spheres: physical, home, and mobile.

The *physical sphere* refers to the traditional brick-and-mortar environment in which retailers try to steer consumer response through store design and staff (Dodds, Monroe, and Grewal 1991; Kerin, Jain, and Howard 1992). The *home sphere* refers to the natural living place of each consumer where retailers have limited control over the shopping environment. Yet this sphere is characterized by a more leisure, private, and convenient atmosphere free of the limits of store hours (Childers et al. 2001). Websites, direct mail, and home shopping are touchpoints within the home sphere. Because of their location and characteristics, the physical and home spheres are strictly separated. As a result, retailers try to combine them in multi-channel marketing or orchestrate them in webrooming and showrooming (Gensler, Neslin, and Verhoef 2017). The *mobile sphere* is characterized by handheld, connected devices, such as smartphones or tablets, which can be taken everywhere to communicate and browse for information. Retailers offer several touchpoints that use these devices, such as mobile optimized websites, branded apps, retailer apps, partner apps (e.g., loyalty programs, malls), and social media accounts (e.g., on Facebook, Instagram, or Twitter). Ubiquity, as the constituent feature of touchpoints in the mobile sphere, means taking the digital connection to every place a consumer wants to use it—be it on the bus, metro, or car; in the garden, city, or office; and even directly in the store. This unique feature enables the mobile sphere to *blend* with the others. For example, mobile promotions (mobile sphere) can target consumers via beacons and sensors inside the store (physical sphere) (Grewal, Roggeveen, and Nordfält 2017). This process is conceptually similar to transformational advertising appeals, which lead to an enhanced experience effectively by stimulating emotions (Naylor et al. 2008). In this line, by providing sufficient mobile touchpoints, the overall physical retail experience might improve. For example, shoppers can discover new products in-store through mobile app advertisements or simply have more fun while shopping.

Our classification framework, which distinguishes among the physical, home, and mobile spheres, highlights the versatile position of the mobile sphere. Because it can blend with the other spheres, the mobile sphere emphasizes the change process of consumer behavior. The use of touchpoints within the spheres can occur in any sequence. Figure 4.1 illustrates our framework. While the mobile sphere can blend with both the home and physical sphere, in this research we focus on using mobile touchpoints to enhance the physical retail experience. We elaborate on this process next.
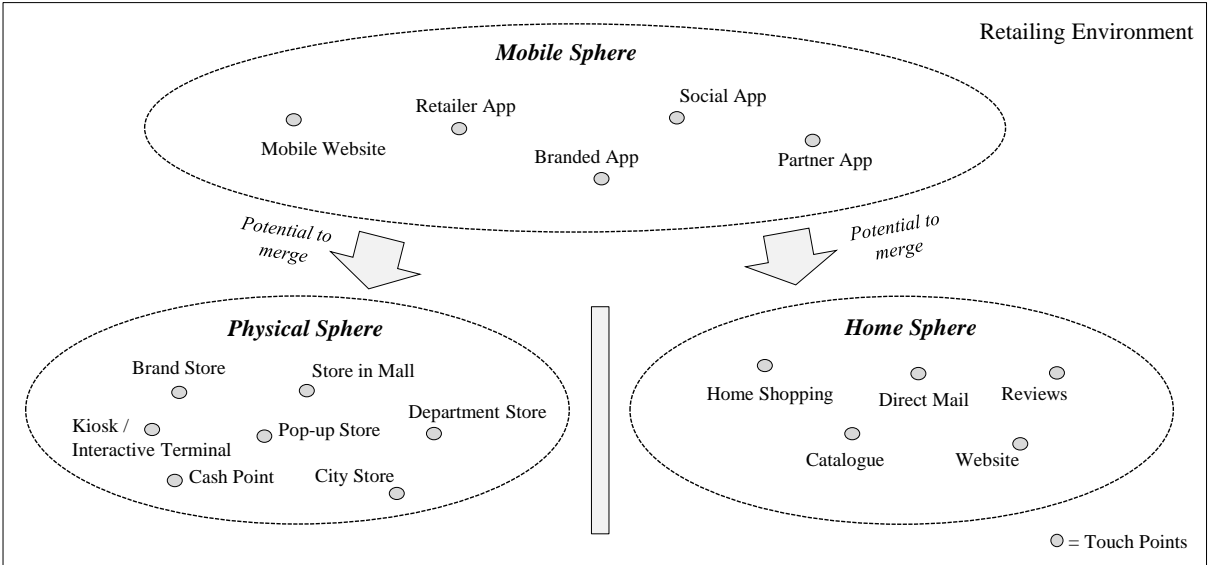
Figure 4.1: Touchpoints in Retail Spheres

4.2.2   How Physical and Mobile Spheres Blend

To explore how the physical and mobile spheres can blend, we inspect both research that links touchpoints in these spheres and examinations of the customer journey. For example, Andrews et al. (2016b) find that in crowded places—classified as the physical sphere in our framework—consumers tend to look at their smartphone even more and thus are more susceptible to the influence of mobile ads. Conversely, retail apps that focus on transactions, such as price comparisons and product locators, can influence preference for buying in-store (Newman, Wachter, and White 2017). In general, mobile targeting is an effective way to add

a mobile touchpoint to increase sales in the physical sphere (Fong, Fang, and Luo 2015; Inman and Nikolova 2017; Luo et al. 2014).

Beyond increased retailer profitability, mobile technologies can revolutionize the consumer retail experience by making it more convenient (Grewal, Roggeveen, and Nordfält 2017). For example, to improve the customer experience, retailers can leverage social media (Roggeveen and Grewal 2016). Engaging consumers in the (digital) social media environment makes them even more profitable for retailers, and the introduction of smartphones has expanded this outcome. Also in the physical (retail) environment are transformational appeals (touchpoints) to influence customer behavior (Naylor et al. 2008). In addition to these flows from digital to physical, the in-store customer journey may also trigger mobile service use. For example, consumers might look for additional product information or consult with their peers before making a purchase. They may also consult a retail app that helps them find a specific item or to look for special deals. We keep with this line of thought and argue that touchpoints from the mobile sphere can provide value to users, which in turn can improve the customer experience within the physical sphere.

4.2.3   Retail Experience

Customer experience reflects the "internal and subjective response customers have to any direct or indirect contact with a company" (Meyer and Schwager 2007, p. 117), where direct contact is usually initiated by the customer. Customer experience is an important pre-economic retail outcome (Grewal, Roggeveen, and Nordfält 2017; Jahn et al. 2018; Lemon and Verhoef 2016) and triggers shopping behaviors such as more shopping visits and higher share of wallet (Grewal, Levy, and Kumar 2009; Verhoef et al. 2009). Consideration of the customer experience inside the retail store, or "retail experience" for short (Jahn et al. 2018; Naylor et al. 2008), is therefore a valuable addition to research that takes a firm perspective and champions concepts such as mobile ad effectiveness and mobile targeting.

According to Schmitt (1999) and Naylor et al. (2008), retail experience encompasses affective, behavioral, intellectual, relational, and sensory attributes. Affective experience refers to feelings and emotions toward the retail environment, whereas behavioral experience means being stimulated to take physical action. The intellectual component can enhance knowledge about the surrounding environment. Last, relational experience is characterized by communality, whereas sensory experience involves triggering the sense of sight, smell, or touch.

