THE IMPACT OF DIGITAL SERVICE INNOVATIONS IN RETAIL AGGLOMERATIONS ON RETAIL DESTINATION ATTRACTIVENESS

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Thesis Summary

Prior to the digital revolution, the decision where to shop concentrated mainly on the shopping area choice between downtown or shopping centre and the need for a specific store. The rise of online retailing resulted in changes in consumer's shopping behaviour. While online retailers list rising sales increases, shopping areas in many cities are confronted with increasing vacancy rates due to a customer-perceived relative disadvantage in terms of their attractiveness as shopping destinations. However, the growth of innovative technologies should not simply be considered as risk for brick-and-mortar retailers, but also as chance to enhance the offline shopping experience. The thesis addresses these developments by investigating digital touchpoints attracting customers to shopping centres, High Streets and town centres. First, the concept of retail destination attractiveness by means of a comprehensive literature review is established. Next, project 1 sets the research framework by conceptualising a typology of devices and platforms delivering digital services. Derived from consumer interviews, technologies adding value from a consumers' viewpoint are introduced alongside the customer journey and antecedents of their acceptance are evaluated. By drawing on agglomeration, service and information management literature, the quality of digital services is conceptualised within project 2. Subsequently, four qualitative and three quantitative studies aid in developing a valid and reliable measurement tool assessing the performance of digital services. Project 3 complements the work by introducing the digital marketing mix as suitable instrument for the classification of digital services. Based on the model, nine best practices of the application of innovative digital technologies are highlighted to demonstrate how traditional retailing is evolving in the digital age. By showing that digital services currently and prospectively have an impact on retail destination attractiveness, guidelines and potentials to strengthen the overall destination experience are revealed, leading to an enhanced economic performance of the retail destination.

Keywords: technology, retailing, scale development, shopping centre, High Street, town centre

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1. Introduction

1.1. Research Background

The retail industry is one of the largest industries in the world and a highly competitive business. In Europe and North America, the e-commerce segment can be classified as fastest growing sector of the retail market (Centre for Retail Research 2021). Figure 1 outlines online sales in UK as percentage of total retail sales. Accounting for around one eight of total retail sales in 2011, the online share has doubled in the last ten years and is now by a quarter (Centre for Retail Research 2021; Statista Research Department 2021). With around 16% in 2020, the worldwide e-commerce share of total retail sales is below the UK numbers, but the rate is simultaneously increasing with a predicted annual rise of 2% for the next years (eMarketer 2019). Hence, although most purchases are still made offline, these past years developments in online sales have made many traditional retailers worry about their future.

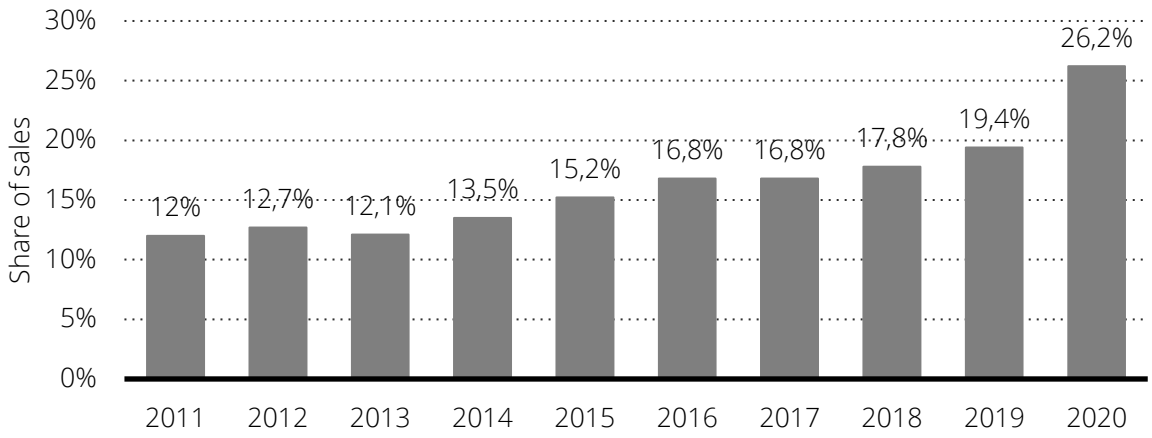

Figure 1: Online share of retail sales in the UK

The prevailing mood of uncertainty only increased in the preceding year 2020 that was marked by the COVID-19 pandemic. Lockdowns have accelerated the development of online retail, predominantly in the grocery and food segment (Centre for Retail Research 2021). A recent survey from May 2020 (Statista 2020) reveals that respondents deliberately purchased e.g., hygiene products online instead of offline because of the pandemic (37% UK, 45% US). At the same time, if open at all, customer's favour for physical stores is decreasing due to social distancing measures and the requirement of wearing masks while visiting (Centre for Retail Research 2021).

Retailing has a large economic footprint and is vital to the community. In the UK alone, 3 million people are employed within the industry (Office for National Statistics 2021). Nevertheless, high vacancy rates of physical retail destinations are recorded in shopping areas in many cities (see Figure 11, chapter 7.2, for further details). This so-called death of the High Street goes together with job losses. It is reported that the pandemic caused over 20,000 job losses across the retail sector in UK, with more than 1,000 store closures (Centre for Retail Research 2021). Part of this decline can be attributed to the bankruptcy of one of UKs former leading shopping centre operators, Intu Properties (Intu), that has collapsed into administration in June 2020. Intu has owned 17 shopping centres in the UK, hereof nine of the top 20, with 2,400 people employed (The Guardian 2020). But even before COVID-19, far-reaching global insolvencies like the 2018 bankruptcy of the store chain Toys “R” Us happened, costing the US 31,000 and the UK 3,000 jobs. The collapse of the department store retailer British Home Stores resulted in 11,000 jobs lost in the UK in 2016 (Statista Research Department 2021). In summary, since the start of this PhD thesis in 2017, footfall and sales in UK High Street stores have been declining.

Traditional retailing appears to be losing its consumer-perceived favour and acceptance to online rivals. In London, 50% of respondents believe that British High Streets will not exist in 50 years. The number of people being pessimistic of the future of High Streets are even higher in Wales and Northern England with more than 70%. Suggestions on aspects that might be able to improve visits to High Streets include better shops, later opening hours and better offers and deals (Statista Research Department 2021).

In the fast-paced world of retail business, a growing penetration of technologies and devices triggered by the proceeding digitalisation and continuously improving online access can be notified (Evanschitzky et al. 2020). In the UK, findings obtained in a representative consumer survey indicate that 80% of shoppers buy at least parts of their Christmas gifts online, and 15% do so through a mobile phone (Aston Centre for Retail Insights 2017). Later research shows that the trend to use mobile devices for shopping is increasing. Hereby, UK is heading the table as country with the largest mobile shoppers in online retailing with 43%. It can be summarised that online shopping is carried out predominantly via pc, smartphones and tablets (Centre for Retail Research 2021).

However, also a tendency of traditional bricks-and-mortar retailers to embrace technologies and apply e-commerce tactics can be registered (Dizdarevic, Evanschitzky, and Backhaus 2020). Approaches range from the offer of e.g., ordering goods online for home delivery or for store pickups to browsing information online like store plans and product details via the retailer’s website before visiting the physical store (Centre for Retail Research 2021). Digital

technologies are also used to grab attention of visitors of retail destinations by delivering value in the form of entertainment. For example, the St David's shopping centre in Cardiff, UK, has launched a “Play to Win” game. By matching coloured lights on a large screen installed at a vacant unit in the centre, successful participants are rewarded with e.g., free parking. Simultaneously, the centre aimed to increase footfall to nearby retailers (St David's 2017). Other retail destinations draw on immersive experiences such as the augmented reality (AR) polar experience (intu 2019) or the AR dinosaur invasion taking place in the city centre of Liverpool (Liverpool ONE 2019) to provide entertainment and fun.

Further, against the background of current developments triggered by the pandemic, retail destinations are increasingly relying on digital services to keep retailers alive despite lockdowns. In order to support stores located at the Oxford Street in London, UK, the High Street bundles information of all retailers offering click and collect services during national store closures (Oxford Street 2021). Other digital services at the corporate website include e.g., lists of products available at the High Street already put together for certain occasions and holidays in order to provide inspiration for purchases.

In general, a trend can be observed among major British towns and High Streets to offer a corporate website promoting the respective location and its shopping facilities as well as digital offerings like Wi-Fi hotspots or newsletter sign ups (e.g., Visit Birmingham 2021; Visit Nottinghamshire 2021). In addition, besides offering such websites providing information to visitors, tenants and the community, a fully developed uniform strategy among retail destinations for the offer of digital services to visitors seems not to exist.

In summary, although innovative technologies are partly responsible for declining sales of brick-and-mortar retailing, this convergence of the online and offline retail landscape might also be viewed as an opportunity to enhance the offline shopping experience. In this context, research emphasises changes in the retailing sector due to the evolution of innovative technologies and accompanying shifts in consumer needs and behaviours (Grewal et al. 2019; Grewal, Roggeveen, and Nordfält 2017; Kumar, Anand, and Song 2017). Based on these developments, the question arises how the usage of pioneering shopper-facing technologies can improve the attractiveness of a retailer, thereby help increase sales and serve as competitive advantage (Inman and Nikolova 2017). This research takes up at this point by analysing factors that can potentially differentiate traditional retailing through including innovative, digital services.

1.2. Research Gaps and Positioning

Based on the double-edged role of technology in retailing, this research aids in investigating how the growth of digital services can be leveraged to enhance the attractiveness of traditional retailing in the digital age. Thereby, the focus lies on three retail formats, namely shopping centre, High Street and town centre formats. By investigating agglomerations consisting of multiple retailers and operators, the potentials of suppliers operating in different sectors can be explored. These objects of investigation could potentially shed more light on the impact of particular digital services in offline retailing than would a purely single store study.

By shifting the perspective to the retail agglomeration level, this research examines technologies adopted across a range of different areas of retail marketing. In times in which brick-and-mortar retailing tends to weaken, such innovations provide opportunities for both retailers and agglomeration management through fostering the creation of authentic, engaging and inspiring shopping experiences – which in turn contribute to footfall and sales (Dizdarevic, Evanschitzky, and Backhaus 2018).

However, while the digital transformation is fundamentally changing the retail sector as a whole, practical adoptions of digital technologies through mobile or fixed devices in brick-and-mortar retailing can be considered to be at an early stage. By embracing emerging technologies, brick-and-mortar retailers can target appropriate customers and engage with these more effectively. Customers using technologies are enabled to make educated decisions about which products or services to consume. The collection of information like transactional or product data can simplify the shopping process for both retailers and consumers (Grewal, Roggeveen, and Nordfält 2017). Further, studies argue that pioneering shopper-facing technologies can affect the customer-perceived image of a retailer (Inman and Nikolova 2017). But, to date, marketing practitioners seem to lack a clear measurement for customer experiences in retail agglomerations (Stocchi, Hart, and Haji 2016), in particular one that incorporates the performance of technologies.

Likewise, studies about the effects of such digital services on customer perceptions and attraction are still underrepresented in the literature. The role of in-store technologies has been discussed by several authors recently (e.g., Alexander and Kent 2020; Evanschitzky et al. 2015; Grewal et al. 2019; Perry, Kent, and Bonetti 2019; Sanden, Willems, and Brengman 2019; Vannucci and Pantano 2019). These studies provide evidence that consumer-facing technologies can increase the consumer-perceived attractiveness of stores and the related customer experience. However, the investigation of digital technologies provided by retail agglomerations remains scarce. Existing studies (Dennis et al. 2012; Newman et al. 2010) consider digital services in retail agglomerations in the context of digital signage. The

qualitative findings suggest a positive effect of digital signage on shoppers' spending, without however quantifying the same. The narrow focus on digital signage needs to be broadened to include a holistic frame of digital services delivered by different devices and platforms as well as its acceptance, measurement and application.

Besides lacking a framework and assessment of the performance of digital services offered by retail destinations, little is known about the conceptual basis of the construct as well as its relation to other constructs. Especially, theoretical consequences such as retail destination attractiveness are not yet conceptualised in the marketing literature. By looking at studies examining the performance of traditional retail formats, it can be summarised that the authors investigate constructs like destination attractiveness (Anselmsson 2016), image (Gomes and Paula 2017) or equity (Dennis et al. 2002b; El Hedhli and Chebat 2009). By examining these constructs, the studies do not focus on one field but rather at multiple factors predicted to influence consumers' attraction to retail destinations. The factors access, retail mix and atmosphere are covered by a vast proportion (El-Adly 2007; Teller and Reutterer 2008; Wong and Yu 2003; Wong, Yu, and Yuan 2001). Only a few studies have explicitly investigated the role of service in this context (Wong and Yu 2003; Wong, Yu, and Yuan 2001), however, none of these studies takes a digital implementation of the innovative services into account. Further, as the examined attributes and items are mainly based on literature reviews, no established scale development process for different retail types can be found in this research area. The chosen attributes were examined in different non-uniform ways on mainly one distinctive retail format, usually national. The majority of the studies include only single and/or national cases of one retail type without evaluating the potential of digital services in different countries.

This research addresses the following shortcomings in the existing literature:

The lack of (1st) explicitly conceptualising retail destination attractiveness in the digital age, (2nd) delivering a framework of digital services offered by traditional retail agglomerations, (3rd) evaluating the acceptance process of these digital service innovations from the consumer's point of view, (4th) providing a reliable and easy-to-administer scale for assessing the performance of digital services applicable in different retail destination formats, and (5th) investigating its relation to existing marketing constructs, (6th) demonstrating current potentials and applications of the utilisation of digital service innovations in town centres, High Streets and shopping centres, and thereby (7th) considering international cases. To deal with the gaps, the research project is divided into a literature review, meeting the 1st gap, followed by three projects taking care of two research gaps respectively (see Figure 2 and 3).

In light of these research gaps, the general research objective intents *to explain if and how retail agglomerations might benefit from digital service innovations in order to attract more customers and remain competitive.*

To meet this research objective, the project focuses on the following research questions:

Chapter 3 (Literature review): Which role do physical and digital attributes currently play in the academic literature to determine retail destination attractiveness perceived by consumers? How can a solid and up-to-date conceptualisation of retail destination attractiveness look like?

Chapter 4 (Project 1): Which devices and platforms are expected to deliver digital services? Which digital services are considered beneficial by customers and at which stage(s) of the customer journey is their application preferred? What drives consumer's acceptance of using digital technologies?

Chapter 5 (Project 2): How can the quality of digital services be conceptualised and measured in a retail agglomeration context?

Chapter 6 (Project 3): What are best practice examples of the implementation of services based on digital innovations?

As shown so far, the research gaps and positioning of this thesis relate to real-world examples and trends in the area of digital services offered by retail destinations. By dealing with the above-listed research questions, the author follows calls for the establishment of ecological validity, defined as "the degree to which research reflects and is relevant to marketing as it exists and evolves among marketing stakeholders and marketing ecosystems", in marketing science (van Heerde et al. 2021). A real-world perspective is incorporated into every stage of the research process in order to ensure relevance, practicality and usefulness of the thesis findings for marketing academics and stakeholders from business and management alike.

The following section outlines how this thesis narrows the highlighted gaps in existing research and meets the illustrated research questions by deriving a theoretical and empirical framework of digital services in retail agglomerations and its impact on retail destination attractiveness.

1.3. Research and Thesis Structure

This thesis is organised in seven chapters. The first chapter introduces the work by discussing current trends and challenges in retailing and accompanying research gaps in the retail agglomeration literature. In chapter two, the research paradigm is presented by means of the philosophical standpoint, supplemented by a discussion of the research design and ethics.