4.2.4   Mobile Apps and Value-in-Use

In value-in-use, a person uses app services and derives value from the consumption experience. Thus, we support the idea of the user as a co-creator of value and refer to value-in-use as "a relativistic (comparative, personal, situational) preference characterizing a subject's experience of interacting with some object" (Holbrook and Corfman 1985, p. 40). Holbrook (1994, 2006) distinguishes key types of value along two dimensions: extrinsic versus intrinsic value and self-oriented versus other-oriented value (see Appendix A). Extrinsic value comes from situations that are valuable to reach certain goals, while intrinsic value means the appreciation of use for its own sake (Holbrook 2006). In a retail context, extrinsic value is typically associated with the "work" aspect of shopping, whereas intrinsic value derives from shopping as "fun" (Babin, Darden, and Griffin 1994; Mathwick, Malhotra, and Rigdon 2001). The main difference between the self- and other-oriented perspective is that self-oriented value means depending on "one's own response" while other-oriented value "depends on the relationship of one's own self to the responses of other people or to some other significant aspect of the cosmos" (Hirschman and Holbrook 1986, p. 232). *Self-oriented value* thus refers to economic (extrinsic) and hedonic (intrinsic) value, which involve evaluating shopping goals with efficiency (e.g., convenience, time, money) and positive emotions (e.g., pleasure, enjoyment). *Other-oriented value* comprises social (extrinsic) and

altruistic (intrinsic) value, which refer to social status and a sense of belonging, respectively (Holbrook 1994, 2006).

A retail app offers economic value if its services are perceived as useful and contain information that allows for efficient shopping. For example, mobile targeting provides economic value because it reduces search costs (Ghose, Goldfarb, and Han 2013); in this vein, a shopping mall app could provide a map or display relevant product promotions. Hedonic value could be triggered through customized product offers or enjoyable app content, such as advertisements for favorite brands (e.g., videos, posts, news), a mall kids club app game, or the announcement of mall events. Another example is a so-called mood menu that determines what food court visitors should eat at from their recent music playback history. Social value–enhancing features in a retail app could include loyalty programs that award app users "gold" status or social media connections for publicly sharing purchases. Finally, altruistic value could be realized through a community feature for discussing shopping-related contexts and offering tips and recommendations.

4.3   Hypotheses

Whereas research on user response to digital or retail services has typically stayed within one respective sphere (Arbore, Soscia, and Bagozzi 2014; Pihlström and Brush 2008; Turel, Serenko, and Bontis 2007, 2010), we suggest that mobile sphere touchpoints blend with those of the physical sphere. In addition to mobile app valuation effects on mobile app adoption and use, downstream effects on the physical retail experience seem possible. For example, Verhoef et al. (2009) argue that retail experience is partly driven by the service interface, which itself consists of digital technologies. The blending is then expected to benefit physical retailing, for example, Inman and Nikolova (2017) note that innovative retail technologies affect retailer profit. Nonetheless, how the merging of spheres works is still underresearched.

One explanation might come from communication psychology. An app belongs to the service retail environment; therefore, it is a form of nonverbal communication, stated as *object language* in early service research (Ruesch and Kees 1956), that gives cues to the customer. Apps provide such cues in the form of content and design (e.g., retail brand logo, corporate design). These cues influence not only the view of the retailer but also the physical shopping environment (emotions and senses). Environmental psychologists contend that customers react to the environment with a positive or negative response, such as staying longer in a service setting because it offers relevant environmental cues (e.g., Bitner 1992). Likewise, transformational advertising appeals have a positive effect on consumers' evaluations of hedonic and symbolic consumption benefits (Naylor et al. 2008). If nonverbal cues (graphics) are available in the app service interface and combined with verbal cues (the information in the app), we argue that the associated value-in-use merges into the physical retail experience.

From this discussion, we hypothesize effects of (1) self-oriented and (2) other-oriented value assessed through a mobile app on the physical retail sphere. For example, an app used during a shopping mall visit might provide a customer with economic value-in-use by navigating through the mall and stores. With such a navigation feature in the app, the user can find stores more efficiently, which stimulates the behavioral component (walking through the mall), the intellectual component (from informational cues, such as store names), and the sensory component (sensorial cues on the way, e.g., brand logo on map). By enabling customers to tweet and text the current position to friends, the app may also alter the relational experience (stimulated through a social media symbol in the app). Specialized offers during the navigation could also increase the affective experience if the advertising content (e.g., beacon messages) matches customers' shopping preferences. App users in the retail environment could then experience the mall in a different way and with greater depth across dimensions (i.e., affective, behavioral, intellectual, relational, and sensory).

In terms of other-oriented value, the mall app might provide users with a GPS functionality that assists in navigating in the mall by helping them meet up with friends or family or find what they seek (with features such as "find me" or "find a store"). By helping the customer navigate through the mall, the app meets the behavioral component of experience. Furthermore, navigation services in the app can lead to higher visual and sensory experiences when searching for a certain store. Even the use of an app in front of others, which can demonstrate a consumer's innovativeness and sophistication, can help enhance status in a peer group. Accordingly, other-oriented value could positively influence affective retail experiences because high self-esteem can strengthen how one feels about their shopping in the mall. App users in a physical retail environment could then experience the mall differently and with greater intensity. In this vein, it is likely that their retail experience will improve as a result of using the app and valuing its services. Accordingly, we hypothesize the following:

H1. An app user's assessment of (a) self-oriented and (b) other-oriented value in a shopping mall app is positively related to the physical retail experience.

H1 indicates that both self-oriented and other-oriented value dimensions contribute to an enhanced physical retail experience, but they might also interact. A first conceptual approach for elucidating the relationships between different value dimensions comes from Jung (2014). In support of the general idea that the provision of other-oriented value can benefit mobile service providers, evidence shows that social value (indirectly) increases mobile loyalty intentions (Pihlström and Brush 2008) and smartphone adoption (Arbore, Graziani, and Venturini 2014). Turel, Serenko, and Bontis (2007, 2010) find that social value does not affect overall perceived value, while playfulness and monetary value has a strong impact on overall value. Overall, these research findings imply a dominance of self-oriented over other-oriented value; as such, other-oriented value may have a particularly strong effect under

conditions of low self-oriented value. Under high self-oriented value, other-oriented value may be less important. Thus, we formulate our second hypothesis as follows.

H2. The effect of other-oriented value on physical retail experience will be attenuated as self-oriented value increases.

While H1 and H2 focus on apps' content, we expect their impact on retail experience to depend on consumer characteristics. For example, Grewal, Roggeveen, and Nordfält (2017) speculate that retailer apps are effective primarily for reaching deal-prone customers. A specific longing for deals can influence consumer-derived shopping value (Lichtenstein, Netemeyer, and Burton 1990; Shukla and Babin 2013). Relatedly, Verhoef et al. (2009) postulate that consumers' price sensitivity moderates how experience drivers translate into retail experience. Likewise, we assume that deal proneness exerts an impact on retail experience by affecting the extent to which self-oriented and other-oriented value perceptions translate into overall retail experience.

The most obvious case for such a moderating influence is mobile apps that offer economic value by displaying promotions; here, deal-prone shoppers would likely have a more favorable retail experience than less deal-prone shoppers. In addition, Mägi (2003) finds that consumers join specific loyalty programs that match their purchase patterns. This suggests that deal-seeking consumers will perceive a more intense retail experience stimulated by an app that offers this service. Thus, we posit the following:

H3. The effects of self-oriented and other-oriented value assessed in the app on the retail experience will be facilitated by deal proneness.

4.4 Overview of Studies

We conducted three studies to test the framework. In the pilot study, we tested the effect of app use on retail experience and other retailer outcomes, including planned shopping time in

the mall, planned spending budget, and future visit. This study demonstrates that learning about app services that can provide value-in-use affects the physical retail experience and planned shopping time as well as (indirectly) planned spending budget and future visit intentions. In Study 1, we analyzed the effects of self-oriented and other-oriented value on retail experience, including their interaction. Our results reveal that self-oriented value is a key driver of retail experience. They further show that other-oriented value has a significant effect on retail experience in the case of low self-oriented value. Study 2 integrated deal proneness as a consumer characteristic that further moderates the effects of self-oriented and other-oriented value. Figure 4.2 illustrates the conceptual framework and its testing across the studies.
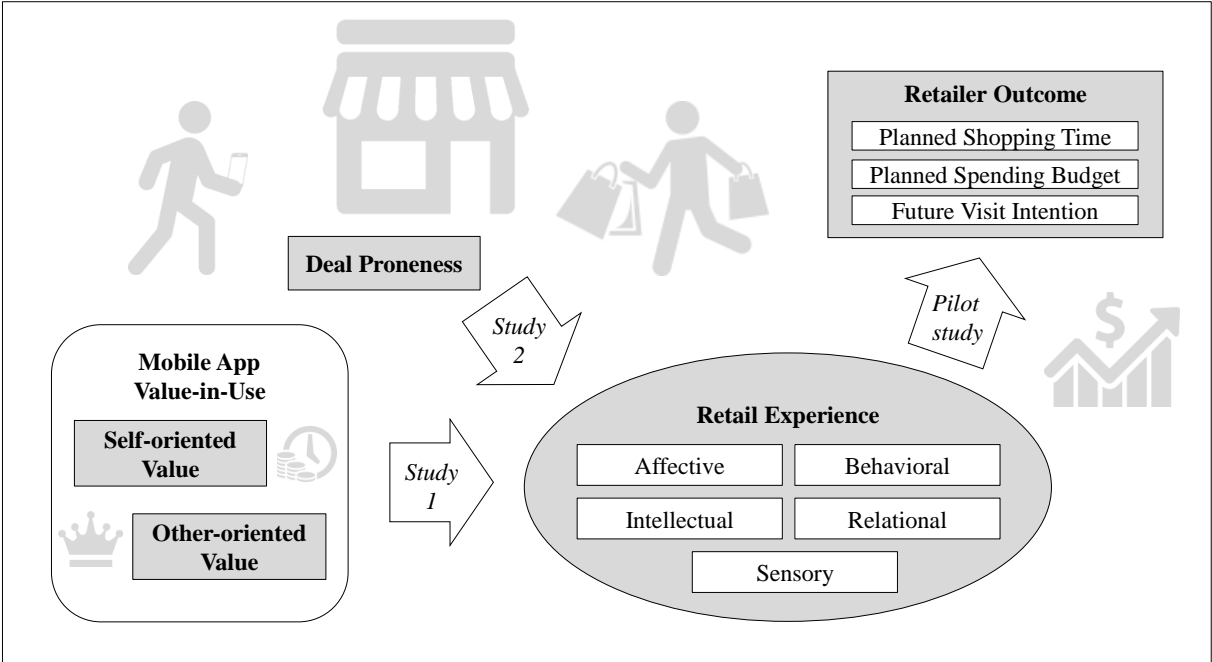
Figure 4.2: Conceptual Framework

4.5 Pilot Study: Shopping Mall Apps and Retailer Outcomes

4.5.1 Method

The purpose of the pilot study was to establish positive retailer outcomes of mobile apps. Respondents were recruited in a large shopping mall in return for a chance to win shopping

vouchers. Controlling for smartphone use, we randomly assigned respondents to an app or a control condition. In the app condition, the respondents were asked to imagine that they were using the app during their shopping trip. This was followed by a verbal description of the shopping mall app and exposure to screenshots and a video highlighting different features of the app (e.g., loyalty program, sales offers, and interactive map). Next, the respondents answered questions about their retail experience, planned shopping time and spending budget, and future mall visit intentions. Such a field setting is likely to make the overall retail experience and the other outcome variables salient to the respondents (Dawson, Bloch, and Ridgway 1990). Thus, the control condition received the same questions without any mention of a mobile app.

We collected data over the course of three days (Thursday–Saturday) during the mall's opening hours (9.30 A.M. to 8 P.M.) to attain a wide variety of mall visitors. In total, we collected 434 surveys, 362 of which were filled out completely and could be used for analysis. Regarding sample demographics, 62.7% of the respondents were women, and the mean age was 31 years (median = 24 years). We measured *retail experience* (on 7-point scales ranging from 1 = "strongly disagree" to 7 = "strongly agree") as a five-dimensional construct consisting of the affective, behavioral, intellectual, relational, and sensory dimensions (Naylor et al. 2008; Nysveen, Pedersen, and Skard 2013; Schmitt 1999). We aggregated the dimensions hierarchically (Bagozzi and Heatherton 1994) to construct a measure of overall retail experience (α = .83). We measured *future visit intention* with a single item based on Wakefield and Baker (1998): "In the future, my shopping at this mall will be ..." (1= "not at all," 7 = "very frequent"). At the beginning of the survey, respondents had to estimate how long they had already been in the mall (*elapsed shopping time*), and at the end of the survey, they had to estimate how long they planned to stay, so that we could gauge the *planned shopping time* (in total minutes). Respondents also provided their *planned spending budget* at the end of the survey. Appendix B provides the items.

4.5.2 Results

A one-way MANOVA showed significant differences in the retail experience $(F(1, 362) = 4.70, p = .031)$ and planned shopping time $(F(1, 362) = 5.68, p = .018)$ across the app and control conditions. Specifically, respondents in the app condition reported a better retail experience than those in the control condition $(Ms = 4.30$ and 4.03, respectively). In addition, those in the app condition were planning to stay approximately 22 minutes (or 16%) longer in the shopping mall than those in the control condition $(Ms = 156.72$ and 134.66, respectively). To control for respondents' elapsed shopping time before survey participation, we conducted a one-way ANOVA. We found no significant differences $(F(1, 362) = .013,$ $p = .910)$ between the app and control conditions $(Ms = 132.81$ and 133.95, respectively). Furthermore, we found no significant differences in planned spending budget $(F(1, 362) = 4311.676, p = .728)$ and future visit intention $(F(1, 362) = 11.123, p = .113)$. Figure 4.3 graphs these results.
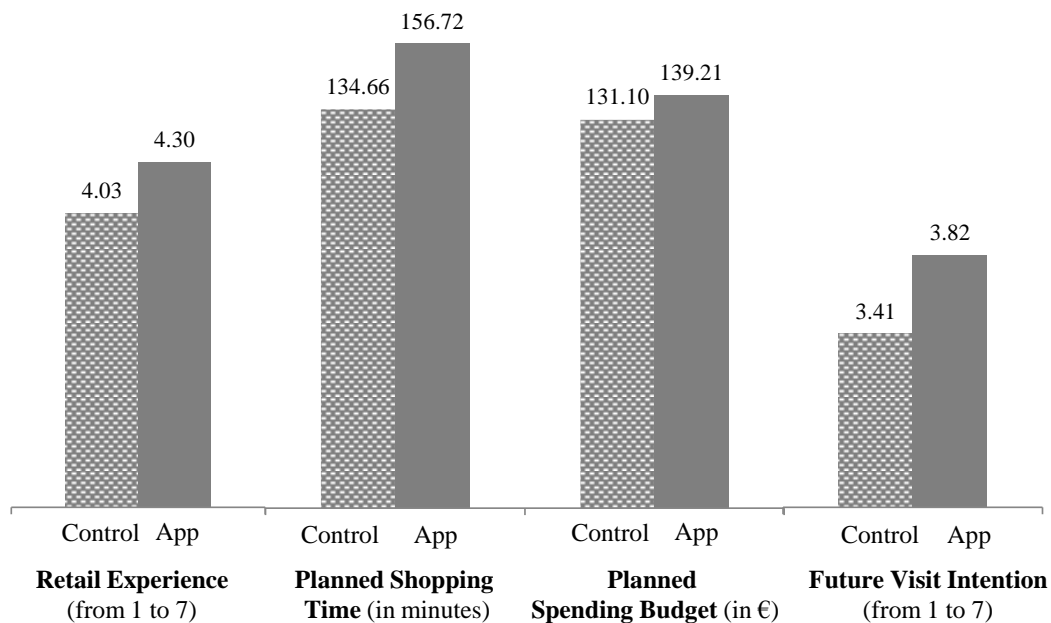
Figure 4.3: App Use and Retailer Outcomes

We conducted three mediation analyses (with 10,000 bootstrap samples; Hayes 2013) to examine whether retail experience mediated the effect of app exposure on planned shopping time, spending budget, and future visit intention. The analysis yielded significant indirect effects of app exposure through retail experience on planned shopping time (indirect effect: 2.67, 95% confidence interval [CI] = .24 to 7.73) and future visit intention (indirect effect: .08, 95% CI = .01 to .21) and a marginally significant indirect effect on planned spending budget (indirect effect: 4.37, 90% CI = .06 to 14.98).