In chapter three, the current state of studies in the retail destination area are reflected by highlighting theories, constructs and attributes aiming to predict customer's choice of retail destinations. Further, as the construct of attractiveness has not been explicitly defined in the retail agglomeration literature, studies from various fields of research are reviewed and synthesised to derive a holistic conceptualisation of retail destination attractiveness, addressing the 1st research gap. After reviewing and developing the theoretical and conceptual underpinning of the research, the chapter ends with the development of an overall conceptual model.

In chapter four, the first of three projects is conducted. An overview of all projects is provided in Table 1. Project 1 establishes the basis for this research by exploratorily studying and classifying digital services in the context of retail agglomerations. Thereby, three research questions are aimed to be answered based on a series of in-depth qualitative interviews with shoppers. Study A aims to answer the question *which devices and platforms are expected to deliver digital services.* In this context, mobile and fixed devices delivering digital services via different platforms provided by retail agglomerations are investigated and defined. This newfound knowledge is used in study B to answer the research question: W*hich digital services are considered beneficial by customers and at which stage(s) of the customer journey is their application preferred?* Thereby, a categorisation of value adding devices and digital services alongside the customer journey is derived. The last research question, *what drives consumer's acceptance of using digital technologies*, is addressed within study C. Insight about predictors of consumer's intended and actual usage of service technologies in retail agglomerations are highlighted based on the Technology Acceptance Model (TAM). In doing so, the project addresses the 2nd and 3rd research gap *in order to provide a guide to management of retail agglomerations to successfully digitise their customer's shopping experience.*

Within chapter five, Project 2 complements the first project by using the provided device framework as basis to investigate the performance of digital services offered by retail agglomerations. It intends to answer the research question *how the quality of digital services (QDS) can be conceptualised and measured in a retail agglomeration context.* First, the construct is conceptualised using recent insights from retail agglomeration, service and information management literature. Based thereupon, a measurement scale is developed and validated across seven empirical studies involving qualitative and quantitative data from face-to-face consumer interviews, marketing academics, agglomeration managers, students, two online panels, and an online experiment. The empirical scale development process includes (1+2) item generation, (3+4) expert judgment, (5) scale refinement, and validation of (6) nomological net as well as (7) predictive power. During the course of these studies, several statistical methods such as correlations, t-tests, analysis of variance, explorative and

confirmatory factor analysis are applied to examine the results. Thereby, this work addresses the 4th and 5th research gap aiming to *(1) conceptualise QDS, (2) develop a measure of QDS applicable in different retail agglomerations, and (3) examine its nomological network of related marketing constructs.*

Table 1: Outline of three research projects

	Project 1	Project 2	Project 3
Title	Elevating Shopping Experiences through Digital Technologies: The Case of Retail Agglomerations	The Quality of Digital Services: Conceptualization, Development, and Validation	Technological Diversification in Retail Agglomerations: Cases Alongside the Digital Marketing Mix
Research question	Which devices and platforms are expected to deliver digital services? Which digital services are considered beneficial by customers and at which stage(s) of the customer journey is their application preferred? What drives consumer's acceptance of using digital technologies?	How can the quality of digital services be conceptualised and measured in a retail agglomeration context?	What are best practice examples of the implementation of services based on digital innovations?
Publication status	Published at Marketing Review St. Gallen, 6/2018, 34–41.	To be submitted to a targeted marketing journal	Published as book chapter in Pantano, E.: Retail Futures (2020), 37–50.
Conference presen-tations	Presented at the BAM 2017 Doctoral Symposium, Warwick, UK.	Presented at the AMS 2020 Annual Conference, USA.	Presented at the BAM 2019 Annual Conference, Birmingham, UK.
Awards	Best Poster	Best Retailing Paper	Best Developmental Paper of Marketing & Retail SIG

In chapter six, the contributions of the first two projects are enlarged by project 3 investigating particular best practices of innovative digital services applied within retail destinations. The aim of this research is to answer the question: *What are best practice examples of the implementation of services based on digital innovations?* Based on a review of academic and practitioner literature, this research employs an exploratory case approach characterising the

application of good practice of digital services in agglomerations. In addition, best practices have been identified by asking study participants as of experts (project 2, study 3) and consumers (project 2, study 5) to indicate excellent examples of digital services or innovations implemented within retail destinations. Through the presentation of nine innovative samples of digital services, capabilities of the operation and use of digital services in retail destinations are highlighted. The evaluated technologies are classified along the digital marketing mix. By applying this updated theoretical framework, research of brick-and-mortar retailing is shifted to the next, digital, level. The chapter addresses the last two gaps aiding in *identifying international best practices of digital service innovations provided by retail destinations.*

The thesis ends within the seventh chapter with a summary of the contribution of each of the previously discussed projects, completed by a presentation of avenues for future research.

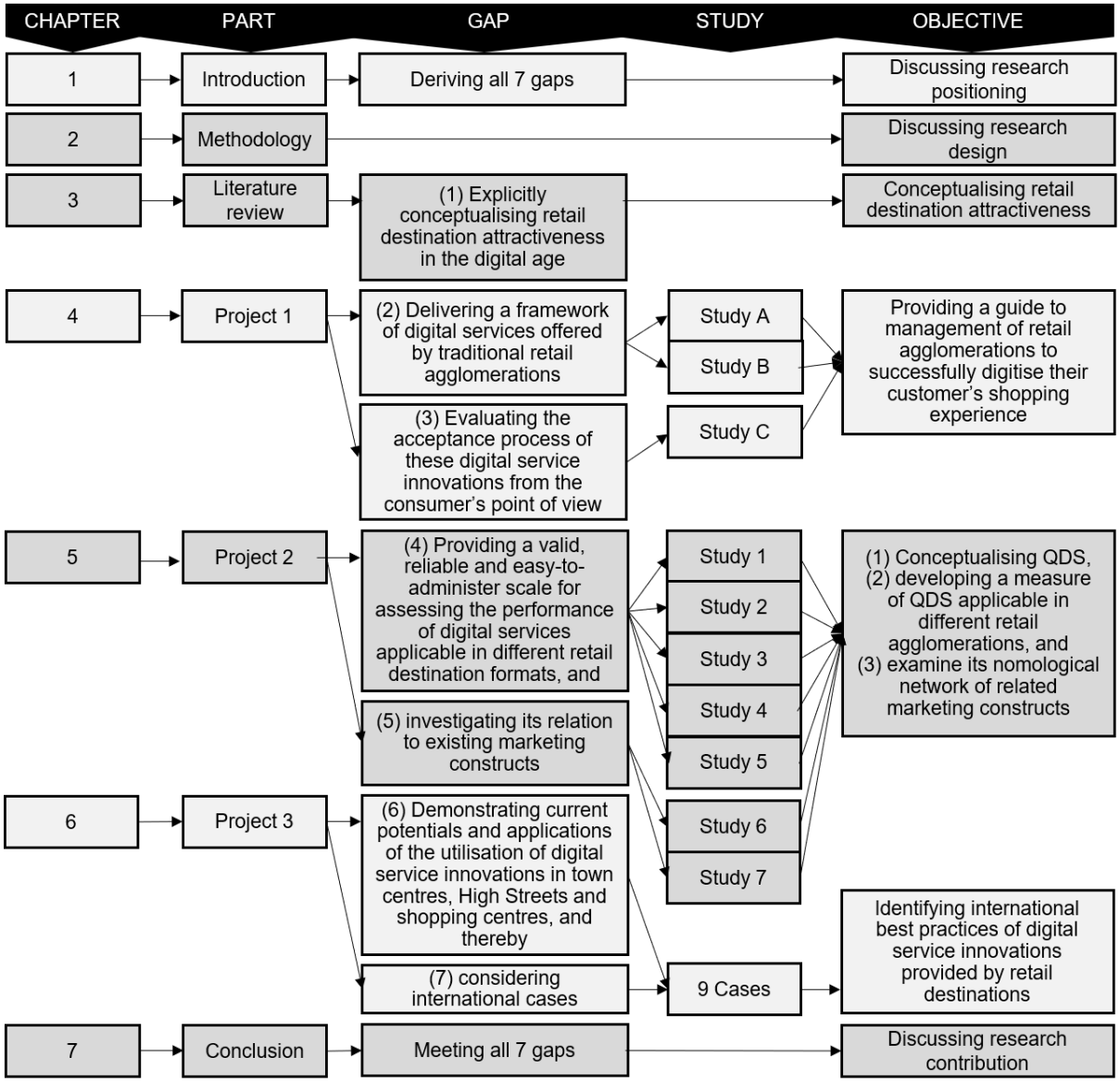

Figure 2: Outline of research positioning

2. Methodology

The subsequent chapter illustrates the general methodology applied in this thesis to examine digital services in retail destinations. The detailed explanations of methods used in each project are discussed in the corresponding chapters.

First, the research paradigm is introduced by evaluating the philosophical orientation of this thesis. Next, the chapter continues with an overall introduction of the chosen mixed methods approach and a discussion of the rational of the research design. The proposed research structure as of a literature review and three projects is presented together with a discussion of the relationship of the quantitative and qualitative elements and chosen methods. A summary of the research ethics is finally outlined.

2.1. Research Paradigm

To show the conceptualisation and development of this work, its philosophical position is introduced. The identification of the philosophical standpoint has an effect on subsequent choices and decisions determining how the research is conducted (Carson et al. 2001). The theoretical perspectives defines the researcher's way of looking at the world and making sense of it (Crotty 1998). Inherent in this theoretical perspective are an individual's worldview about reality and knowledge, referred to as the paradigms ontology and epistemology (Creswell and Creswell 2018).

Ontology is defined in the literature as "the study of the nature of reality" (Lee and Lings 2008) or just as "reality" (Carson et al. 2001). This first term for the concept of knowledge perceives the world as set of beliefs about what the world the researcher is studying actually is. In this context, every researcher has beliefs relating to the way the world functions. Following from ontology, the next term in the framework of the concept of knowledge is epistemology defined as "the relationship between that reality and the researcher" (Carson et al. 2001). This term illustrates the study of what can be known about reality, not dependent on what the researcher believes reality to be (Lee and Lings 2008). A third term within the concept of knowledge is methodology referred to "the technique used by the researcher" (Carson et al. 2001), hence how the researcher is proceeding the research (Lee and Lings 2008). This last term is chosen in dependence of the ontology and epistemology of the research projects.

In this framework, two opposite schools of knowledge are prevalent in social science: positivism and interpretivism (Carson et al. 2001; Lee and Lings 2008). The positivist ontology

claims the existence of one single external reality. This world is external and objective, hence its epistemology takes the view that researchers are independent and have direct access to this one real world. It is possible to acquire objective knowledge, hence causal relationships are justified by objective facts. As researchers keep a distance between themselves and the object of research, the methodology used is typically a quantitative, deductive nature (Lee and Lings 2008).

In contrast, the interpretivist ontology accepts the presence of a situation-based reality. Under this premise, researchers do not have direct access to the real world, though the epistemology takes the view that the reality is understood through perceived, subjective knowledge. The context of the situation has an impact on how the situation is perceived and how the reality is constructed. This approach allows the researcher to create findings by considering multiple realities and different perspectives. Data can be interpreted and the researcher might be involved in the research process based on the perceptions of the reality. The methodology used is typically a qualitative, inductive nature (Lee and Lings 2008).

Between these two extreme philosophical standpoints of positivism and interpretivism, further views can be found in the literature. Critical realists and critical relativists appreciate a real and an observable world and claim a modified perspective of how knowledge is developed by means of theory and method in dependence of the context (Lee and Lings 2008).

A further philosophical approach is pragmatism known for the practicality and usefulness of knowledge. The reality of pragmatist ontology is true if it is practically useful. According to this understanding, the world can be objective as well as subjective, hence its epistemology claims that research findings can be created as well as justified by objective facts. The basis of adopting the pragmatic epistemology represent the research questions that are interlinked with the purpose of the research (Saunders, Lewis, and Thornhill 2016). Within the process of knowledge development, as highlighted in chapter 1.2, this thesis strives for relevance, practicality and usefulness in terms of the created findings. The general research objective is to explain *if and how retail agglomerations might benefit from digital service innovations in order to attract more customers and remain competitive.*

The pragmatism perspective recognises both branches of philosophy, positivism and interpretivism, making use of objective and subjective worldviews in dependence of the practicality of the research method and findings. The perceived reality is classified as containing elements that are accessible and independent of mind as well as elements that are constructed and therefore dependent on mind (Bryman 2016; Lee and Lings 2008). The approach correspondents with this thesis research objectives, hence a pragmatism perspective has been chosen as best fit.

2.2. Research Design

The preceding chapter has shown that quantitative methods often base on positivism, an objective approach recognising only what can be scientifically verified or which is capable of logical or mathematical proof. In turn, qualitative methods are mostly related to interpretivism that involves researchers to interpret elements of the study and hence can be classified as subjective (Carson et al. 2001; Lee and Lings 2008). The usage of both methods, quantitative and qualitative, is also feasible. Qualitative research elements can be applied to generate first key research insights and then the findings might be used for subsequent quantitative research deriving general perspectives (Carson et al. 2001).

When choosing the research design, a consistency with the research philosophy selected is essential (Saunders, Lewis, and Thornhill 2016). In the case of pragmatism as beforehand selected branch for this research, both quantitative and qualitative research methods are practicable. Further, the choice of the research design is closely related to the questions the research aims to answer (Saunders, Lewis, and Thornhill 2016). Therefore, to evaluate the research design of this thesis, the research questions and appropriate methods are highlighted and discussed in the following.

The literature review in chapter three aims to answer the research questions: *Which role do physical and digital attributes currently play in the academic literature to determine retail destination attractiveness perceived by consumers? How can a solid and up-to-date conceptualisation of retail destination attractiveness look like?* Consequently, the first pair of research questions is answered by reviewing and synthesising literature. This step is vital for designing the overall conceptual model of the thesis and as preparation for the subsequent three research projects (see).

Chapter four introduces the first research project targeting the following questions: *Which devices and platforms are expected to deliver digital services? Which digital services are considered beneficial by customers and at which stage(s) of the customer journey is their application preferred? What drives consumer's acceptance of using digital technologies?* This part of the research focusses on generating in-depth understanding of the application of digital services in retail agglomerations. Besides focussing on what, the research emphasis lies on why and how, typical for qualitative research (Carson et al. 2001). The conceptualisation of a framework for digital services in retail agglomerations represents a new approach to the marketing literature. Consequently, as the method chosen needs to be useful to explore novel and under-researched topics, in-depth consumer interviews are conducted. This research element is commonly used in qualitative research methodologies due to its ability to collect rich and profound data supporting a first deep understanding of the research topic (Carson et

al. 2001). This is especially important as the developed classification of devices delivering digital services via different platforms serves as conceptual foundation of project 2 and 3.

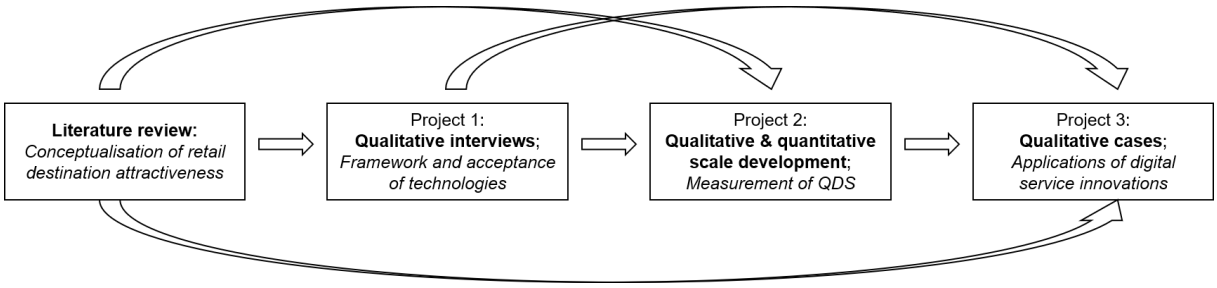

Figure 3: Overall research design

The second research project in chapter five is conducted to respond to the research question: *How can the quality of digital services be conceptualised and measured in a retail agglomeration context?* Here, the framework of the first project is used as basis to investigate and measure the performance of digital services offered by retail destinations. Developing and subsequently validating a new measure for the QDS is established by following the recommendations of Churchill (1979). To deliver the necessary dimensions and items for the QDS measure, qualitative studies followed by quantitative ones are recommended and common in established scale building studies (Böttger et al. 2017; Nenkov, Inman, and Hulland 2008). Consequently, the process starts with an emphasis of theory building, meaning and understanding by means of generating items. Therefore, consumer interviews are enriched by an online panel survey in order to reach a wider audience. Further, to additionally incorporate the opinion of decision-makers in the generation process, two expert panel rounds are asked to evaluate the generated statements for content and face validity. To test the developed theory and purify as well as validate the measure, the remaining items are subject to statistical analyses. Thus, quantitative methods in the form of student and consumer surveys as well as an experiment are conducted. The mixture of different methods and associated samples ensures a holistic examination of the topic.