4.5.3 Discussion

The pilot study provides evidence that learning about the features of a mobile app influences how shoppers experience their shopping mall visit as well as retailer outcomes such as planned shopping time, planned spending budget, and future visit intention. The results lend support to the assumption that a mobile app can blend with the physical sphere and create favorable outcomes for brick-and-mortar retailers.

While the pilot study demonstrates that apps can trigger physical retail outcomes, both directly and indirectly through physical retail experience, it does not examine how shoppers evaluated the app. Study 1 therefore considers self-oriented and other-oriented value of using the app and how these value types contribute to physical retail experience.

4.6 Study 1: App Value-in-Use and Physical Retail Experience

4.6.1 Method

We recruited US respondents from the Clickworker platform in return for nominal payment. Respondents had to imagine that they were using an app during their shopping, similar to the pilot study. Each respondent received a description of the shopping scenario in a newly opened Mall of America along with pictures of the shopping mall. We asked them to imagine

that they had just arrived at the mall to start shopping and were using the mall app. This was followed by a verbal description of the shopping mall app and screenshots. Respondents were randomly assigned to one of four scenario conditions to test different app services. In the conditions, we used typical app service designs (interactive mall map, personalized product promotion, and loyalty program); in the control group, we gave no explanation about a specific function. For each feature, we provided two screenshots of the app and a short description of the highlighted functionality. Furthermore, each respondent saw a specific mobile message depending on his or her condition (e.g., "Check in and collect reward points to show your friends what you bought!"). Respondents first completed questions about the app in a randomized order and then answered the scales about their mall experience also in a randomized order. The study ended with some demographic questions.

The sample consisted of 202 eligible respondents. Regarding sample demographics, 133 female respondents (65.8%) took part in the survey, and a typical respondent was 32 years of age (median 29.5 years). We measured *self-oriented value* as economic value, using a scale from Pihlström and Brush (2008), and as hedonic value, using a scale based on Sweeney and Soutar (2001) and Nysveen, Pedersen, and Thorbjørnsen (2005). We combined the two subscales to form a measure of self-oriented value ($\alpha = .84$). We measured *other-oriented value* as social value (Sweeney and Soutar 2001) and altruistic value (Price, Feick, and Guskey 1995). We combined the two subscales to form a measure of other-oriented value ($\alpha = .79$). Finally, we measured *retail experience* the same as in the pilot study based on Schmitt (1999); it consists of affective ($\alpha = .69$), behavioral ($\alpha = .86$), intellectual ($\alpha = .76$), relational ($\alpha = .88$), and sensory ($\alpha = .89$) dimensions. We combined the subscales to form a measure of retail experience ($\alpha = .91$). We used a 7-point Likert scale (1 = "strongly disagree," 7 = "strongly agree") to measure all the constructs.

4.6.2 Results

We used moderated regression analysis to test the effects of self-oriented and other-oriented value on retail experience. The results indicate a positive and significant effect of self-oriented value on retail experience (β = .61, t = 10.724, p < .001). Moreover, we found a positive and significant effect of other-oriented value on retail experience (β = .14, t = 2.525, p = .012). Thus, the data provide support for H1a and H1b.

In addition, we found a significant interaction between self-oriented and other-oriented value (β = −.12, t = −2.345, p = .020). Simple slope analysis results (Hayes 2013; see Figure 4.4) show that under low self-oriented value (e.g., one standard deviation below the mean), other-oriented value has a positive and significant effect on retail experience (b = .25, t = 3.730, p < .001). By contrast, other-oriented value has no effect on retail experience when self-oriented value is high (b = .02, t = .234, p = .815). These findings indicate that high self-oriented value attenuates the effect of other-oriented value on retail experience, in support of H2.
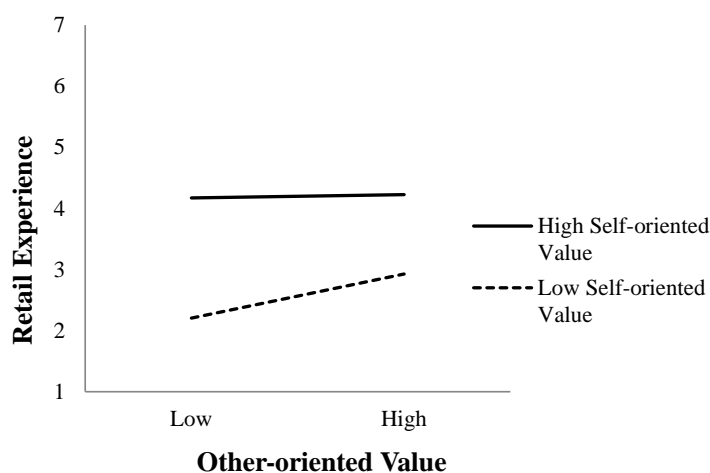
Figure 4.4: Retail Experience by Other-oriented Value and Self-oriented Value

We performed a robustness check to substantiate the validity of our previous findings. We re-estimated the model but included dummy variables for each of the three used app scenarios (mall map, product promotion, loyalty program). None of these covariates was significant

(ps = .99, .90, and .20, respectively), and the effects of self-oriented value (β = .60, t = 10.546, p < .001), other-oriented value (β = .14, t = 2.421, p = .016) and their interaction (β = –.13, t = 2.405, p = .017) remained constant. In a next step, we further included personal characteristics as covariates (i.e., age, gender, mall experience, general app experience, and knowledge of used mall app). Again, the results did not change. Hence, the observed results appear to be robust.

4.6.3 Discussion

Study 1 demonstrates that self-oriented value influences retail experience, confirming corresponding research that focuses on economic drivers of mobile channel value perceptions (Kleijnen, de Ruyter, and Wetzels 2007). The results further show that other-oriented value significantly affects retail experience. This finding implies that previous research (Kleijnen, de Ruyter, and Wetzels 2007; Turel, Serenko, and Bontis 2007, 2010) may have missed impactful features on app success, namely those that elicit other-oriented value. Yet retail experience was driven to a greater extent by self-oriented value, which is also apparent in the interaction between self-oriented and other-oriented value.

A limitation of this study is the absence of any moderating effects for consumer heterogeneity. Study 2 addresses this issue and explicitly treats deal proneness as a moderator in the link between app value-in-use and retail experience. Retailer apps are known as tools to gain vouchers and therefore are popular among deal-seeking consumers. Given the relevance of other-oriented value found in Study 1, we are especially interested in whether this effect attenuates among deal-prone consumers. In addition, Study 2 focuses on the differential effects on each of the five retail experience dimensions.

4.7 Study 2: The Moderating Role of Deal Proneness

4.7.1 Method

In Study 2, we recruited respondents from the cooperating shopping mall management group (social media channels and push message in their app) in return for a chance to win shopping vouchers. All respondents received a description of the shopping scenario in a mall, along with a picture of a mall, and were asked to imagine that they were using the app during their visit. This was followed by a verbal description of the shopping mall app, screenshots, and a short video highlighting different features of the app (e.g., bonus point program, sales offers, and mall map). Respondents who had experience with the app were allowed to skip the descriptions.

The sample consisted of 154 eligible respondents. Regarding sample demographics, 110 female respondents (71.4%) took part in the survey, and a typical respondent was 33 years of age (median 31 years). To measure all the constructs, we used a 7-point Likert scale (1 = "strongly disagree," 7 = "strongly agree"). We measured *self-oriented value* as economic value and hedonic value, using the same scales as in Study 1. We combined the two subscales to form a measure of self-oriented value (α = .73). We measured *other-oriented value* as social value and altruistic value, again using the same scales as in Study 1. We combined the two subscales to form a measure of other-oriented value (α = .76). We measured *retail experience* using the same scales as in Study 1; it consists of affective (α = .73), behavioral (α = .74), intellectual (α = .63), relational (α = .80), and sensory (α = .78) dimensions. We adapted deal proneness from Lichtenstein, Netemeyer, and Burton (1990) and measured it with two items ("When I use coupons, I feel that I am getting a good deal" and "Redeeming coupons makes me feel good;" α = .75). Finally, we controlled for app familiarity ("Do you know the app?").

4.7.2 Results

In H3, we argued that app users' deal proneness would further moderate the effects of self-oriented and other-oriented value assessed in the app on retail experience. Moderated regression analysis results (see Table 4.1) indicate a marginally significant three-way interaction effect of self-oriented value, other-oriented value, and deal proneness on overall retail experience ($\beta = -.18$, $p = .058$). Furthermore, the results reveal significant three-way-interaction effects on behavioral experience ($\beta = -.22$, $p = .034$) and intellectual experience ($\beta = -.20$, $p = .040$). There is also a marginally significant three-way-interaction effect on sensory experience ($\beta = -.19$, $p = .068$). In addition to the three-way interactions, the interaction between self-oriented value and deal proneness is significant with respect to overall retail experience ($\beta = -.46$, $p < .001$), affective experience ($\beta = -.26$, $p = .050$), behavioral experience ($\beta = -.39$, $p = .004$), intellectual experience ($\beta = -.52$, $p < .001$), and sensory experience ($\beta = -.42$, $p = .002$). Deal proneness enhances retail experience across all its dimensions, except relational ($\beta = .02$, $p = .869$) and sensory ($\beta = .10$, $p = .317$) experience. App familiarity enhances the overall, behavioral and intellectual retail experience (see Table 4.1)

Variable	Overall Experience		Affective Experience		Behavioral Experience		Intellectual Experience		Relational Experience		Sensory Experience	
	β	p	β	p	β	p	β	p	β	p	β	p
Self-oriented value (SV)	.20	.053	.06	.618	.22	.054	.33	.003	−.07	.524	.13	.243
Other-oriented value (OV)	.15	.138	.16	.138	−.10	.386	−.06	.569	.48	.000	.21	.064
Deal proneness (DP)	.21	.022	.21	.039	.24	.022	.20	.040	.02	.869	.10	.317
Interaction SV × OV	.01	.861	.09	.241	−.02	.799	−.01	.897	−.06	.453	.06	.475
Interaction SV × DP	−.46	.000	−.26	.050	−.39	.004	−.52	.000	−.23	.063	−.42	.002
Interaction OV × DP	.20	.079	−.01	.913	.20	.129	.36	.003	−.04	.710	.25	.054
Interaction SV × OV × DP	−.18	.058	−.03	.782	−.22	.034	−.20	.040	−.01	.954	−.19	.068
App familiarity	.14	.049	.10	.211	.15	.069	.16	.035	.06	.433	.02	.809
Adj. R^2	.306		.200		.141		.244		.279		.143	

Table 4.1: Regression Results for Study 2

To further examine H3, we conducted simple slope analysis (Hayes 2013). Regarding overall retail experience, the results (see Figure 4.5) show that under low deal proneness and low self-oriented value (e.g., one standard deviation below their means), other-oriented value has no effect on retail experience (b = −.10, t = −.763, p = .447). Likewise, there is no effect on retail experience under low deal proneness and high self-oriented value (b = .05, t = .405, p = .686). By contrast, other-oriented value has a positive, marginally significant effect on retail experience under high deal proneness and high self-oriented value (b = .19, t = 1.770, p = .079) that is further pronounced under high deal proneness and low self-oriented value (b = .31, t = 2.328, p = .021). These findings indicate that deal proneness not only strengthens the effect of self-oriented value on retail experience but also facilitates the effect of other-oriented value. Hence, H3 is supported.
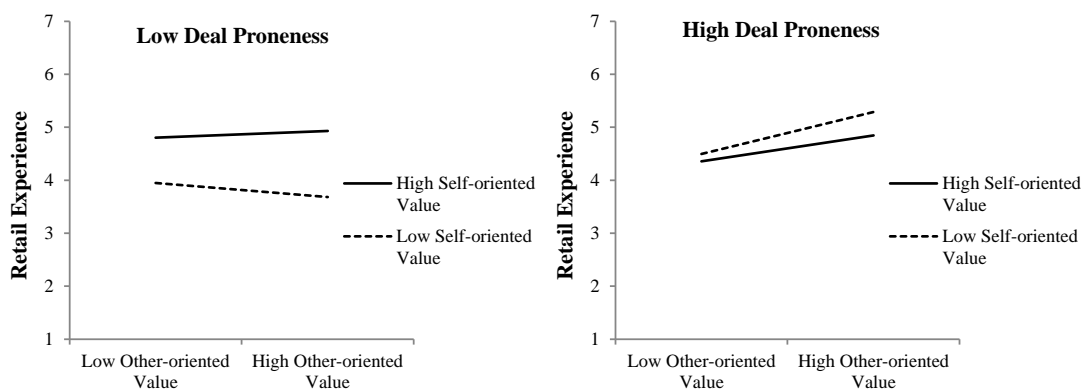
Figure 4.5: Retail Experience by Other-oriented Value, Self-oriented Value, and Deal Proneness

Additional simple slope analysis results of the sub-dimension behavioral experience (see Appendix C.1) shows a different pattern under high deal proneness: other-oriented value has no effect on behavioral experience when self-oriented value is low (b = .21, t = 1.088, p = .278) nor when it is high (b = −.05, t = −.316, p = .753). Yet another pattern is found for the sub-dimension intellectual experience (see Appendix C.2). The results show that under low deal proneness and low self-oriented value, other-oriented value has a negative and significant effect on intellectual experience (b = −.41, t = −2.510, p = .013). Additionally, there is a marginally significant negative effect of other-oriented value on intellectual

experience when self-oriented value is high (b = –.25, t = 1.732, p = .085). Confirming results for overall retail experience, other-oriented value has a significant positive effect on intellectual experience under high deal proneness and low self-oriented value (b = .32, t = 2.048, p = .042). By contrast, other-oriented value has no effect on intellectual experience when self-oriented value is high (b = .13, t = 1.029, p = .305). We find the effects of overall experience to be supported by sensory experience (see Appendix C.3). Results show that other-oriented value has neither an effect on sensory experience under low deal proneness and low self-oriented value (b = –.19, t = –.847, p = .398) nor high self-oriented value (b = .14, t = .733, p = .465). By contrast, under high deal proneness and low self-oriented value, other-oriented value has a positive significant effect on sensory experience (b = .51, t = 2.413, p = .017). In addition, other-oriented value has a positive significant effect on sensory experience under high deal proneness and high self-oriented value (b = .42, t = 2.437, p = .016). Regarding affective and relational experience, there is no three-way interaction effect (see Table 4.1). Accordingly, affective experience is mainly driven by deal proneness (β = .21, p = .039) and the interaction between self-oriented value and deal proneness (β = –.26, p = .050). By contrast, relational experience is mainly driven by other-oriented value (β = .48, p < .001) and the interaction between self-oriented value and deal proneness (β = –.23, p = .063).

4.7.3   Discussion

Study 2 replicates the positive impact of app value-in-use on retail experience, and additionally shows the moderating effect of deal proneness. The results qualify previous research findings in two important ways. First, we empirically demonstrate support for previous research (Pura 2005; Turel, Serenko, and Bontis 2010) in that directly contrasting self-oriented with other-oriented value, the latter has a minor role in driving retail experience.