In chapter six, the third project investigates the issue: *What are best practice examples of the implementation of services based on digital innovations?* This part complements the previous studies by characterising the application of good practice of digital service innovations in agglomerations and in this framework explicitly reviewing potentials in different countries. To work out the best practices, the project draws on nine cases in the retail settings of High Streets, shopping centres and town/city centres. Case-based research is chosen due to its known relevance for researchers and managers a like (Carson et al. 2001). By preparing and

analysing the research as cases, the findings are easier to comprehend and reproduce for stakeholders from theory and practice. The relevance of digital services is highlighted by reviewing applications and potentials, obtaining a practical, up-to-date perspective. In addition, through the usage of qualitative cases subsequent to quantitative elements (project 2), contextual insights enrich quantitative data deriving comprehensive future research directions.

The discussion above reveals that this dissertation is following a mixed methods approach. Gray (2014) defines a mixed methods approach as a research design using quantitative and qualitative methods with the absence of a relation to a particular inquiry paradigm. The order of the applied methods is variable. Common designs are a first qualitative exploration, followed by a quantitative study and a final qualitative deepening and result assessing. This research design applies to the structure of the three highlighted projects of this research.

By conducting quantitative and quantitative methods, the advantages of both methods can be exploited. The three main benefits of mixed-methods research are triangulation, facilitation and complementarity (Hamersley 1996; Lee and Lings 2008). Triangulation represents the idea that by approaching the research objective from multiple angles, hence mixed methods, a more precise picture can be obtained in comparison to the usage of only one method. The described advantage is the main reason why a mixed method was chosen for this dissertation project. Through the combination of small and large samples as well as explorative and descriptive analyses, all relevant insights can be obtained. Further, data gained in one study can be used as fundament for the next one; hence, each method can facilitate the other.

For instance, the qualitative interviews of project 1 support the conceptualisation of a framework for digital services in retail agglomerations. Further, the qualitative consumer and expert interviews of project 2 are the basis for the items derived and utilised to conduct large quantitative surveys. As quantitative methods cover different aspects and data of a study in comparison to qualitative methods, and vice versa, the usage of both methods enables a complementary coverage of the respective research. Qualitative approaches applied before quantitative research can supplement the literature and develop measurements like in the scale development process in project 2. Through the usage subsequent to quantitative methods, contextual insights can enrich quantitative data and future directions can be generated, as for the cases in project 3. By conducting quantitative work as forerunner of qualitative data, a complimentary picture of the research is created by means of performing surveys to identify cases (Lee and Lings 2008).

However, the usage of mixed methods has also some limitations. The combination of methods is time consuming, especially because methods and instruments of both approaches have to be understood to ensure an effective mix. Further, the question arises how inconsistent results

should be interpreted. The main argument against mixed methods is that research methods carry epistemological commitments in form of positivism or interpretivism. As quantitative and qualitative research streams are considered as separate paradigms, a mixing might be impossible (Bryman 2016). Other authors like Gray (2014) and Lee and Lings (2008) counter that the process of mixing methods does not involve mixing paradigms. Paradigms are assessed at the overall project level rather than at individual method levels. Based on a pragmatism view with mixed methods, this research corresponds with the latter argumentation.

In summary, a three-project approach is conducted forming the centrepiece of the thesis. Each project relates to digital services in retail destinations, but has its unique focus and contribution to the overall research question. To highlight how one project ties to the next, introductory paragraphs labelled “linking sections” explain the link between the respective chapters at the start of each of the projects. The three-project approach allows to derive a research framework (project 1) and then shine a spotlight on three different key aspects of digital services: its acceptance (project 1), its measurement (project 2), and its application (project 3).

2.3. Research Ethics

As discussed, this PhD research is built on multiple data collections to account for a comprehensive investigation of technologies in retailing from consumer and management perspectives. Each data collection step has successful obtained ethical approvals by the Aston Business School (ABS) Research Ethics Committee as follows: consumer interviews (2017), expert interviews (2019), student surveys (2019), consumer survey (2020) and experiment (2020). Thereby, participant information sheets have been reviewed and approved by the research ethics committee ensuring that participants understand 1) the reasons for the research and what it involves, 2) the research aims, and 3) the voluntary nature of the participation with the possibility to withdraw at any time without giving reason. In addition, consent forms have been permitted by the research ethics committee asking the participants to consent to 1) an anonymised storage of data obtained in a specialist data centre and 2) a usage of the anonymised data by other researchers than the research team for future research.

All sampling procedures are targeting adults over the age of 16 years that are competent to give consent. Hence, the research does not involve participants who are particularly vulnerable or unable to give informed consent. Participants who might not adequately understand information in English or with special communication needs are not expected to participate.

In summary, the research steps of all three projects are guided by core principles for ethical research aiming to maximise benefit for individuals and society and minimise risk and harm.

3. Literature Review and Overall Conceptual Framework

As stated in the introduction above, the focus of the research lies on the three retail formats shopping centres, High Streets and town centres. To describe these agglomerations, it can be noted that the terms retail destinations and formats as well as (shopping) destinations are used synonymously in the existing literature (Arentze, Oppewal, and Timmermans 2005; Teller 2008; Teller, Wood, and Floh 2016). Due to the presumed equal meaning, this study does likewise not make a distinction between the listed terms. However, Arentze, Oppewal, and Timmermans (2005) argue that agglomerations do not only serve for shopping purposes, but also for non-retail urban attractions like work places and leisure or transport facilities. Further, Levy, Weitz, and Grewal (2014) define destinations as places where consumers are willing to accept inconvenient travel arrangements in order to benefit from a large assortment allowing for comparison shopping. Following these explanations as well as Teller (2008) describing agglomerations as shopping destinations where customers are willing to stay as long as possible during their visits, the term retail destinations is considered as most appropriate for this research and hence used when deriving the overall conceptual model (see Figure 5), presented at the end of this chapter.

It should be further noted that although retail destinations in this thesis relate to shopping centres, High Streets and town centres, most of the examples of technologies in theory and practice are found in shopping centres to date. One explanation might be that shopping centres are in a relatively more advanced position due to a central management and a generally more centralised governance approach. In contrast, High Streets and town centres, are grown retail agglomerations which are usually self-organising and/or belong to a city management. Also, as these two formats represent so-called borderless agglomerations (Berman and Evans 2013), an exact definition and distinction cannot always be made unambiguously. Nevertheless, the introductory High Street examples of the Oxford Street in chapter 1.1. has shown that grown agglomeration formats are also starting to capitalise on digital technologies. Consequently, this movement towards common digital approaches justifies the coverage of all three retail destination formats in this thesis.

In order to answer the research question *which role physical and digital attributes currently play in the academic literature to determine retail destination attractiveness perceived by consumers,* the chapter starts with an overview of the state of the art of retail destination research. For this purpose, in the agglomeration literature discussed theories, constructs and attributes aiming to predict customer´s choice of retail destinations are highlighted. In order to address the second research question, *how a solid and up-to-date conceptualisation of retail*

destination attractiveness can look like, the chapter derives a definition of retail destination attractiveness by reviewing studies from various fields in- and outside of marketing research. Finally, the overall conceptual framework of the thesis, incorporating all three research projects, is presented.

3.1. Theoretical Underpinning

In the following, an overview of theories used in the retail destination research area is provided. It can be summarised that most studies in the agglomeration research context are based on retail gravitation models embedded in the spatial interaction theory and the central place theory (see Table 2). In addition to the listed theories, the theory of reasoned action and its significance for the investigation of consumer behaviour is discussed. Further, to integrate digital service technologies in the context, the Technology Acceptance Model (TAM) is introduced. By doing so, limitations and compatibilities of the discussed theories are stated leading to the decision that the depiction of multiple theories is suitable for this research.

3.1.1. Geographical Perspective

As the origin of the spatial interact theory in retail, Reilly's (1931) work about the law of retail gravitation can be highlighted. Following Isaac Newton's physical law of gravity by adapting the variable mass as a variable of size representing the attractiveness of a retail area, he argues that consumer behaviour underlies gravitational forces. When selecting a shopping location, a consumer living between two cities would consider both as alternatives. The final choice depends on the road distance from the residence point to the trading area and the population size of the area. Consumers would choose the trading area with a higher population because of the assumption of an accompanying larger assortment offer.

Build on Reilly's law of gravitation (1931), empirical tests by Converse and Mitchell (1937) and further conceptual modifications (Converse 1949), the Huff model (1964) was established. The probability of a consumer at a travel base (i) shopping at a particular retail location (j) is defined as the ratio of the square footage of the selling area (S_j) to the travel time involved from the travel base to the given retail destination (T_{ij}):

$$P_{ij} = \frac{\frac{S_j}{T_{ij}^{\lambda}}}{\sum_{j=1}^{n} \frac{S_j}{T_{ij}^{\lambda}}}$$

Figure 4: Formal expression of Huff's model (1964)

Λ demonstrated the effect of travel time on various kinds of shopping trips and has to be measured empirically. The model states that consumers choose trading areas based on the total perceived value considered as overall utility. A larger shopping centre with a wider product assortment would hence provide greater utility to the consumer in comparison to a small centre. The distance between a consumer and a shopping location can be classified as disutility or cost.

Huff's model can be considered as lower-level theory sitting within the higher-level theory of spatial interaction. The theory assumes that consumers value the attractiveness of a shopping area as more important than the distance they have to travel. This is the significant difference to the related central place theory which assumes consumers choose the nearest shopping location offering the wanted good or service (Christaller 1993; Lösch 1940). Retailers are as central places distributed in a regular triangle grid surrounded of uniform sized hexagonal market areas. This arrangement is ought to be the most efficient approach to serve areas without any overlap (Christaller 1993). The theory assumes that sellers, who act rational and profit maximizing, appreciate equivalent costs and free entry to the market. The population is even distributed and customers are identical informed, equally wealth and frequent the nearest service centre offering the required product. Shopping trips are performed for only one purpose and travel expenses are constant and equally easy in all directions. The traditional model was later amended by Berry and Garrison (1958) who derived the assumption that Christaller's (1993) four-tier hierarchy of a village, town, city and regional capital can be applied to the internal organization of a city's purchasing locations, namely a street corner convenience cluster, a neighbourhood, community and regional shopping centre.

It can be summarised that the spatial interaction theory and the central place theory are equal in assuming that people are rational, utility-maximizing decision makers. The theories, based on simplified statements of an ideal world, describe retail activities and consumer behaviour that should come into effect, but do not certainly do. The assumptions that consumers start

their shopping journey always from home, shop only for one purpose and are free in the choice of a shopping location have been subject of criticism (Curry 1972; Ghosh 1986; Gibson and Pullen 1972). As the distance to a retail destination builds a main part of the spatial interaction theory and the central place theory, the question arises if these theories are suitable for this research that focuses on services as differentiation factors of traditional retail destinations.

The distance variable is assumed one among other attributes having an impact on retail destination attractiveness. Nevertheless, with regard to the wide-ranging use of geographic theories in the research area of retail destination attractiveness, it is reasonable to consider these theories when building the theoretical framework of this research. Hence, location-related factors will be evaluated within the empirical research part. However, the existing conceptualisations are assessed as insufficient in capturing the complete retail destination attributes, especially digital services. Hence, as additional characteristics can be derived from the research area of psychology and marketing, further theories attempting to explain consumer behaviour are introduced next.

3.1.2. Consumer Behaviour Perspective

The theory of reasoned action (Ajzen and Fishbein 1980; Fishbein and Ajzen 1975), intends to predict and explain human behaviour based on their pre-existing attitudes and behavioural intentions. An individual's decision to perform a particular behaviour is based on the expected outcomes of the performed behaviour.

An intention to perform a certain behaviour precedes the actual behaviour. This behavioural intention is influenced by attitudes toward and subjective norms concerning the particular behaviour. The attitude is again affected by behavioural beliefs about the consequences of the behaviour, the subjective norm by normative beliefs about it. Belief is defined as the probability dimension of a concept, attitude as the evaluative dimension (Fishbein 1963; Fishbein and Raven 1962). Through the described model, the theory of reasoned action proposes that stronger intentions result in a higher effort to perform the behaviour, which increases the possible performance of the final behaviour.

Considering the discussed consumer behaviour perspective, the interactive processes taking place in a consumer can help explain retail destination attractiveness. It is assumed that stronger behavioural intentions to perceive retail destination attractiveness result in a higher effort to carry out the behaviour, leading in turn to an increased possibility of the performance of the final behaviour. As different attributes are expected to have an impact on retail destination attractiveness, the intention and use of these attributes and its antecedents need

to be investigated. With regard to the focus of this research, the next chapter introduces a technological perspective.

3.1.3. Technological Perspective

As this study pays attention to the impact of digital service technologies on retail destination attractiveness, the described theoretical framework needs to be expanded. Studies examining the acceptance and usage of technologies draw primarily on the previously discussed theory of reasoned action to introduce the technology acceptance model (TAM).

The TAM has occurred as one of the most frequently used conceptual frameworks to explain how customers accept and use technologies in the existing literature The model suggests that a customer's usage intention and actual use of a new technology is influenced by the perceived usefulness and perceived ease-of-use of it (Davis, Bagozzi, and Warshaw 1989; King and He 2006).

The model has already been transferred to a shopping context by for example examining the acceptance of personal digital assistants (e.g., Evanschitzky et al. 2015) or smartphone-based mobile shopping (e.g., Hubert et al. 2017). In this framework, the extent to which a customer believes that using a digital service technology will enhance his or her task performance refers to perceived usefulness of a technology. Perceived ease of use is defined as the degree to which a customer believes that using a digital service technology will be free of effort. Authors also argue that customers recognise risks and benefits associated with the technologies which shape the usage intention (Hubert et al. 2017; Pavlou 2003).

This discussed technological perspective is applied by project 1. By dealing with the acceptance and usage of information systems in retail agglomerations, predictors and antecedents of the intended and actual usage of service technologies are explored and analysed in the framework of the TAM (Davis, Bagozzi, and Warshaw 1989). The TAM can be classified as lower-level theory sitting within the higher-level theory of reasoned action (Ajzen and Fishbein 1980; Fishbein and Ajzen 1975). By focussing on the consumer perspective, project 2 draws on the latter theoretical foundation extended through service quality models. In order to classify examples of digital services offered to visitors and customers of retail destinations, the cases of project 3 are structured alongside the marketing mix (Blut, Teller, and Floh 2018), for this purpose build on a new digitalised framework.