However, when deal proneness is high, other-oriented value has a strong and positive effect on retail experience.

Second, with regard to the moderating influence of deal proneness, for deal-seeking consumers we found a substantial impact of self- and other-oriented value on overall retail experience and specifically on intellectual, and sensory experience. This result is consistent with the idea of H3 that consumers who tend to have high deal proneness have a more intense experience because they react even more to product promotions, such as hunting after a deal in the mall. The findings suggest that deal proneness strengthens the effect of other-oriented value on retail experience. In line with H3, deal proneness facilitates the app value–retail experience link. This effect holds for intellectual and sensory experiences. By contrast, under low deal proneness, consumers are deterred from other-oriented value in their intellectual experience. The negative effect also accounts for behavioral experience under low deal proneness and low self-oriented value.

4.8   General Discussion

4.8.1   Theoretical Contributions

Three studies, one of which we conducted in the field, demonstrate that a retail app enhances customer experience in a physical shopping environment. This finding provides an explanation for why apps as smart retailer technology can be effective for retailer profitability (Grewal, Roggeveen, and Nordfält 2017; Inman and Nikolova 2017). From a theoretical perspective, we highlight the usefulness of distinguishing among different retail spheres— such as physical, home, and mobile—and note the pivotal role of a merging process between the physical and mobile spheres. Furthermore, we show that self-oriented value and other-oriented value assessed in the app facilitate this transition. In doing so, we clarify the role of retail apps as carriers of potential value-in-use and hubs that enhance the physical retail

experience. We corroborate previous findings that app-use-derived self-oriented value such as efficiency and entertainment resonates with customers (Kleijnen, de Ruyter, and Wetzels 2007; Pihlström and Brush 2008; Turel, Serenko, and Bontis 2010). In addition, we find that the positive impact of apps on retail experience prevails when other-oriented value is increased under high deal proneness. Regarding downstream consequences, an app translates directly and indirectly through retail experience into retail outcomes such as planned shopping time, spending budget, and future visit intention.

This research contributes to the literature on retail experience and the influence of mobile applications on retailer outcomes (Inman and Nikolova 2017; Jahn et al. 2018; Naylor et al. 2008; Puccinelli et al. 2009; Verhoef et al. 2009) as well as customer value theory in retailing (Babin, Darden, and Griffin 1994; Mathwick, Malhotra, and Rigdon 2001) in four ways. First, we developed a new framework to classify touchpoints into superordinate spheres (e.g., physical, home, and mobile). While previous research has mainly examined processes within respective spheres, our research shows how the mobile sphere merges into the physical sphere by enhancing the retail experience. To the best of our knowledge, this is the first empirical demonstration of the conceptual argument that a mobile touchpoint can affect a physical customer-centric experience (Andrews et al. 2016a; Faulds et al. 2018).

Second, our empirical research provides evidence of the applicability of the conceptual distinction between self-oriented and other-oriented value (Holbrook 1994, 2006). This extends previous work that has distinguished between extrinsic and intrinsic self-oriented value (Babin, Darden, and Griffin 1994) or extrinsic/intrinsic and active/reactive self-oriented value (Mathwick, Malhotra, and Rigdon 2001). Adding to this literature, we empirically confirm the proposition that both self-oriented and other-oriented types of value-in-use provided via a mobile retail app design affected the physical retail experience. Moreover, both key types of customer value interact in their influence on retail experience.

Third, we identified a boundary condition to the mechanism in deal proneness. Specifically, we find support for our hypothesis that high deal proneness facilitates the effect of retail app valuation on experience. This result confirms the more general assumption that retail apps serve primarily to reach deal-prone consumers (Grewal, Roggeveen, and Nordfält 2017). Our findings indicate that high deal proneness changes the effect of other-oriented value on retail experience. Indeed, with increasing other-oriented value, we find a boost in retail experience—which compensates a low self-oriented value and even exceeds the effect of high self-oriented value. Notably, this effect enlightens a status-belonging for deal prone consumers in this situation, which surprises because deal proneness is related to a strong economic and hedonic motivation to hunt for deals. Accordingly, we empirically find evidence of a high relevance of other-oriented value in the app–experience link for deal-prone consumers, though these effects account in specific for intellectual and sensory experiences. In doing so, we offer first indication to explain differences among behavioral, intellectual, and sensory experience dimensions with respect to personal consumer characteristics (Kranzbühler et al. 2018). A dark side is that under low deal proneness other-oriented value reduces behavioral and intellectual experience—providing more status-elements in the app for deal avoiders might have a dissuasive effect.

Fourth, our studies contribute to retailing and information systems research that has examined drivers of mobile service design success. Specifically, our findings go beyond those of Kleijnen, de Ruyter, and Wetzels (2007), who identify self-oriented aspects as major drivers of the value of mobile brokerage services. Prior research has also suggested that the provision of other-oriented value in apps is of little benefit (Turel, Serenko, and Bontis 2007, 2010). Notably, we find that other-oriented value significantly affects retail experience in the physical consumer shopping context. Regarding the relevance of other-oriented value provided in mobile applications, research must shift the view to consider app designs that foster a social self-concept and fit with consumers' social reality (Solomon 1983). Thus, a

mobile application also works as a social stimulus for consumer behavior, and its symbolic value is high.

4.8.2 Retailing Implications and Future Research Directions

This research provides several insights for retailers. In direct comparison, self-oriented value exceeds the effect of other-oriented value in the first study, which means economic and hedonic value highly increase physical retail experience. Retail management should still encourage app development to provide even more time-saving features, such as an interactive store and mall navigation service, as well as emotional content in the app. Yet our findings suggest that other-oriented value helps enhance retail experience next to self-oriented value but does not fundamentally drive it. Indeed, a significant managerial implication is that retailers and app developers should keep track not only on self-oriented app features but also of their apps' social features. While shopping mall app providers have begun offering digital assistants, our study highlights the need for more innovative, other-oriented services, such as community boards or bonus point allocations among friends. We consider both findings important for managerial decision making.

Moreover, we demonstrate some (pre-)economic benefits of retail apps. Whereas prior research has found an impact of mobile apps on brand effectiveness and overall profit (Bellman et al. 2011; Inman and Nikolova 2017), we provide evidence for further economic outcomes. In particular, our studies show that retail apps not only stimulate future visit intentions but also (in)directly lead to an increase in planned shopping time and planned spending budget. By doing so, our results add to the strategic and economic understanding of mobile apps for retailers that are flooding the app store. Because the app is (in)directly tied to increased shopping time and future visits, in the long run offering both types of value-in-use can greatly contribute to a retailer's bottom line.

We found support for the idea that apps increase the retail experience, dependent on the occurrence of deal proneness. With this finding, we add to the perspective that retail apps are mainly of interest to deal-prone consumers (Grewal, Roggeveen, and Nordfält 2017). Even if an app attracts new users who are deal avoiders, it should still promote high self-oriented value to attract interest and boost retail experience. Thus, services not directly connected with price promotions (e.g., a sufficient navigation service in the mall and playful elements to foster hedonic usage motivation) will likely be important for this new target group of app users. Deal avoiders seek valuable design elements that support value-in-use for themselves in terms of economic (time-saving) and hedonic value and might be distracted by a promotion of other-oriented value.

Our finding of a direct influence of app familiarity on behavioral and intellectual retail experiences also highlights the generalizability of retail app effectiveness. Other than familiarity with the app, we find that neither high nor low deal proneness nor the interaction between self- and other-oriented value dimensions completely eliminates the positive effect of apps on retail experience. Thus, the positive impact of apps on retail experience appears to be robust.