Table 2: Overview of studies in retail destination research

	Measure description	Retail destination	Theoretical framework	Construct	Operatio-nalisation	Data collection/ N	Analyses	Validity	Main outcome
Spatial interaction theory, gravitation models, central place theory									
Anselmsson (2016)	Improvement and investment effect model	Shopping centre	Sales and visit growth model	Patronage, attractiveness, satisfaction	Literature review, hypotheses	Expert interviews; shopping centre managers, telephone / 96	Cronbachs α, EFA, median, mean, Pearson correlation, linear regression	NS	15% of sales **/** 8% of visit growth variance accounted for by attribute model (significant)
Dennis et al. (2002b)	Brunel Index brand image measure	Shopping centre	Fishbein compensa-ting model	Attractiveness	Focus groups, semi-structured survey	Mall intercept; convenience sample, face-to-face / 287	Semantic differential, weighting, linear regression	NS	98% of sales, 83% of rental income, and 79% of catchment area variance accounted for by Brunel index image (significant)

Nevin and Houston (1980)	Retail image measure	Shopping centre and downtown area	Extended gravitation model with image and special store	Image	Literature review, expert interviews	Survey; probability sample, post / 827	PCA, regression, factor congruent test, Cronbachs α	Predic-tive	40% of drawing power variance accounted for by department stores (significant)
Wong et al. (2001)	SCATTR: instrument for measuring shopping centre attractiveness	Shopping centres	Extended gravitation model	Attractiveness (overall)	Literature review, consumer focus group	Mall intercept; random sample, face-to-face / 500; 194; 193	Cronbachs α, FA, ANOVA, regression	Con-struct, predic-tive	37-33% of overall attractive-ness ranking accounted for by quality and variety (significant)
Random utility theory									
Finn and Louviere (1996)	Anchor store contribution	Shopping centres	Model of consumer shopping centre decision-making	Image, patronage	Literature review	Survey; random mail sample / 399; 1042; 841	Multiple and stepwise regression, correlation	NS	70-90% of image item variance accounted for by store tenant variable (significant)

Severin et al. (2001)	Stability of retail shopping choices	Shopping centre, super-market, superstore, warehouse club	Multinomial logistic regression model	Image, retail choice	Literature review, hypotheses	Survey; random mail sample / 740; 624; 476; 1043; 846	Full Information Maximum Likelihood	NS	Retail destination choices are mainly stable over space and time (significant)
Other/no theoretical underpinning									
El-Adly (2007)	Shopping mall attractiveness	Shopping centre	Segmen-tation	Attractiveness	Literature review, pre-test	Survey of university staff, written convenien ce sample / 404	PCA, Cronbachs α	NS	Attractive-ness factors account for 54% of total variance
El Hedhli and Chebat (2009)	Shopper-based mall equity	Shopping centre	Customer-based brand/ store equity	Equity	Literature review, expert judges	Mall intercept; random sample, face-to-face / 408; 497	Cronbachs α, corrected item-to-total correlation, CFA	Content , face, conver-gent, discri-minant, predic-tive	Awareness (.66) twice as important as image (.34) in explaining equity (significant)
Gomes and Paula (2017)	Shopping mall image	Shopping centre	Retail location/ store image	Image	Literature review	Biblio-metric/ content analysis	Cluster analysis	Exter-nal	Mall image model

Teller and Reutterer (2008)	Retail agglomeration attractiveness	Shopping centre and high street	Evaluation model of marketing mix	Attractiveness	Literature review, hypotheses, focus groups	Mall intercept, random sample, face-to-face / 1066; 1073	SEM, CFA, variances, Cronbachs α, mean, standard deviation	Discri-minant	Tenant mix (.36/.22) and merchandise value (.11/.08) exert impact on overall attractive-ness (significant)

3.2. Conceptual Underpinning

The following chapter further advances the understanding of the current role of physical and digital attributes in the academic literature determining retail destination attractiveness perceived by consumers. By reviewing studies on retail agglomerations, related research work on destination attractiveness (Anselmsson 2016; Teller and Reutterer 2008; Wong, Yu, and Yuan 2001), image (Nevin and Houston 1980; Severin, Louviere, and Finn 2001) and equity (Dennis et al. 2002b; El Hedhli and Chebat 2009) can be highlighted. It can be noted that the attributes and characteristics forming a retail image, establishing a retail equity or influencing the attractiveness of a retail choice are similar in the existing literature (see Table 2 and 3). This gives evidence that retail destination attractiveness, image and equity are related, justifying a discussion of the examined attributes and measurement approaches in this research context. In this context, retail destination attractiveness is determined as most appropriate construct for this research and a solid and up-to-date conceptualisation derived.

3.2.1. Retail Destination Equity

The construct retail destination equity is derived from the related term brand equity which is defined as the value a brand adds to a product (Goworek and McGoldrick 2015). Hence, when the customer is familiar with the brand and holds some unique, strong, and favourable brand associations in memory, customer-based brand equity exists (Keller 1993). In this research, the perspective is changed from a single brand to a total retail destination encompassing several brands. Consequently, when the customer is familiar with the retail destination and holds some unique, strong, and favourable retail destination associations in memory, customer-based retail destination equity exists.

The related construct of brand equity is discussed by Keller (1993) who demonstrates a conceptual model from the perspective of the individual consumer. The author defines consumer-based brand equity as “the differential effect of brand knowledge on consumer response to the marketing of the brand”. By responding more supportive to a marketing mix element because of a brands name in comparison to the same marketing mix element of a made-up (un)named version of the product or service, the brand can be characterised by having a positive customer-based brand equity. The same applies the other way around, showing negative customer-based brand equity (Keller 1993). In this context, brand knowledge is conceptualised through the two components brand image, expressed as a set of brand associations, and brand awareness, consisting of brand recognition and brand recall. Two

ways of measuring consumer-based brand equity are presented. By measuring brand knowledge, hence brand awareness and image, the construct is assessed indirectly. Further, by measuring the effects of brand knowledge on consumer response to elements of the marketing mix a direct approach is offered.

Literature argues that the use of an exclusive mall image construct does not account sufficiently for the total value of a given mall. According El Hedhli and Chebat (2009), a mall has not only an image, but an equity entailing that image. Inspired by Keller's (1993) work on customer-based brand equity as well as Hartman and Spiro's (2005) work on customer-based store-equity, the authors introduced shopper-based mall equity. The concept is defined as "the differential effect of mall knowledge on shoppers' responses to a mall's marketing activities".

El Hedhli and Chebat (2009) developed a 16-item measure considered as a valid and reliable scale to measure shopper-based mall equity. Thereby, the authors examined the dimensions. The measure was constructed while checking for content, face, convergent, discriminant and predictive validity as well as assessing the internal consistency via Cronbachs α. However, as this study derives insights through literature reviews and the exclusive judgement of experts and managers, it is not clear if the used items are also appropriate from a customer's point of view.

The authors also classify their construct shopper-based mall equity as multidimensional consisting of the sub-constructs mall awareness, a one-dimensional construct showing the degree to which a consumer is able to recognise and recall the mall characteristics, and mall image, classified as a multidimensional construct representing the way a given mall appears in the mind of the shopper. The next chapter gives attention to the investigation of the latter construct.

3.2.2. Retail Destination Image

The perception of retail mix elements of a distinct retail destination can be defined as retail destination image, which is embedded in consumers' minds. Retail mix elements refer to the combination of marketing activities and include e.g., location, merchandise, atmosphere, customer service, price, advertising, personal selling and sales incentive programs (Ghosh 1994).

In the existing literature, the image of a store or retail type is discussed from the consumer perspective (Baker, Grewal, and Parasuraman 1994; Hart, Stachow, and Cadogan 2013; Nevin and Houston 1980) and from a management point of view (Finn and Louviere 1996).

According to Gomes and Paula (2017), the concept mall image reveals consumers' mall awareness of functional, hence tangible, and psychological, thus intangible, attributes. Merchandise assortment, sales, post-sales services, quality, price, and physical facilities like parking and weather protection can be classified as observable, tangible attributes. Not direct observable, intangible attributes are e.g., the image of visiting people and the atmosphere (Chebat, Sirgy, and Grzeskowiak 2010; Gomes and Paula 2017).

The mall image conceptualisation is derived from the store personality or image idea describing the way in which consumers' minds construe a store. It is also closely related to the construct of brand image defined as brand impressions reproduced by associations held in consumer memory (Keller 1993).

In a condition where products, prices, services and marketing efforts of a retail option do not differ, preferences arise through the perceived destination image. Thereby, it can be assumed that as more positive the image is, the more likely it is that the consumer prefers the store (Lindquist 1974; Martineau 1958). The same causality can be applied for the retail destination image: The preference for one retail type increases as soon as the consumer perceived image of this retail type is enhanced. To improve the image in turn, the characteristics increasing the image of the particular retail type have to be identified.

According to Finn and Louviere (1996), physical and tenant characteristics create a consumers' image of a shopping centre. These characteristics are memorised through shopping trips as well as perceived marketing communication and world of mouth. The authors argue that it is crucial for managers to understand that long-term modifications of the tenant mix can lead to shifts in the perceived destination image. Their study's findings support this assumption showing that 70-90% of the image item variance is accounted for by store tenant variables. For instance, the presence of discount stores like KMart in a centre was associated with significantly weaker image perceptions of high quality, wide selection, good service, high prices, and latest fashions, and with stronger perceptions of low prices. The additional variance in image accounted for by physical characteristics like centre size, levels and distance was in contrast rather small.

In can be further summarised that studies comparing relationships in different countries are limited**.** Severin, Louviere, and Finn (2001) analysed retail shopping choices across Canada, USA and Norway. The study concluded that factors driving retail destination choices are mainly stable over space and time. A further study investigating a competitive relationship between two agglomeration formats in different countries was conducted by Teller, Wood, and Floh (2016). By means of consumer surveys in Bratislava, Ljubljana and Vienna, the impacts of the dimensions tenant mix, atmosphere, accessibility and parking condition, as a form of service,

on patronage across town centres and shopping malls are compared. The results show only limited differences between the examined agglomeration formats in terms of the investigated drivers.

By looking for studies discussing possible destination attributes and items with managers and expert judges, the work of Nevin and Houston (1980) can be highlighted. As one of the pioneer studies of retail image, the authors suggested the development of a scale based on store image literature review (Bearden 1977; Lindquist 1974) and interviews with centre managers (N=16). The 16 items aimed to measure the image component of the model were integrated into the questionnaire and measured on a 5-point semantic differential rating scale. The results were analysed using factor analysis, multiple and stepwise regression and tested by Cronbachs α and predictive validity. However, as the study derived possible items through literature reviews and the exclusive judgement of experts and managers, it is again not clear if the used items are also appropriate from a customer's point of view.

The suggested retail image measure of Nevin and Houston (1980) emphasises the attribute dimensions benefits offered by the market area, facilities and positioning as essential. The authors' findings suggest that nearly half of the drawing power variance is accounted for by department stores. The work of Gomes and Paula (2017), examining the perceived image of shopping malls, is based on this study as well as on pioneer studies on store image (Bearden 1977; Lindquist 1974; Nevin and Houston 1980). By further adapting Huff's (1964) gravitational model, showing that consumers choose trading areas based on the total perceived value, the dimensions assortment, facilities and market posture are highlighted to be significant for consumers' choice of retail destinations. Gomes and Paula (2017) refine the listed established models and derive the dimensions location, merchandise, service, popularity, facilities, sales and incentives.

Interestingly, the proposed image dimensions overlap with the examined attractiveness attributes of Wong, Yu, and Yuan (2001) and Anselmsson (2016). To deliver a comprehensive comparison, the concept of retail destination attractiveness is discussed next.

3.2.3. Retail Destination Attractiveness

Studies on retail destination attractiveness try to reveal what attracts individuals to particular retail formats like shopping centres or High Streets. According to Anselmsson (2016), recent shopping centre studies have examined three theoretical areas: centre patronage, centre attractiveness and centre satisfaction. However, the idea of attractiveness has to be differentiated from the concept of satisfaction proceeding after the visit of a shopping location

by comparing expectations with experiences and the concept of patronage commonly defined through the visit rate of a customer (Chebat et al. 2014; Howell and Rogers 1981). Hence, this research focusses on the foregoing concept of centre attractiveness as on the downstream concepts of satisfaction and patronage.

By studying attributes conceptualised to drive retail destination attractiveness, the related work of Teller and Reutterer (2008) can be highlighted. The authors examine the attractiveness of a shopping centre and a High Street in Vienna through attributes following the marketing mix. The attributes were grouped in site related factors (accessibility and parking), tenant related factors (tenant mix and merchandise value) and environment related factors (orientation, ambience and atmosphere). By using a random sample, the authors derived the results that the atmosphere and tenant mix, in contrast to accessibility and parking, play a major impact on the perceived attractiveness of such agglomeration forms. As the analysed dimensions have been shown to be valid for the agglomeration formats shopping centre and High Streets, the proposed attribute classification is applied in this thesis. Attributes examined by other studies are classified according these marketing mix groups in Table 3. To consider the distance variable highlighted in the discussed geographical theories in the previous chapter 3.1, the dimension site related factors is extended to site and distance related factors or services. Also, to take into account the focus of this chapter, the examination of digital and physical service attributes, a fourth group labelled “services” is added.

The framework of Teller and Reutterer (2008) is used as following in Table 3 to group the attributes of the beforehand discussed studies: Merchandise (Gomes and Paula 2017), facilities (Gomes and Paula 2017; Wong, Yu, and Yuan 2001), refreshments and retail mix (Anselmsson 2016) can be classified as tenant related factors, location (Gomes and Paula 2017; Wong, Yu, and Yuan 2001) and access (Anselmsson 2016) as site and distance related factors, and atmosphere (Anselmsson 2016) as environment related factors. Sales, incentives (Gomes and Paula 2017; Wong, Yu, and Yuan 2001) and promotions (Anselmsson 2016) present new sub-group of tenant-related attributes. In addition, the attributes anchor, wide selection, latest fashion, low and high prices as well as high quality are examined by Finn and Louviere (1996) and Severin et al. (2001) and can be assigned to tenant related factors. As attributes like high and low prices are product specific, an extension of the dimension to tenant and product related factors is carried out. Also the dimensions of the developed shopper-based mall equity (El Hedhli and Chebat 2009) can be grouped in the attractiveness framework: Product quality is classifiable to tenant related factors, convenience and service quality to site and distance related factors, and environment to environment related factors.

In addition, a review of the attribute identification and item generation reveals that existing studies collect data merely thorough literature reviews and hypothesising (Anselmsson 2016; Gomes and Paula 2017; Severin, Louviere, and Finn 2001). Though other authors (Teller and Reutterer 2008; Teller, Wood, and Floh 2016; Wong and Yu 2003; Wong, Yu, and Yuan 2001) also collected measurement scales from relevant literature (Bearden 1977; Lindquist 1974; Nevin and Houston 1980), the items are adapted by using consumer focus groups or surveys and by following validity and reliability requirements (Bagozzi, Yi, and Phillips 1991; Churchill 1979; Fornell and Larcker 1981). However, the conducted focus groups of 30 and 31 consumers (Teller and Reutterer 2008; Wong, Yu, and Yuan 2001) can be queried as small sample, especially when considering the lack of adding a management perspective in the item generating process (Nenkov, Inman, and Hulland 2008; Rossiter 2002).

It can be further emphasised that existing studies attempt to measure the relationship of destination attractiveness, or related constructs, to one retail agglomeration format like town centre (Hart, Stachow, and Cadogan 2013) or shopping centre (Anselmsson 2016; El Hedhli and Chebat 2009; El-Adly 2007; Finn and Louviere 1996; Wong, Yu, and Yuan 2001). Some authors compare different subcategories of the examined format like city with external centres (Anselmsson 2016) or regional with joint venture or community centres (Finn and Louviere 1996; Wong, Yu, and Yuan 2001). Only a few attempt to measure drivers in multiple retail contexts exist; e.g., in shopping centres and High Streets (Teller and Reutterer 2008), in shopping centres, supermarkets, superstores and warehouse clubs (Severin, Louviere, and Finn 2001) or in downtown areas and shopping centres (Nevin and Houston 1980).