The limitations of our study may offer fruitful avenues of future research. The developed framework included three spheres, of which we concentrated on the blending of physical and mobile sphere, leaving out the home sphere. Although we see many parallels to how the home sphere blends with mobile, some differences exist. For example, at home it is a matter of technical devices (tablets, smartphones, phablets) and virtual reality how a value-in-use can lead to a certain home experience. Likewise, shoppers might be more relaxed at home, which may have implications for the time spent with playful app elements or connect with others. In this vein, the heightened recreational orientation at home can affect how app use translates into retail experience (Jahn et al. 2018). On the other hand, using a mobile app in the home sphere can limit the effectiveness of sensor-based services.

Moreover, there is a need for field studies that link app value-in-use with retail experience and employ metric measures of user purchases and even follow-up cross-channel purchases. The ultimate test of the economic performance of such apps could be achieved with field experiments and natural interventions such as app-specific promotions and augmented reality functions in the app (Dacko 2017). Furthermore, external validity of our results is limited by the use of a single research context and reliance on self-reports. Although we ensured generalizability through the mixed design of the studies and surveys collected in field, future research should undertake a longitudinal study to implement actual use. Longitudinal studies would especially help address the question of which app services engage and retain users in the long run. In this vein, research could feature app service design elements that have pronounced value-in-use provision profiles (e.g., design elements that provide intense altruistic value and less intense economic value) to systematically compare their effects.

In summary, we offer a framework to examine the effectiveness of mobile retail apps. This study is one of the first to address the mechanism that links apps with the physical retail experience, to increase planned shopping time, spending behavior, and future visit intentions. The findings have implications for retailers, especially shopping malls. Taken together, the results of this study offer an optimistic view of the potential of mobile retail apps to vitalize brick-and-mortar retailing.

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4.10   Appendix A

		Extrinsic Motivation	*Intrinsic Motivation*
Self-oriented Perspective		**Economic Value**	**Hedonic Value**
	Definition	Using the app is a means to achieve self-oriented ends and involves efficiency and convenience.	Using the app is enjoyed for its own sake as a source of pleasure (e.g., fun, happiness).
	App Features	e.g., navigation to save time, coupons for monetary advantage, product information for convenient shopping, savings for bonus point program	e.g., customized product offers, event messages, collecting bonus points (playful aspects), in-app games, enjoyable video ads
Other-oriented Perspective		**Social Value**	**Altruistic Value**
	Definition	Use of the app elicits status-relevant responses from others and increases self-esteem; it is suitable for impression management.	Use of the app fulfills obligations or duties pursued as ends in themselves to support and help other people or a community.
	App Features	e.g., social media connection to show off, awards for bonus points, special deals for loyal customers	e.g., sharing position to find friends, product community to discuss shopping topics, bonus points to give to friends

**Table 4.2:** Key Types of Customer Value (Holbrook 2006) in the App Usage Context

4.11 Appendix B

| Construct	Item
Self-oriented Value	*The mobile shopping mall app ....*
Economic value	... makes my life easier (orientation in the mall, assortment).
	… would save time and money.
	… is an efficient way to manage my time.
Hedonic value	… would make me feel good.
	… is one that I would enjoy.
	… would be entertaining.
	… would be exciting.
Other-oriented Value	*The mobile shopping mall app ....*
Social value	… would help me to feel acceptable.
	… would make a good impression on other people.
	… would give its owner social approval.
	… would improve the way I am perceived.
Altruistic Value	… would induce me to help other people.
	… would induce me to share what I have.
	… would induce me to give to others.
Retail Experience	*Please indicate how you perceive shopping in the mall.*
Affective	Shopping in this mall induces positive feelings and sentiments.
	Shopping in this mall is emotional inspiring.
Behavioral	I engage in physical actions when I visit this mall (shopping in several floors and shops).
	I engage in physical behaviors when I go shopping in this mall (unplanned buying, shop variety).
	Shopping in this mall is action oriented (motivates to shop).
Intellectual	I engage in a lot of thinking (e.g., opening hours, shop variety, price comparison) when I encounter shopping in this mall.
	Shopping in this mall stimulates my curiosity (new products, shops, sales).
	Shopping in this mall stimulates my problem solving.
Relational	As a customer of the shopping mall I feel like I am part of a community.
	I feel like I am part of the shopping mall family.
Sensory	Shopping in this mall makes a strong impression on my senses (hear, see, smell, feel).
	I find shopping in this mall interesting in a sensory way.

Table 4.3: Item List
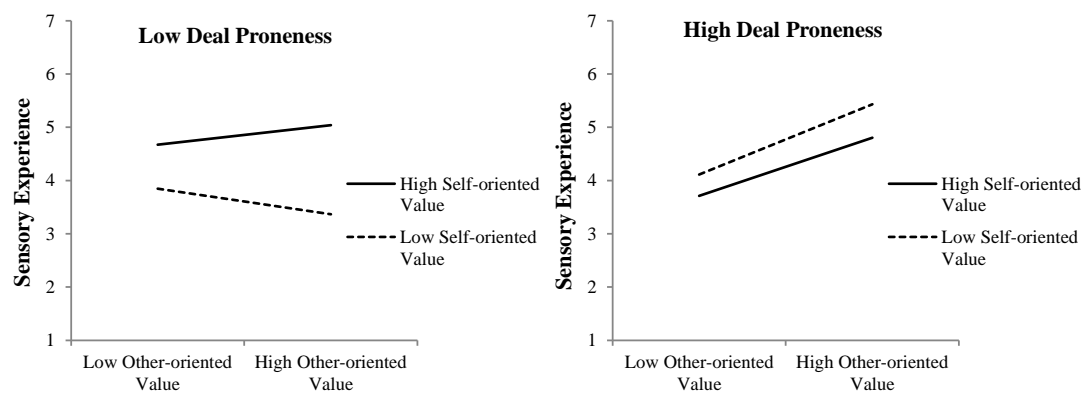
4.12 Appendix C

Retail experience dimensions by other-oriented value, self-oriented value, and deal proneness.
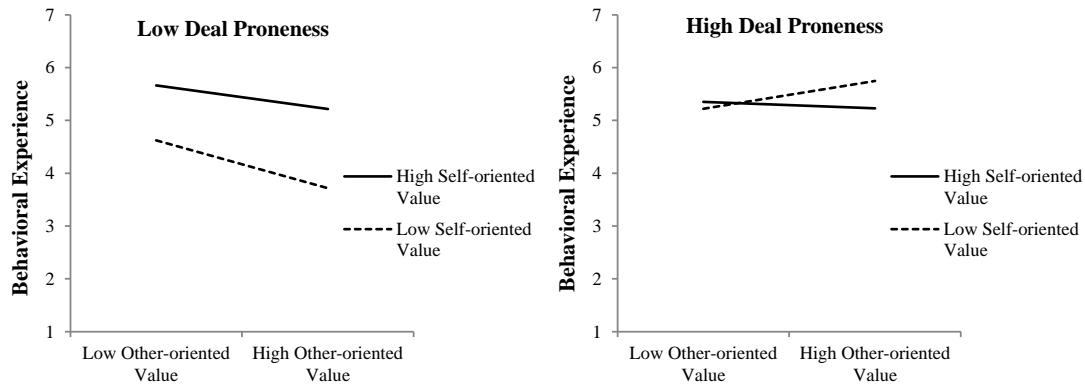
Figure 4.6: Behavioral Experience
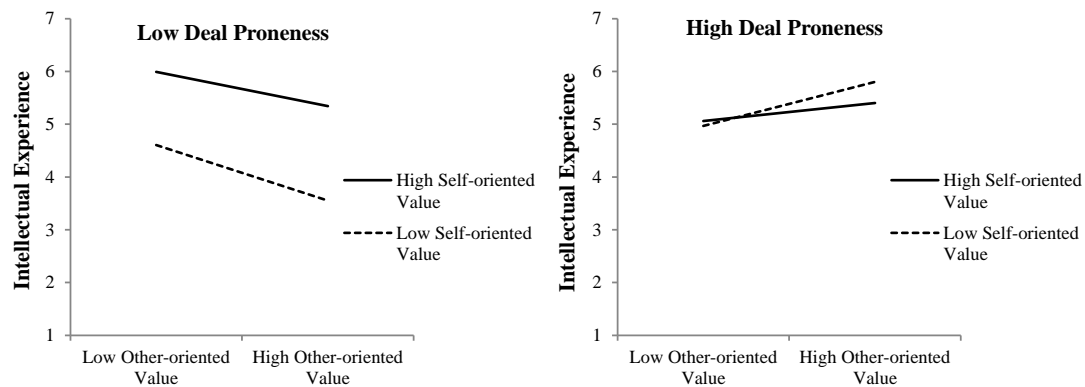
Figure 4.7: Intellectual Experience