The discussed studies, particularly in terms of the examined attributes, show that the constructs image, attractiveness as well as equity are closely related. In addition, the substitutional usage of the three constructs leads to the assumption that the respective choice depends on the authors' preference. Further, the overview of previous examined attributes shows that among different attributes the dimension service is covered by a vast proportion, whereby a digital perspective has not been assessed (see Table 3). Hence, agglomeration literature accounts for the importance of services, but lacks an up-to-date investigation of digital services. In this research, innovative technologies are considered as an opportunity to enhance the (offline) shopping experience, and its impact on retail destination attractiveness is explicitly examined. The next chapter starts by outlining the reasons why among attractiveness, image and equity, the comprehensive construct of retail destination attractiveness is considered as most appropriate for this research.

Table 3: Overview of examined attributes in retail destination research

	Products and tenant mix related attributes			Site and distance related attributes			Environment related attributes			Services	
	Tenant mix/ anchors	Merch-andise value	Sales/ promotion/ events	Staff	Accessibility	Parking	Location/ distance	Orien-tation/ layout	Atmos-phere/ ambience	Rest area	Non-digital	Digital
Attractiveness												
Anselmsson (2016)	X		X		X				X		X	
El-Adly (2007)	X	X	X		X	X		X	X	X	X	
Teller and Reutterer (2008)	X	X			X	X		X	X	X		
Wong et al. (2001)	X		X				X					
Equity												
Dennis et al. (2002b)	X	X			X	X		X	X			
El Hedhli and Chebat (2009)		X			X	X			X		X	

Image											
Finn and Louviere (1996)	X	X									X
Gomes and Paula (2017)	X	X	X	X	X	X	X	X	X	X	X
Nevin and Houston (1980)	X	X	X	X	X	X	X	X			
Severin et al. (2001)	X	X	X		X		X		X		X

3.3. Conceptualisation of Retail Destination Attractiveness and Overall Model

As stated before, the discussion of the constructs retail agglomeration image, attractiveness and equity are closely related in the existing literature. Authors argue that the familiarity with the retail destination is a requirement for the formation of retail destination equity (El Hedhli and Chebat 2009). However, the examined concept in this research emphasis rather a customers' perception of a retail destination, than its familiarity. On the other hand, retail destination image is defined as the perception of retail mix elements of a distinct retail destination (Finn and Louviere 1996). Although this definition encompasses the assumption that the preference for a retail destination increases as soon as the consumer perceived image of this retail destination is enhanced, the construct is lacking an explicit evaluation process of agglomeration attributes perceived by consumers. Due to the described shortcomings, the comprehensive construct of retail destination attractiveness is ranked as most appropriate and will hence serve as the dependent variable in this study.

The construct retail destination attractiveness has not been explicitly defined in the existing literature, hence research conceptualising the idea of attractiveness in various fields is reviewed (see Table 4). First, the thesis draws back on the general definition of attractiveness as a quality or power that arouses an interest or consideration to someone or something (Ortony, Clore, and Collins 1988). Further context specific conceptualisations can be found in consumer psychology and marketing (Bhattacharya and Sen 2003; Reingen and Kernan 1993; Till and Busler 2000), business and entrepreneurship (Chandler and Hanks 1994), environment and geography (Borst et al. 2008; Walz and Stein 2017), medicine (Schulz and Hayn-Leichsenring 2017; Tedesco et al. 1983; Zang et al. 2017), information and technology (Li et al. 2018; Melis et al. 2015) and tourism (Hu and Ritchie 1993).

In the context of facial human attractiveness, Zang et al. (2017) argue that the assessment of attractiveness varies fundamentally from person to person. Considering this argumentation, it can be assumed that the assessment of retail destination attractiveness varies from customer to customer and hence takes place on an individual level. Other studies of facial attractiveness show that attractiveness is predominantly driven by perceptual processes (Schulz and Hayn-Leichsenring 2017). In the study of Li et al. (2018), identity attractiveness is analysed in the research context of omnichannel retailing. The authors describe the construct as “a retailer's enduring attributes (e.g., brand image, competencies, product offerings, reputation, and values) that are appealing and can satisfy the diverse needs of customers”. Further, as related construct brand attractiveness, defined as a positive assessment of a brand's principal, unique, and permanent associations and characteristics, can be highlighted. Thus, brand associations

matching consumers' main self-definitional needs lead to the establishment of an attractive brand (Bhattacharya and Sen 2003; Elbedweihy et al. 2016).

Additionally, by defining place attractiveness as the degree by which consumers are drawn or pulled towards a particular place, Teller and Elms (2012) consider place attractiveness as outcome of holistic assessment of attributes. Thereby, the perception of attributes and the evaluation of attractiveness can be influenced by the place or agglomeration management when applying marketing mix instruments. These instruments are established in retail agglomeration characteristics perceived by consumers and are transformed into an overall evaluation of the attractiveness (Teller and Reutterer 2008). Also, El-Adly (2007) proposes that shopping mall attractiveness occurs when delivered attributes are matching the preferences of shoppers. In this context, this evaluation process has an effect on the shoppers' behaviour, ideally bringing consumers to come, stay, spend money and revisit. Hence, retailers and agglomerations need to be preferable or favourable for customers on every stage of the buying process (Teller and Reutterer 2008).

Considering the previous listed explanatory approaches, retail destination attractiveness in this thesis refers to *the extent to which consumers are pulled towards a retail destination, shaped by consumers overall assessment of perceived digital and physical marketing mix attributes at every stage of the customer journey.* This pull effect holds true when consumers' holistic perceptions of marketing mix attributes lead to a favourable evaluation of the retail destination, by reconciling that the retail destinations enduring attributes are able to meet the customers' preferences. It arouses a customer's interest and depicts how appealing a retail destination's principal and permanent associations and characteristics are. This favourable evaluation in turn leads to a positive attitude and behaviour of customers towards the retail destination by e.g., increased satisfaction, patronage intention, number visits and spending.

In line with Anselmsson (2016), the attraction or pull process is proposed to take place before a visitor selects a retail destination and continues during and after the visit. Also, the perception of the retail destination attributes can vary significantly with the context of the shopping experience sought (Hu and Ritchie 1993).

By explicitly highlighting that the pull effect of a retail destination can occur at every stage of the customer journey, this research links the well-established concept of the customer journey (Lemon and Verhoef 2016) to the attractiveness research of retail agglomerations. This is in particular applicable as recent research emphasises the advantages of technologies to foster customer journeys in the era of omnichannel retailing (John and Scheer 2021; Lemon and Verhoef 2016). To the best of the authors' knowledge, research in the retail agglomeration context considering the customer journey is scare. In this context, the work of Stocchi, Hart,

and Haji (2016) can be highlighted, examining the customer journey to conceptualise the town centre customer experience. However, by investigating the influence of functional and experiential non-digital touchpoints on consumer behaviour in town centres, the authors follow a different research objective not applicable to this research.

The idea of the customer journey illustrates that within the decision process whether to purchase in a particular store or not, consumer in advance look for information and assess other alternatives (Spiggle and Sewall 1987). The same evaluation approach can be transferred to the decision upon a retail destination. Figure 5 reconciles the previously discussed relationships of marketing and retail concepts within the overall conceptual model of this thesis. The idea of the examined construct retail destination attractiveness driven by digital and physical attributes, which can be found at different stages of the customer decision process, is underlined. In addition to holistically drawing on the customer journey, all three projects make use of the marketing mix, amended within the respective studies according to the individual research objectives and findings.

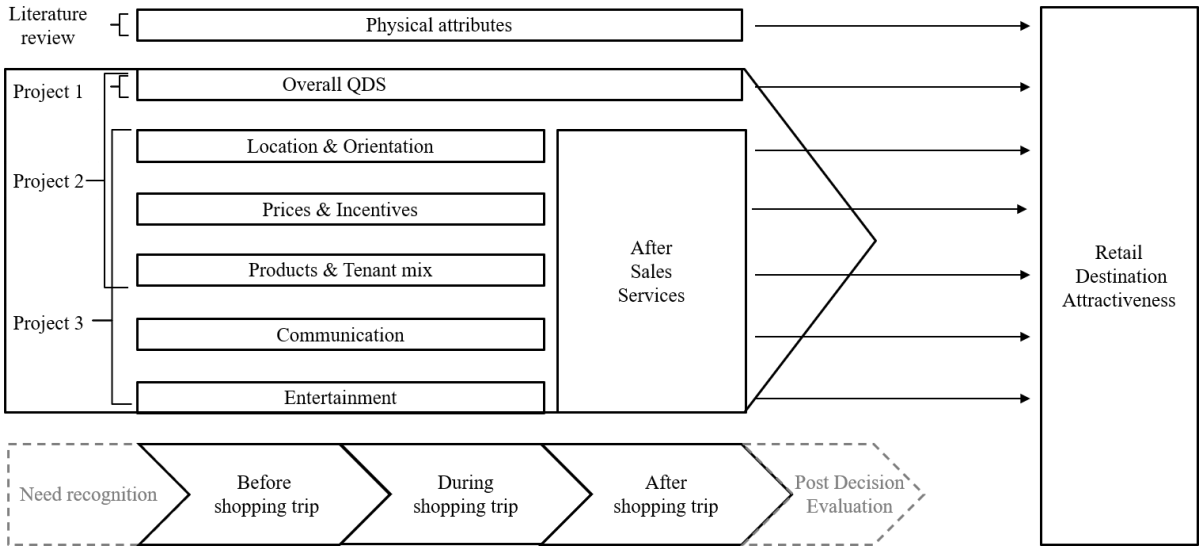

Figure 5: Overview of overall conceptual model

The provided conceptual model can be considered as a full model showing all influencing attributes. By examining the status quo of theories and concepts within retail agglomeration research, the literature review highlights physical attributes preceding retail destination attractiveness. The emphasis of the subsequent three projects lies on digital attributes driving retail destination attractiveness, summarised within the large arrow in Figure 5.

Based on previous conceptualisations (Herhausen et al. 2019; Lemon and Verhoef 2016), the customer journey in this research is defined as *the process a customer goes through across all stages and touchpoints that forms the customer experience, including retailer-owned, competitor-owned, and additional digital touchpoints*. In this context, the quality of digital services (QDS) is conceptualised as *the extent to which a consumer believes that the digital service offered by a retail destination performs well* (see project 2, chapter 5.2.1 and 5.2.2). These constructs and all other research parts, marked on the left-hand side in Figure 5, are discussed in more detail in the respective chapters. In line with the title of this dissertation, the impact of digital service innovations, operationalised by marketing mix instruments, on retail destination attractiveness is reflected.

Chapter 3 has shown that studies in the agglomeration literature are primarily based on retail gravitation models highlighting distance as main lever accountable for the attractiveness of a retail destination. In this context, the discussion of the related constructs has led to the result that the attributes forming a retail image, establishing a retail equity or influencing the attractiveness of a retail choice are alike. Thereby, attributes following the marketing mix are prevalent: products and tenant related factors like anchors and merchandise value, site and distance related factors like accessibility and parking, and environment related factors like orientation and ambience. Although attributes in the context of services are covered by a large percentage of studies, the impact of digital touchpoints on retail destination attractiveness has not yet been assessed. In summary, physical attributes currently play the leading role in the academic literature to determine retail destination attractiveness perceived by consumers. In contrast, the potentials of digital attributes receive little attention. In addition, the chapter determines retail destination attractiveness as most appropriate construct for this research and derives a solid and up-to-date conceptualisation referring to the extent to which consumers are pulled towards a retail destination.

In order to account for digital devices and attributes driving retail destination attractiveness, the next chapter 4 introduces the first research project of this thesis. The work addresses the lack of (2nd) delivering a framework of digital services offered by traditional retail agglomerations and (3rd) evaluating the acceptance process of these digital service innovations from the consumer's point of view in the existing literature.

Table 4: Interdisciplinary summary of existing constructs for attractiveness

	Investigation	Nominal definition	Conceptualisation	Operationalisation	Transferability
Retail agglomerations					
Anselmsson (2016)	Shopping centre attractiveness	What makes/attracts individuals (visitors and shoppers) to visit and shop at shopping centres	Attractiveness is put on one level with shopping centre patronage and satisfaction, hereby seven categories of attributes are identified	Questionnaire with 30-item scale along attribute model to analyse impact of improvements/ investment on sales and visit growth	Presumption that attraction process takes place before a visitor selects a shopping area is adopted; but consideration of attractiveness as foregoing and satisfaction and patronage as downstream concepts
El-Adly (2007)	Shopping mall attractiveness	Motivational aspects of consumers that explain attraction to a shopping mall; attributes matching the preferences of shoppers	Attractiveness put on one level with mall image, what is considered as critical determinant of consumer patronage decisions; six shopper-perceived categories of attributes	Questionnaire with 26 mall attributes based on literature on mall attractiveness, image, and patronage	Putting the preference of shoppers as key to explain the analysed construct is reasonable; assumption that attractiveness and image show conceptual parallels is plausible, but a separate conceptualisation and analysis of constructs is required
Teller and Reutterer (2008)	Retail attractiveness	Attractiveness brings consumers to come, stay, spend money and revisit; retailers and agglomerations need to be i.e. preferable/ favourable for their	Attractiveness is seen as multi-faceted construct: Overall attractiveness is introduced as satisfaction with an agglomeration, in turn divided into sustainable attractiveness (patronage) and	Scale development along marketing mix consisting of site (6 items), tenant (8 items), environment (7 items) and buying situation (6 items) related factors	Attraction process after buyers have already chosen a shopping location is examined by means of patronage and satisfaction as part of overall attractiveness; however, this research perceives the constructs separately by considering attractiveness as foregoing and satisfaction and

		customers on every stage of buying process	situational attractiveness (retention proneness)		patronage as downstream concepts
Teller and Elms (2012)	Place attractiveness	Degree by which consumers are drawn or pulled towards particular place and retail agglomeration	Attractiveness as second-order construct with three factors: overall satisfaction, retention proneness and patronage intention	Questionnaire with 46-item scale, thereof 37 items as exogenous and 9 items as endogenous measures	Considering attractiveness as outcome of holistic evaluation of perceived attributes is rational. The operationalisation of the construct takes a different approach
Consumer psychology and marketing					
Bhatta-charya and Sen (2003)	Company´s identity attractiveness	Consumers' attractiveness evaluations of a company's identity are based on perceptions of that identity	Identity attractiveness depends on extent to which consumers perceive it to be similar to their own, distinctive on dimensions they value, and prestigious	Questionnaire with multiple-item scale measuring a number of constructs, thereof 4-item scale measuring identity attractiveness	Considering perception as component of attractiveness is plausible and hence the term is included in the definition of Retail Destination Attractiveness
Elbedweihy et al. (2016)	Brand attractiveness	Positive evaluation of the brand's central, distinctive, and enduring associations and characteristics	Value congruence and customer-to-customer similarity influence consumer-brand Identification indirectly through brand attractiveness	Questionnaire with 4-item scale about favourite brand in product categories mobile phones and TVs	Proposal that brand associations matching consumers' main self-definitional needs lead to formation of an attractive brand; hypotheses tested by mall intercept study; due to related research context and mythology, the definition is adopted
Reingen and Kernan (1993)	Physical attractiveness	Physical attractiveness is evoked by interactions of	Attractiveness implies a set of personalitylike traits; impressions of attractive people differ	Impressions of salespersons facial photographs on 18-item scale (study 1); role-	Multiple factors accounting for physical attractiveness is assumed to be also valid for other attractiveness constructs;

	of salespersons	facial beauty with other factors; it goes beyond sole physiognomic phenomena	from those hold for unattractive people	playing phone transaction on 6-item scale (study 2); judgement of facial photos on 6-item scale (study 3)	mixture of labour and field settings to counterbalance respective studies limitations is reasonable
Till and Busler (2000)	Physical attractiveness of endorsers	NS	Attractiveness implies a set of personalitylike traits; an attractive endorser has a positive effect on brand attitude and purchase intentions	Impressions of print ad with (un)attractive endorser and product used to (not) enhance one´s attractiveness on 24-item scale	Due to a missing definition of physical attractiveness, the selection of an attractive endorser by means of a pretest is elusive
Business and entrepreneurship					
Chandler and Hanks (1994)	Market attractiveness	Market attractiveness is depicted by the unique position in which a firm finds itself when interacting with other organizations	A new firm's performance is directly related to market attractiveness which consists of the task environment and includes customers, suppliers, regulators, and competitors	Questionnaire with 6-item scale regarding growing customer base, competing products and intensity of competition	The emphasis of a unique position as key part of the definition is assumed to be more appropriate for the description of brand or retail destination equity; depiction of task environment is insufficient and needs extension with more attributes
Environment and geography					
Borst et al. (2008)	Attractiveness of local street environment for walking	NS	Attractiveness as function of the influence of (physical) street characteristics	Questionnaire for general walking behaviour and personal	By asking participants to mark streets they did (not) like to walk, "attractive" is put on a level with

				characteristics; walking diary with map	"like"; exact delimitation is required
Walz and Stein (2017)	Landscape attractiveness	The natural potential of a landscape to support nature-based recreation	Indicator is derived from eight equivalent parameters for the determination of human use and landscape structure	Capability analysis of an area for nature-based recreation with five-tier scale	Used indicators to measure construct (e.g., percentage of open space or proportion of unfragmented open space larger than 50 km²) is conceptually too far from retailing
Medicine					
Schulz and Hayn-Leichsen-ring (2017)	Face attractiveness	The physical beauty of the face	There are two different hedonic values in art portraits: The attractiveness of the depicted person and the artistic beauty of the image itself	Two behavioural experiments with art portraits as stimuli to investigate the relation between attractiveness and artistic beauty	Highlighting that attractiveness is predominantly driven by perceptual processes is plausible, hence the relationship is included in the definition of Retail Destination Attractiveness
Tedesco et al. (1983)	Dental-facial attractiveness	Perceptions of dental-facial attractiveness is characterised by a person´s occlusal characteristics and status	Dental-facial attractiveness is related to the deviation of a person´s facial aesthetics from the sociocultural norm; in particular the position of teeth and jaws	Study A/B: Photos of children´s mouth and jaw rated on 5-point scale; ratings between children (not) seeking orthodontic treatment of malocclusion	Operationalisation of attractiveness with facial photos is considered to be appropriate for humans, for retail destinations a different approach needed; comparison of different judges is reasonable
Zang et al. (2017)	Facial attractiveness	An abstract and complicated concept contributed by	The assessment of attractiveness varies fundamentally from person to person	Analysis of 10,000 profiles photos from dating website to predict user's facial	In line with this study, it is assumed that the assessment of Retail Destination Attractiveness varies from customer to

		multiple facial features		attractiveness by means of machine learning	customer and takes place on an individual level
Information and technology					
Li at al. (2017)	Identity attractiveness	A retailer's enduring attributes (e.g., brand image, competencies, product offerings) that are appealing and can satisfy the diverse needs of customers	Identity attractiveness mediate the effect of Cross-Channel Integration on customer retention and the relationship between Cross-Channel Integration and interest in alternatives	Questionnaire with 42-item scale, thereof 5-item scale for identity attractiveness	The provided definition linked to omnichannel retailers is due to conceptual parallels to this thesis considered as appropriate and adopted
Melis et al. (2015)	Online assortment attractiveness	NS	NS	Analysis of household grocery purchases of size and structure of assortment	Attractiveness not explicitly defined or conceptualised, only variables and operationalisation listed
Tourism					
Hu and Ritchie (1993)	Destination attractiveness	Reflects the feelings, beliefs, and opinions that an individual has about a destination's perceived ability to provide satisfaction in relation to his or her special vacation needs	The importance of the majority of destination attributes can vary significantly with the context of the vacation experience sought (educational or recreational)	Visitor survey with sixteen touristic attributes to examine how respondents evaluate the touristic attractiveness of a travel destination and to measure the notion of destination attractiveness	The concept of destinations is common and diversely used in tourism and travel research, thus it is reasonable to take the conceptually related definition into account when formulating the construct of Retail Destination Attractiveness

4. Project 1: Elevating Shopping Experiences through Digital Technologies: The Case of Retail Agglomerations

Despite the highlighted practical relevance of digital services for agglomeration and city management in chapter 1, the literature review in the preceding chapter 3 has shown that research on technologies in retail agglomerations remains scarce. Existing studies focus on physical attributes as antecedent to customers' attraction to retail destinations, mostly discussed in terms of access, retail mix and atmosphere. In addition, research in the agglomeration area to date attempts to measure the relationship of destination attractiveness, or related constructs, to one retail agglomeration format like town centre or shopping centre.

The following project examines how traditional retailers can remain competitive by embracing opportunities of augmenting the shopping experience in an innovative way. By drawing on in-depth consumer interviews, the following research questions are addressed by means of three studies: *Which devices and platforms are expected to deliver digital services? Which digital services are considered beneficial by customers and at which stage(s) of the customer journey is their application preferred? What drives consumer's acceptance of using digital technologies?*

Abstract

Increasingly seizing the opportunities digitalisation offers, physical retail agglomerations such as city centres, shopping centres and High Streets draw on digital applications to elevate customer experiences. From a marketing perspective, the challenge lies in finding and implementing those types of digital applications that consumers find both useful and easy to use. Based on series of qualitative interviews with shoppers, this project provides a guide to management of retail agglomerations to successfully digitise their customer's shopping experience.[1]

[1] This research has been published as journal paper at the *Marketing Review St. Gallen* 6/2018, 34–41. Also, the work has been presented at the BAM 2017 Doctoral Symposium, Warwick, UK, where it has been awarded the Best Poster Award.

4.1. Introduction

While online shopping is still on the rise, traditional retailing faces enormous challenges. This becomes particularly evident in the case of smaller cities, where once well-functioning traditional city centre and High Street retail agglomerations increasingly suffer from high vacancy rates and downgrading tendencies. Nevertheless, most buying decisions are still made offline. Instead of only considering innovative technologies as a threat, digitalisation – and in particular the convergence of online and offline retailing – might be viewed as an opportunity to enhance the traditional shopping experience and an agglomeration's overall attractiveness as a shopping destination. Through digital technologies, retailers can engage with customers in a different way, delivering additional benefits at the point of sale. For example, online shoppers are used to being provided with large assortments, in-depth information and easy and convenient product selection and thus increasingly demand such features when shopping offline as well (Stüber, Velden, and Mischer 2016). In store environments, such features can be incorporated into the customer journey as well. Effectively supporting the creation of an authentic, engaging and inspiring shopping experience (e.g., Böttger et al. 2017), digital applications are therefore promising as a means to counter the crisis traditional retailing is facing.

This article investigates the use of technologies delivering digital services in a traditional retail environment along the customer journey (Berman and Evans 2013). By embracing emerging technologies, brick-and-mortar retailers can target appropriate customers by helping them to make better decisions and thereby make them more engaged. The qualitative exploratory study focuses on three types of traditional retail agglomerations, namely shopping centres, High Streets and town centres. In particular, the study aims to answer the following research questions:

- Which devices and platforms are expected to deliver digital services?
- Which digital services are considered beneficial by customers and at which stage(s) of the customer journey is their application preferred?
- What drives consumer’s acceptance of using digital technologies?

By shedding light on the interplay between traditional retailing and digital technologies based on customer insights, guidance for decision-makers to strengthen the overall destination experience is provided.

4.2. Theoretical Background

4.2.1. Definitions of the Examined Retail Agglomerations

Retail agglomerations can be defined as the spatial concentration of individual businesses like retailers and service providers in one place (Müller-Hagedorn, Toporowski, and Zielke 2012; Teller, Alexander, and Floh 2016; Teller and Reutterer 2008). Such agglomerations can consist of identical or dissimilar retail formats like department stores, specialised shops or supermarkets. The shopping centre format examined in this research is classified as a planned agglomeration with salesroom and central management. It is larger than 20 000 m² and is located in towns as well as out-of-town (International Council of Shopping Centers 2006). In contrast, town or city centres and also High Streets represent naturally grown commercial areas which can be classified as unplanned retail formats without exact borders (Berman and Evans 2013; Gomes and Paula 2017; Teller, Alexander, and Floh 2016; Teller and Reutterer 2008). With regard to High Streets, this study focuses on traditional large to medium-sized forms located in city centres.

4.2.2. Retail Agglomeration Attractiveness

Taking into account the definition of identity attractiveness in the research context of omnichannel retailing (Li et al. 2018), retail agglomeration attractiveness is defined as a retail agglomerations' appealing characteristics that are able to satisfy the needs of customers.[2]

While the retail marketing literature provides a range of conceptual and empirical insights on the drivers of retail agglomeration attractiveness, the following aspects limit the transferability of existing insights to address the question if and how digital services can help to raise consumers' attractiveness perceptions in the context of a High Street or shopping centre visit.

First, the literature focuses on physical attributes as antecedent to customers' attraction to retail agglomerations. Among the factors most widely covered are access, retail mix and

[2] At the time of writing and publishing research project 1, the definition of retail agglomeration attractiveness has focused on satisfying consumer needs. Later, thanks to the helpful feedback of the scientific community at academic conferences, the conceptualisation and definition of retail destination attractiveness has been revised (see chapter 3.3) to take into account the pull effect associated with attractiveness in the existing literature. Still, both definitions have a common core, namely that attractiveness in the retail context is based on the characteristics or attributes offered by retail agglomeration management and perceived as well as evaluated by consumers.

atmosphere (El-Adly 2007; Teller and Reutterer 2008; Wong, Yu, and Yuan 2001). While a few approaches have explicitly considered the role of services in enhancing the perceived attractiveness (Wong and Yu 2003; Wong, Yu, and Yuan 2001), little recognition is provided to assess digital touchpoints that customers consider as relevant in their journey. Second, existing studies typically consider one retail agglomeration format only (Anselmsson 2016; El Hedhli and Chebat 2009; El-Adly 2007; Finn and Louviere 1996; Hart, Stachow, and Cadogan 2013; Wong, Yu, and Yuan 2001) and thus do not allow for generalisations across different forms of retail agglomerations. Only few attempts have been made to compare multiple retail contexts (e.g., in shopping centres and High Streets: Teller and Reutterer 2008; in downtown areas and shopping centres: Nevin and Houston 1980). Third, many studies assessing agglomeration attractiveness are based on retail gravitation models arguing that a customer's choice of a retail agglomerations is mainly affected by the size of the selling area representing the assortment offer and the distance or travel time between the customer and the retail area (Anselmsson 2016; Dennis, Marsland, and Cockett 2002a; Nevin and Houston 1980; Severin, Louviere, and Finn 2001; Wong, Yu, and Yuan 2001). However, geographic approaches have been challenged for being too broad and unrealistic in terms of shopping behaviour (Hart, Stachow, and Cadogan 2013; Timmermans 1981). Also, digitalisation tends to dilute the role of spatial distance in the given context, as it allows shoppers to engage independent from the location through an internet-capable device.

4.2.3. Technology Acceptance

Studies examining the acceptance and usage of information systems, digital technologies and shopping through digital devices (Davis, Bagozzi, and Warshaw 1989; Evanschitzky et al. 2015; Hubert et al. 2017; King and He 2006) typically draw on the technology acceptance model (TAM), which suggests that a customer's usage intention and actual use of a new technology is influenced by its perceived usefulness and ease of use. In the case of shopping, perceived usefulness is defined as the extent to which a customer believes that using a digital service technology will enhance his or her task performance. The degree to which a customer believes that using a digital service technology will be free of effort refers to perceived ease of use (Davis, Bagozzi, and Warshaw 1989; Hubert et al. 2017). Hence, to understand the acceptance and usage of information systems in retail agglomerations, predictors and antecedents of the intended and actual usage of service technologies are explored and analysed.

4.3. Research Design

The empirical study draws on face-to-face in-depth interviews with UK-based consumers that were conducted between October and December 2017. In sum, 30 participants – ten for each retail agglomeration type – were interviewed, with the sample size determined on the basis of data saturation (Saunders and Townsend 2016). One interview took 24 minutes on average. Respondents were 18 to 56 years old (mean: 31.7 years). Gender distribution was 50.0% male and 50.0% female. The sampling process of the test subjects took place on a purposive basis, hence participants were chosen by the researcher's decision (Bryman and Bell 2015; Saunders, Lewis, and Thornhill 2016). Considering the research aim of the project, a standardised interview guide was designed with open questions about a customer's latest shopping trip to a retail agglomeration. By following established guidelines (Braun and Clarke 2006; Saldaña 2016), the interviews were evaluated by means of a qualitative thematic content analysis as follows: The first step involved the familiarisation of the researcher with the data. Therefore, the recorded interviews were transcribed with the help of the data analysis software NVivo with a focus on the entire data set. Then, re-reading the data and taking notes of initial ideas supported the first understanding of the data structure. Step two involved coding the data by means of generating initial codes. For this purpose, the data has been organised systematically into groups. The coding process can be characterised as data-driven and inductive as the data has been coded without trying to fit it into a pre-existing coding frame. The interpretative analysis started in step three as the researcher collected codes into potential themes to generate an initial thematic map. Hence, the themes evolved during the analysis through coding. In step four, the final thematic map has been established by means of reviewing the themes and examining if the themes work in relation to the codes and data set. Step five involved the definition and labeling of the fully worked-out themes. Finally, the results have been compared with related literature and a report of the definitive analysis has been produced in step six. In order to ensure intercoder reliability, the author has shown and discussed the results of every step with a research team consisting of the two PhD supervisors.

4.4. Empirical Findings

4.4.1. Shopper Typologies

To ensure that the participants' answers correspond to retail agglomerations and not to single stores, an offline interview setting was chosen. Due to the abstract meaning of digital services, a proper understanding of the topic was facilitated by offering examples. To not limit the

relevance of the results by only asking offline shoppers, the online shopping behaviour was enquired additionally. The results indicate that 97% of the subjects shop online and offline with a range of online shopping from ‘rare’ (once or twice per year) and ‘occasionally’ (once or twice a month) to ‘heavy’ (once or twice a week). It was ensured that – despite the offline context of the research topic – the sample was heterogeneous with regard to the shopping behaviours of respondents.

4.4.2. Value-adding Devices and Platforms

With regard to the different types of devices, respondents’ answers indicate that both mobile and fixed devices, provided by the shopping area or by the customers themselves, can generally add value to the customer experience (see Table 5).

Within the group of mobile devices, mobile phones as well as tablet- and laptop-based applications can add value. Although the latter might also be considered as fixed devices due to the relatively large size and weight, the characteristic that laptops have no fixed connection and can hence be carried anywhere during the visit of a retail destination justifies a classification as mobile devices. Typical fixed devices within the retail agglomeration are display boards, also called digital signage or – as larger format – digital walls (Stüber, Velden, and Mischer 2016). These devices normally do not have an interactive function, but are electronically updateable and can serve as scoreboard to provide information on advertisements, promotions and routing. Fixed, interactive devices include self-service machines for automated checkouts, mounted tablets and customer service terminals.

Table 5: Overview of digital devices

Type \ Belongs to	Retail agglomeration	Customer
Mobile	Mobile phone Tablet Laptop	Mobile phone Tablet Laptop
Fixed	Display board Mounted tablet Self-service machine Customer service terminal	Computer

In contrast to self-service machines, mounted tablets and customer service terminals can deliver the same services, but on devices that differ in size. Using mounted or mobile tablets provided by the retailer, the customer can browse through the information without having other passers-by looking at the display. Customer service terminals, also called virtual shopping shelves (Stüber, Velden, and Mischer 2016), are usually of a larger size, with the information displayed for everyone around.

For mobile technologies, there is a preference of customers to use their own devices, above all mobile phones, to access information digitally. Most fixed devices are provided by the retailer, except for computers that can be used before the shopping trip to access specific information.