Figure 4.8: Sensory Experience

Acknowledgements

5 General Discussion

The goal of this dissertation was to determine how apps can affect retailer outcome by applying the dual perspective of value-in-use. Academic work on the influence of apps has largely concentrated on technological and self-oriented drivers. Building upon this background, the three papers included here contribute to research by implementing a dual perspective of value-in-use and emphasizing that self- and other-oriented value dimensions have distinct effects on retailer outcome. Within this perspective, the three papers examine how apps can foster engagement and physical retail experience to further contribute to the retailing literature. Accordingly, several academic and practical implications indicate the importance of discussing how technological devices affect retail experience.

5.1 Research Implications

In summary, the three papers detailing different studies conducted online and in the field demonstrate that implementing a retail app affects retailer outcome. The findings explain why apps can be effective for retailer profitability (Inman and Nikolova 2017): they can facilitate engagement and allow for downstream effects through retail experience. In addition to these outcomes, Paper 1 describes how social value and hedonic value as representations of the two value-in-use perspectives affect positive app word-of-mouth and retailer loyalty. Paper 2 empirically demonstrates how app service design can improve intention to reuse the app and translates into physical retail experience. Paper 3 then provides a framework illustrating how the physical and mobile spheres can blend. Furthermore, the findings offer empirical evidence that other-oriented value greatly affects retail experience, also under a boundary condition.

Across the three papers, the findings reveal that the dual value-in-use perspective provides novel insights into how apps affect retailer outcome. By applying this dual view, the papers

support the conceptual argument that recommends distinguishing between self- and other-oriented value (Holbrook 1994, 2006). This extends previous work that has differentiated between intrinsic and extrinsic self-oriented value (Babin, Darden, and Griffin 1994) or the sub-classification of intrinsic/extrinsic and active/reactive self-oriented value (Mathwick, Malhotra, and Rigdon 2001). Adding to this literature, the papers empirically confirm that both self-oriented and other-oriented types of value-in-use provided in an app directly and indirectly affect retailer outcome. Nevertheless, self-oriented value exceeds the importance of other-oriented value, which is apparent in the interaction effect between those two value-in-use perspectives identified in Paper 3. Prior research has suggested that providing other-oriented value is of little benefit for mobile services (Turel, Serenko, and Bontis 2007, 2010). However, our three papers notably demonstrate the need for further consideration of the effects of both app value-in-use perspectives – with a focus on other-oriented value – in the consumer shopping context.

By highlighting the effects of value-in-use on app engagement behavior, specifically on app word-of-mouth in Paper 1 and intention to reuse the app in Paper 2, this research contributes to the research on mobile post-adoption behavior (Bellman et al. 2011; Fang 2017; Kim, Wang, and Malthouse 2015; Xu, Peak, and Prybutok 2015). Indeed, the results of Paper 2 reveal that self-oriented value greatly increases the intention to reuse an app, but in specific service designs other-oriented value also affects reuse intention. Moreover, the findings of Paper 1 indicate a dependence of the positive effect of other-oriented value on app WOM under the constraint of providing sufficient self-oriented value.

As Papers 2 and 3 reveal a strong effect of apps on retail experience, this research contributes to the literature on retail experience and the influence of mobile applications on retailer outcome (Inman and Nikolova 2017; Naylor et al. 2008; Puccinelli et al. 2009; Verhoef et al. 2009). While previous research has mainly analyzed effects within a specific sphere (e.g.,

purely mobile purchases), the findings of Papers 2 and 3 demonstrate how apps merge into the physical sphere. To the best of my knowledge, this is the first empirical evidence supporting the conceptual argument that a mobile touchpoint can affect the physical experience from a customer-centric view (Andrews et al. 2016; Baxendale, Macdonald, and Wilson 2015; Faulds et al. 2018).

Boundary conditions are presented in Papers 1 and 3. First, Paper 1 indicated that only a highly positive game evaluation facilitates the effect of other-oriented value on retailer loyalty. Moreover, this still bears the risk of losing reputation if the other-oriented value turns out to be not persuasive and effectively leads to a decrease of loyalty, which could be a starting point for further research. Second, Paper 3 identified the mechanisms of deal proneness as a boundary condition. The results reveal that high deal proneness alters the effect of other-oriented value on retail experience. This implies that other-oriented value can even compensate for a low self-oriented value in providing retail experience.

Some of the papers' limitations may offer fruitful avenues for future research. Although we ensured generalizability through the mixed design of the studies and surveys collected in the field, future studies should implement a longitudinal study. Paper 3 offered a first indication that the results are robust under app familiarity, but a longitudinal study would be needed to determine which app services engage and retain users in the long run. In this vein, research could analyze single app service designs that provide intense manifestations of each value type (e.g., high social and low economic value) and undertake further investigations for app design implications as suggested in Paper 2.

5.2   Managerial Implications

The findings of the three papers provide several insights for retailers. In a direct comparison with other-oriented value, self-oriented value is of major importance for generating app

engagement and fostering retail experience. However, other-oriented value-in-use also plays a relevant role. Accordingly, retail management should encourage app development to provide economic and hedonic features, such as an interactive store map and well-designed, small in-app games. The findings also suggest that app developers should maintain social features in their apps, such as a mobile community board to share and distribute shopping badges.

Papers 2 and 3 found support for the influence of apps on retail experience – notably, that self- and other-oriented value can heighten the physical retail experience. In this case, other-oriented value enhanced retail experience via a personalization feature for product promotions. This again emphasizes the role of social value within such digitized services. Management should foster brands within the app that can boost self-esteem and offer users a personalization function for their preferences. These results are in line with other ongoing research about personalization in digital environments (Kalaignanam, Kushwaha, and Rajavi 2018). Furthermore, the provision of self-oriented value also attracts users with low deal proneness, as suggested in Paper 3. Hence, services without price promotions but with convenience character are recommended to attract the new target group of deal avoiders to the use of retail apps.

Papers 1 and 2 found support for a strong positive influence of self-oriented value on app engagement and indicate that the self-oriented value dimension is a necessary prerequisite for the positive effect of other-oriented value. Retail management should therefore place significant effort into developing an enjoyable and coherent game story for retail game apps and integrating timesaving features in their service apps. Nonetheless, app word-of-mouth can also be encouraged by providing social value through, e.g., game-play rankings or loyalty awards.

Moreover, the findings of Paper 3 provide evidence for the influence of retail apps on economic outcomes such as planned shopping time, future visit intention, and planned

spending budget, either directly or indirectly via retail experience. In particular, both value-in-use perspectives can greatly contribute to a retailer's bottom line.

Overall, this dissertation offers a framework to examine the impact of apps on retail outcome. The papers presented within are among the first to address the mechanism that links apps with a physical retail experience and offer insights into post-adoption behavior. Their findings have implications for both retail managers as well as app developers in retailing. Taken together, the results of this dissertation offer an optimistic view of the potential of mobile retail apps to revitalize stationary retailing. Further research is encouraged to increase the competitiveness of stationary retailing through the use of apps.

5.3   References

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