The platforms delivering information are also of importance. Here, participants pointed out that social media accounts, apps, websites and email newsletters are generally seen as value-adding platforms through which retail agglomerations can interact with consumers.

4.4.3. The Use of Digital Devices Alongside the Customer Journey

As part of the decision-making process whether to purchase in a particular store, consumers search for information and evaluate other store alternatives beforehand (Spiggle and Sewall 1987). The same approach can be applied to decision-making regarding visiting a retail agglomeration. Figure 6 gives an overview of the service applications preferred alongside the temporal stages of the retail agglomeration visit (before, on-site and after) and the type of the device utilised. Customers want to get access to different kinds of information before the shopping trip, on the way to the shopping destination, on-site and afterwards. These findings give evidence that retailers should not only focus on delivering digital touchpoints at the actual point of sale, but alongside the entire customer journey.

Before traveling to a retail agglomeration or on the way to it, availability checks play a major role. One of the key benefits of traditional retailing is the possibility to check items physically, potentially try them on and take them home immediately. Customers making an effort to travel to a physical retail area do not want to face an out-of-stock situation. Hence, availability checks of stores, brands, products, and also for services such as restaurants and bars are seen as valuable. Further, by providing information about discounts, sales, promotions, offers and events, retailers give customers a reason in advance to visit their shops. When browsing products, customers want to get the possibility to order items online and afterwards collect them offline. By offering such click and collect services or self-service kiosks like Amazon

Locker, retailers ensure that customers have a reason to visit the retail agglomeration, with the possibility to engage in offline shopping. Information about opening times, peak times and waiting hours are also appreciated. Customers want to know how to avoid large crowds when visiting a shopping centre or High Street. Further, the locations of all facilities and stores in the area as well as reliable information about connections to and traffic around the retail area can be provided to facilitate the journey to the destination.

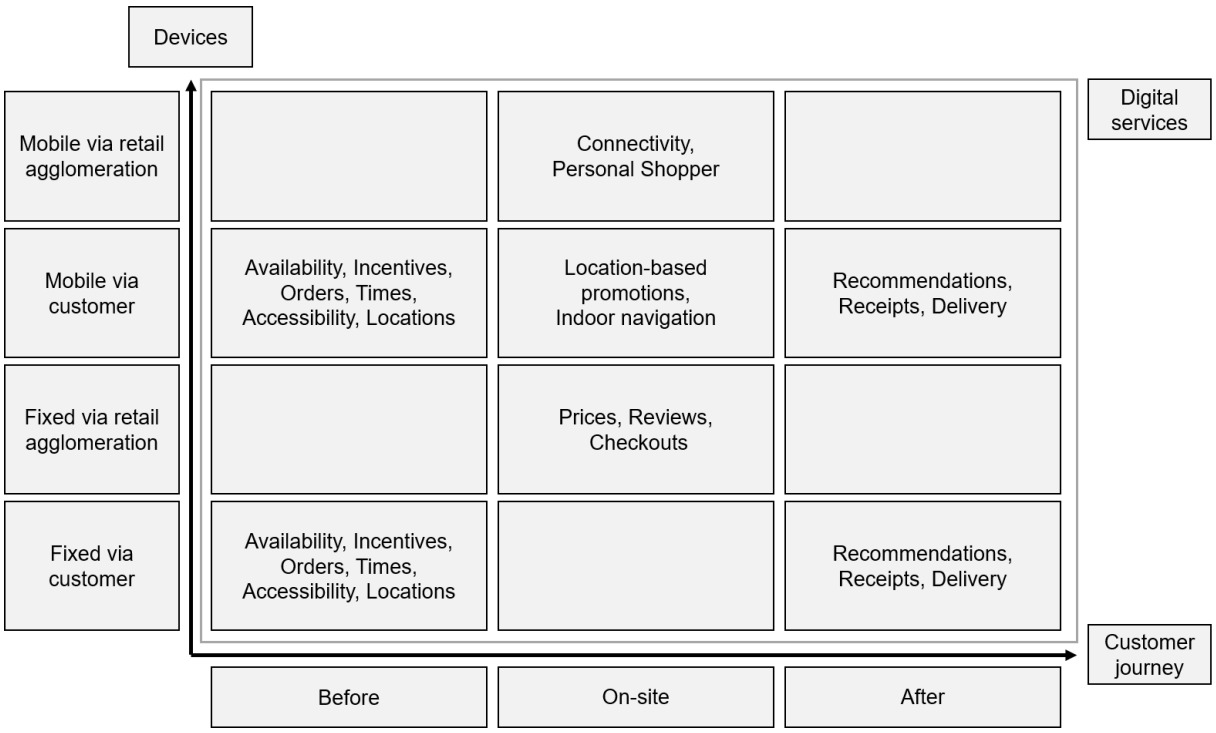

Figure 6: Digital services alongside the customer journey

During the shopping trip, an agglomeration's digital services offering should be similar to the range of services offered before the trip, especially for availability, price and review checks. The main difference in services required by customers during the trip is the increased demand for services delivered on mobile devices, also on their own devices, through an app. With geolocation functions, retailers can notify customers about promotions based on their location. In addition, instead of directions and navigations to the destination, now assistance in form of orientation is required in the retail agglomeration. Especially, digital interactive maps and navigation services offered via mobile phones are an innovative way to lead customers to particular shops, restaurants, or the products they desire. A service gaining more and more attention is the provision of a digital personal shopping assistant through a mobile device owned by the retail agglomeration. By the use of tailored filters, this service helps the customer

to locate the most suitable product within the retail agglomeration. In addition, other amenities like changing stations for mobile phones, free Wi-fi access or self-checkouts are valued by customers.

After completion of the shopping trip, retailers can stay connected with their customers by introducing the possibility to give feedback or recommendations and write reviews about a product or an experience. Also, receipts can be sent digitally for instance per email and delivery times of on-site ordered items can be checked.

Due to different customer preferences, it is advisable for retail agglomerations to offer an assortment of devices varying in particular in display size. However, Figure 6 shows that for the choice of the service, the stage of the customer journey is more significant than the device. Before and after the visit of the point of sale, customers' access services considered as beneficial via their own devices, with a preference for mobile ones. Independent of the device, the applied services are similar per stage. Within the retail agglomeration, customers prefer to use their own devices, provided that the desired service is available that way. For specific services like checkouts or personal shoppers, customers are willing to use fixed or mobile devices provided by the retail agglomeration. Hence, management decision-making regarding device selection plays a greater role at this level.

4.4.4. Acceptance of Digital Innovations

Frequently, innovations of any kind are first viewed sceptically by customers (Stüber, Velden, and Mischer 2016). Based on the TAM, Figure 7 shows a summary of predictors and antecedents of the intended and actual usage of service technologies in retail agglomerations based on the interviews.

To accelerate the acceptance of fixed and mobile technologies, the digital services provided need to be useful rather than entertaining, with time and efficiency being key. When using such technologies, customers want to get 'their work' done easier and faster with the device, rather than having to approach staff. Digital technologies are mainly considered useful due to the possibility to browse products and apply filters. Personalising the experience allows for an easier decision regarding what to find and buy. As these functions are also available while shopping online from home or work, the sole application of digital services that already exist in online retailing is not sufficient.

Delivering exclusivity through, for instance, on-site promotions that are only available for visitors opening the app while physically present in (or close to) the retail agglomeration are

considered as an incentive to visit an offline retail environment and use the service technology delivering such benefits.

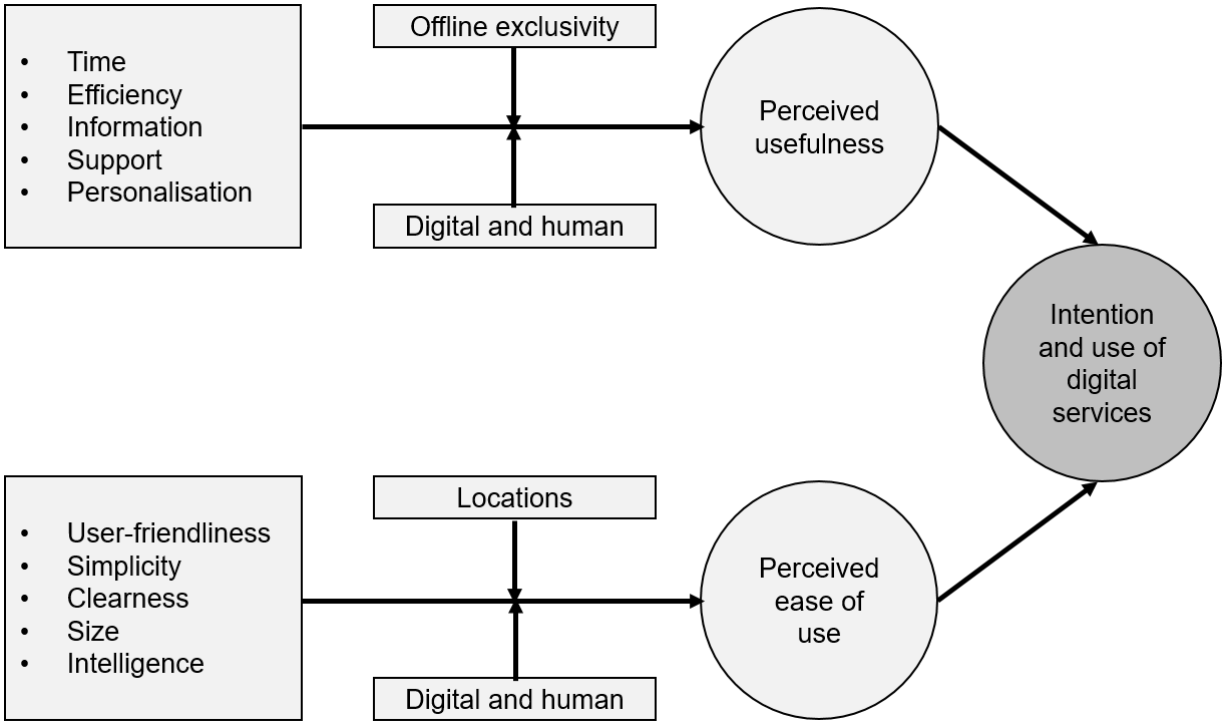

Figure 7: Antecedents of the usage of service technologies in retail agglomerations

Further, customers do not want to queue to get information from a device. They consider it beneficial to be able to help themselves so that the usage of their own devices or devices that can be operated without the assistance of staff are preferred. However, participants view the combination of digital and personal assistance as complementary. Thus, digital devices like service terminals could be equipped with a function to locate or call employees nearby. Such features can only be presented offline and are a big plus compared to pure online retailing.

Ease of use has a further direct impact on the usage and acceptance of digital services. Devices need to be user-friendly and easy to operate. This is ensured by designing a proper screen with an intuitive menu allowing the customer to navigate easily through the software. Most importantly, the device should ‘understand’ and complete the desired task immediately as customers are reluctant to spend time learning how to operate it. In this case as well, the possibility of providing all choices from digital application to a human service encounter is considered as the great advantage of a physical store environment in comparison to pure

online shopping. Additionally, in the case of digital technologies provided by retail agglomerations, well displayed devices in multiple locations are essential.

4.5. Management Summary

(1) No longer only physical factors like availably and tenant mix, but also digital technologies are considered as an opportunity to deliver value to customers of retail agglomerations along the customer journey.
(2) A range of digital services facilitating the shopping experience can be provided through mobile and fixed devices, which are owned by the retail agglomeration or the customer, with preference for services delivered on own mobile devices.
(3) Predictors and antecedents of the usage intention by means of usability and ease of use of information technologies are analysed to understand the acceptance process of digital services.

4.6. Main Propositions

(1) To remain competitive in the digital age, traditional retailing needs to be linked with digital offerings.
(2) The selection of the digital device and service depends on the stage of the customer journey.
(3) Customers prefer to use their own devices, above all mobile phones.
(4) Only digital services that are perceived as timesaving, efficient and exclusive are considered useful.
(5) The location of the device and the possibility to complement digital assistance with human help is key.

4.7. Conclusion and Implications

One aim of this study is to support decision makers in retail agglomerations regarding the use of digital services delivered through mobile and fixed devices along the customer journey. In this context, it is key to understand that emerging digital technologies should not be considered as thread or even tried to be ignored, but should be embraced as a chance to interact with the customer in a new way.

Management has the most influence with device selection within the retail agglomeration, whereby the preference of customers visiting retail agglomerations is to use own mobile devices. Independent of the device, the services are similar per stage with a focus on availability checks before, exclusive location-based promotions while and reviews after the customer journey. In summary, management should try to provide digital services along the whole customer journey since not only their application and use on-site while shopping, but also after and especially before the trip is appreciated.

The offer of tailored and personalized digital services to customers through filters and queries enables a screen of interests and needs of the user. In addition, as customers appreciate the combination of digital and human assistance, staff needs to be trained to work with the technologies. However, it is crucial to keep in mind that customers want to be able to decide for themselves when and how to use the offered services. By concentrating on the potential of digital services and the understanding of the customer acceptance process, strategies in dependence of the respective retail agglomeration and target group can be adjusted as well as newly developed to strengthen the overall destination experience and enhance economic performance.

So far, this thesis has shown that visitors of High Streets, shopping centre and town/city centre are increasingly faced with digital services offered via mobile or fixed devices. However, a review of the marketing literature reveals that a comprehensible conceptualisation and measurement of the quality of digital services does not exist. Also, an examination of the antecedents and outcomes of the construct received no attention.

In order to examine the performance of digital services driving retail destination attractiveness, the next chapter 5 introduces the second research project of this thesis. The work addresses the lack of (4th) providing a reliable and easy-to-administer scale for assessing the performance of digital services applicable in different retail destination formats, and (5th) investigating its relation to existing marketing constructs in the academic literature.

5. Project 2: The Quality of Digital Services: Conceptualization, Development, and Validation

Project 1 has developed a comprehensive overview of devices and platforms delivering digital services to visitors of retail destinations. The provided classification of mobile and fixed devices delivered via a retail destinations' website, app, social media account or email newsletter along all three stages of the customer journey serves as a conceptual foundation for the projects 2 and 3.

The following project 2 is using the provided framework of project 1 as basis to investigate and measure the performance of digital services offered by retail destinations. By drawing on seven studies with consumers and expert judges, the project addresses the following research question: *How can the quality of digital services can be conceptualised and measured in a retail agglomeration context?*

Abstract

Although the offer of digital services via mobile or fixed devices to visitors of inner-city shopping areas can be considered at an early stage, the usage of innovative technologies is gaining ground in retail practice. Surprisingly, within marketing science, little is known about customers' perception of the quality of digital services offered by traditional retailers. The author reviews prior conceptualizations of the role of technologies in academic literature and introduce the quality of digital services as the extent to which a consumer believes that the digital service offered by a retail destination performs well. An example for a digital service is an availability check of products offered via a shopping center's website or app. In the framework of a mixed-methods approach, a measurement tool is developed by means of four qualitative studies and validated by three quantitative studies. Empirical findings demonstrate that the application of two scale parts reflecting a second-order construct is reasonable. The developed measure shifts the retail agglomeration literature from a traditional offline view to an up-to-date digital perspective. Applying the scale in marketing practice enables retail destinations to assess the performance of offered digital services, evoking in turn an overall attractive evaluation of the retail destination.[3]

[3] At the time of writing, this project is being submitted to a targeted marketing journal. Also, the work has been presented at the AMS 2020 Annual Conference, USA, where it has been awarded the Best Retailing Paper Award.

5.1. Introduction

Given the socio-economic role of town centers as vital hearts of local communities, the pace with which once well-functioning retail landscapes are changing is alarming. The offline retail industry is facing an economic slowdown due to increasing online sales and competition from other retail formats, driving shop closures to a record high. In January 2020, the Financial Times announced that with 9.7%, vacancies in US shopping centers reached the highest level in the last 20 years (Gray 2020). For the remainder of 2020, lockdowns caused by the COVID-19 pandemic have even worsened the already tense situation for traditional retailing. A survey from May 2020 reveals that 28% of UK-respondents and 37% of US-respondents indicate to have changed their shopping lifestyle by means of shopping more online since the beginning of the pandemic (Statista 2020).

Although innovative technologies are partly responsible for declining sales of brick-and-mortar retailing, studies also emphasize beneficial changes in the retailing sector due to the evolution of innovative technologies and accompanying shifts in consumer needs and behaviors (Dizdarevic, Evanschitzky, and Backhaus 2018; Grewal et al. 2019). On this background, the question arises how traditional retailers can remain competitive by embracing opportunities of augmenting the shopping experience in an innovative way. This research takes up at this point by analyzing factors that can potentially differentiate traditional retailing through investigating innovative, digital services. By doing so, the author follow calls of future research in marketing science (Davenport et al. 2020) to investigate how firms can best implement and develop artificial intelligence and technologies to take advantage of benefits and to alter customer behavior. By investigating created and evolved agglomerations (Teller, Wood, and Floh 2016), the focus lies on shopping centers, High Streets and town centers, chosen due to their significant role as retail, social, and cultural hubs of the community.

In Germany, a shopping center operator has introduced the concept of the ‘Digital Mall’ (ECE 2020). Stores within a shopping center are connected to a digital platform provided by the center website or app. Customers looking for a product online are automatically led to the website of a center nearest to them where they can review products, sizes and prices available in a center and reserve items for pick up in the respective store. Although the example shows that technologies are gaining ground in retail agglomerations, the marketing literature lacks a coherent conceptualization and measurement of the performance of digital services. Assessing the role of technologies is an important advancement of the retail agglomerations literature that has thus far focused on physical drivers of the attractiveness of retail destinations (e.g., Finn and Louviere 1996; Nevin and Houston 1980; Teller and Reutterer 2008). In

addition, the chosen attributes were examined in different non-uniform ways on mainly one distinctive retail format.

In light of these research gaps, the research project aids in enhancing the attractiveness of traditional retailing by focusing on: (1) The conceptualization of the construct the quality of digital services (QDS) in the retail agglomeration context, (2) the development and validation of a reliable and easy-to-administer scale to improve the measurement of the performance of technologies in brick-and-mortar retailing, and (3) the examination of its nomological network of related marketing constructs.

A holistic conceptualization of QDS is proposed by drawing on agglomeration and service research. By doing so, the research takes into account fixed and mobile devices delivering digital touchpoints along the customer visit of a physical retail destination (Dizdarevic, Evanschitzky, and Backhaus 2018). The project builds the scale dimensions based on the marketing mix (Blut, Teller, and Floh 2018) and considers content- as well as function-based items by means of two scale parts through a series of five studies. Through two additional studies, the position of the construct QDS is shown empirically within the nomological network of related marketing constructs. Using an online experiment in the last study, the findings show that QDS can explain variance in consumer outcome behaviors and perceptions.

Understanding and measuring QDS is important for several reasons. The first is the marketing area's interest in measurement issues and in developing high-quality instruments (Nenkov, Inman, and Hulland 2008). By conducting quantitative and qualitative studies, the development of a standardized scale for the QDS ensures reliability and validity when applying the measurement tool across studies (Böttger et al. 2017). Second, the study extends previous agglomeration research by focusing on customer-perceived digital services with the aim to work out and develop approaches enhancing the performance of traditional retail formats. The developed scale shifts the retail agglomeration literature from a traditional offline view to a contemporary digital and omnichannel perspective. Third, the established QDS measure contributes to preserving and enhancing the character of urban life, which is largely shaped by retailing. By studying the perspectives of users and decisions-makers of three different destination types, the understanding of the performance of digital services in retailing is enhanced to help boost retail destinations competitiveness against pure online rivals.

5.2. Conceptualization

5.2.1. Research Background

This article draws from different streams of literature, the first of which relates to retail agglomeration research. These studies are mainly based on retail gravitation models (Huff 1964) emphasizing distance as main lever accountable for the attractiveness or image of a retail destination (e.g., Nevin and Houston 1980; Wong, Yu, and Yuan 2001). However, the importance of spatial distance tends to decrease due to the evolving digitalization. Consumers can engage with retailers, products and services independent from the location through an internet-capable device (Dizdarevic, Evanschitzky, and Backhaus 2018).

Besides site- and distance-related attributes, tenant- and product- as well as environment- and service-related dimensions are analyzed as predictors of the attractiveness of a retail destination (Teller and Reutterer 2008). Services offered are examined by several studies (e.g., El Hedhli and Chebat 2009; Finn and Louviere 1996), however, research analyzing digital services in retail agglomerations is scarce.

Table 6 demonstrates that by now only digital signage is considered in shopping malls (Dennis et al. 2010; 2012; Newman et al. 2010; 2007). The qualitative findings suggest a positive effect of digital signage on shoppers' spending, but without quantifying the same. Also, a coherent definition and measurement of the analyzed construct is lacking. This is also the case for other studies that mainly build on literature reviews supplemented by customer focus groups (e.g., Teller and Reutterer 2008; Wong, Yu, and Yuan 2001) or expert judgements (e.g., El Hedhli and Chebat 2009; Nevin and Houston 1980).

Further, authors primarily focus on the retail agglomeration format shopping center (e.g., Wong, Yu, and Yuan 2001). By investigating three similar retail destination formats, shopping centers, High Streets and town centers, this research could potentially shed more light on the impact of particular digital services in offline retailing than would a purely single destination study. Further, the narrow focus on digital signage needs to be broadened. In this study, fixed and mobile devices delivering digital services via different platforms like apps and websites are taken into account in order to conceptualize a holistic measure of the performance of technologies offered by retail destinations.

Next, the investigation of information management and systems literature shows that authors investigate the role of technologies at the business (Venkatesh and Davis 2000) or retailing and marketing level (e.g., Parasuraman 2000).

Table 6: Overview of existing constructs for digital technologies in retail agglomerations

Author	Construct	Nominal definition	Conceptualization	Operationalization
Dennis et al. (2012)	Perception of digital signage	Perception used synonymously for role/impact/effect; apart from that only digital signage defined	Digital signage as direct driver of shoppers' positive perception of mall environment what in turn drives positive affect and approach behavior (spending)	Quasi-experimental questionnaire survey; before and after installation of display compared with unchanged control mall; preference for/ perception of digital signage measured by likelihood
Dennis et al. (2010)	Perception of digital signage	Perception as rational appeal (consumer's cognitive responses) and/or emotional appeal; only digital signage defined	Digital signage as direct driver of shoppers' positive perceptions of mall environment and positive affect which in turn drive approach behavior	Trial installation of digital signage screens and mall consumers survey; perception of digital signage measured by community information, information on special events, entertainment, overall
Newman et al. (2010)	Shoppers' experiences of digital signage	Digital signage as atmospheric stimulus in public places carrying mixture of advertising and program content such as news and entertainment	Atmospheric stimuli improves atmosphere and consumers' images of shopping mall what leads to positive approach behaviors (likely to stay longer, visit more often and/or spend more)	Semi-structured focus groups evaluating screens by comparing one mall with digital signage and one without in 3 countries
Newman et al. (2007)	Impact of plasma screens	Usage of plasma screens as advertising and methods of improving customer experience via the information content	Plasma screens and specific informational content impacts shopping center user behavior/ mall image / attractiveness/ customer experience	Semi-structured focus groups evaluating screens and its influence on shopping center experience; emerged themes comprise size, quantity, locations, informational content

Notes: A more extensive literature review is available in the Appendix (5.6.1).

Further perspectives on the usage of technologies include mobile and multichannel (e.g., Dacko 2017) and store or product perspectives (e.g., Roggeveen, Nordfält, and Grewal 2016; Seegebarth, Backhaus, and Woisetschläger 2019). Details on each of these research streams and their relation to QDS are available in the Appendix (5.6.1).

The degree to which technologies are spread across retailing is mainly considered at the firm- or store level in the retailing and marketing literature. By doing so, studies employing technological-driven conceptualizations draw on the Technology Acceptance Model (TAM; Davis, Bagozzi, and Warshaw 1989) or more recent extensions like the Unified Theory of Acceptance and Use of Technology (Venkatesh, Morris, and Davis 2003; Venkatesh, Thong, and Xu 2012).

Authors explain how customers accept and use technologies like store-based self-service technologies (Weijters et al. 2007), personal shopping assistants (Evanschitzky et al. 2015), mobile shopping technologies (Chopdar et al. 2018; Hubert et al. 2017), and location-based retail applications (Kang, Mun, and Johnson 2015).

Shifting the perspective from store- to agglomeration-based research, the study of Dizdarevic et al. (2018) uses the TAM as its conceptual basis. By drawing on the theory of reasoned action (Fishbein and Ajzen 1975), the model suggests that a customer’s usage intention and actual use of a new technology is influenced by the perceived usefulness and perceived ease-of-use (Davis, Bagozzi, and Warshaw 1989). However, by analyzing the offer of digital technologies of retail destinations, the study lacks a conceptualization of a construct capturing digital services. Further, as this research aims to move the point of view from solely analyzing the acceptance of technologies to a holistic investigation of customer-perceived performances of digital services, the TAM and its related models are not sufficient to serve as sole theoretical basis for this research.

Therefore, service literature models are employed to derive the QDS construct. The SERVQUAL model (Parasuraman, Zeithaml, and Berry 1988) as one of the first service quality models measured the discrepancy between consumers' perceptions of services offered by a particular firm and their expectations about firms offering such services. Later studies have aimed to validate and advance that scale, in particularly the SERVPERF performance-based scale (Cronin and Taylor 1992) by only focusing on consumers' perceptions without measuring expectations.

In line with the aim of the study to examine consumers' perceptions of digital services offered by a retail destination, this research follows these later research streams on service quality measurement and neglect the expectations dimensions.

With the digital transformation, website-specific quality models such as e.g., E-S-QUAL (Parasuraman, Zeithaml, and Malhotra 2005), eTailQ (Wolfinbarger and Gilly 2003) and SITEQUAL (Yoo and Donthu 2001) appeared. All these studies operationalize the amended service quality construct by website characteristics important to consumers, e.g., the design. These conceptualization and operationalization proposals are too website- specific for this research, as QDS can not only be delivered by websites, but also via e.g., apps or social media.

A further research stream in the customer–technology interaction context proposes the service quality measurement of self-service technologies, e.g., SSTQUAL (Lin and Hsieh 2011). The consideration of SSTQUAL as customer evaluation process of new technologies is transferable to this research by conceptualizing the customer evaluation process of multiple digital services in retail agglomerations. However, as the SSTQUAL scale builds on website-specific research, the operationalization is again not applicable to the wider QDS construct. By looking at further quality studies, the delineation of overall quality as customers' overall assessments of recent consumption experience and how well their personal requirements were met can be highlighted (Hult et al. 2019). The assessments of experience and the accompanying match with personal requirements fit is considered suitable for this research, however the process of QDS is rather understand as customers comparing perceptions of digital services than as post-purchase evaluation assessing experiences.

In this framework, the study of Herhausen (2015) is emphasized considering perceived service quality as a customer evaluation process. This conceptualization is transferred to the retail agglomeration research context by indicating that service quality perceptions can be summarized as overall assessments of the perceived performance of a technology. This assessment is further operationalized by Venkatesh and Davis (2000) as output quality describing the degree to which an individual believes that the system performs his or her tasks well. Although the authors concentrate on a theoretical extension of the TAM, the definition of output quality is suitable and transferred to the retail agglomeration context.

Literature highlights that the conceptualization of service quality, originally having its roots in expectancy disconfirmation theory, is moving to the theory of reasoned action (Collier and Bienstock 2006). This movement supports the conceptual development of an individual's decision making with perceptions and reasoned action as basis for measuring QDS. As the QDS applied in retail destinations has not been explicitly defined in the existing literature, the author draws on the definition of output quality (Venkatesh and Davis 2000) and perceived service quality (Herhausen et al. 2015) to conceptualize the construct as *the extent to which a consumer believes that the digital service offered by a retail destination performs well.*

This study anticipates that by perceiving digital services within a retail destination, consumers compare the perceived performance of the technology with their preferences. If their preferences are met, a positive evaluation of the digital services occurs leading to a perceived QDS. The positive assessment of the QDS in turn results in an increased retail destination attractiveness, referring to the extent to which consumers are pulled towards a retail destination.

5.2.2. Framework

To holistically operationalize the construct, it is proposed that QDS conceptually encompasses two scale parts reflecting different dimensions (see Figure 8). First, literature argues that studies lack to consider the impact of specific functionalities when a generic type of technology or an app is the subject of the analysis (Barann et al. 2020). Still, service literature has shown that functionalities and design of technologies and services affect customers' perceptions of the technology in traditional retail stores (Inman and Nikolova 2017; Lin and Hsieh 2011). In this framework, the overall quality of digital services (O-QDS) is introduced as *depicting the general perception customers have of the digital services offered by retail destinations*. The scales' items are detached from customer journey phases or specific features and reflect functionalities based on technology acceptance and service quality models.

The second part is defined as visit quality of digital services (V-QDS) scale rooting in the customer experience and retail agglomeration literature. Recently authors highlight the role of technologies to support customer journeys in the era of omnichannel retailing (John and Scheer 2021; Lemon and Verhoef 2016). Customer journey research has its roots in the buying process depicting the phases from need recognition to purchase and assessment (Herhausen et al. 2019; Spiggle and Sewall 1987). This product selection approach can be applied to decision-making in the context of retail agglomerations (Dizdarevic, Evanschitzky, and Backhaus 2018). Customers can receive access to different kinds of information before physically entering the destination from a place outside the retail destination (e.g., at home, on the way to the retail agglomeration), on-site accessible from a place inside the retail destination or afterwards from a place outside the retail destination (e.g., on the way home, at home).

In line with prior conceptualizations (Herhausen et al. 2019; Lemon and Verhoef 2016), the customer journey in this research is defined as *the process a customer goes through across all stages and touchpoints that forms the customer experience, including retailer-owned, competitor-owned, and additional digital touchpoints*.

As digital touchpoints can enhance the visitor experience throughout the whole customer journey, it is proposed that the V-QDS describes *explicit perceptions customers have of the digital services offered by the retail destination alongside the three temporal stages of the retail agglomeration visit: before, while and/or after the visit*. The dimensions within this scale comprise of feature-describing items such as product availability checks delivered via fixed and mobile devices and platforms. In addition, to articulate a customer-centric view of the performance of technologies in retailing (Lemon and Verhoef 2016), the research studies how digital services are perceived by consumers alongside the marketing mix (Blut, Teller, and Floh 2018). The model facilitates the coordination of individual marketing instruments in order to transform marketing strategies into concrete actions. Depending on the context, several modifications of marketing mix instruments have emerged, with product, price, place and promotion most commonly used. As the literature on digital technologies in retail agglomerations is at an early stage and hence scarce, the adoption of the marketing mix concept in this context adds to a new research stream (Dizdarevic, Evanschitzky, and Backhaus 2020).

Based on prior research (Blut, Teller, and Floh 2018; Teller and Reutterer 2008), digital services within the dimension *location* are conceptualized as digital information about distance and ways to get to and maneuvering within the retail destination as well as parking conditions. *Pricing and incentives* compromise digital information about characteristics of prices charged for products and services as well as monetary inducement and non-monetary rewards. Digital information about products, brands, and product/service range offered by shops in an agglomeration are summarized within the *product* dimension. The dimension *tenant mix* captures digital information about the range of retail shops, the hospitality and other service shops in an agglomeration. Digital services providing the ability to write and review products and shopping experiences and to inform about the community and facilities, as well as to complain and to check purchasing information are referred to *services* or *after sales services*.

Customers preference and usage of channels varies across different purchase phases (Lemon and Verhoef 2016). Consumers engaging with a supplier's offering via one touchpoint within a specific channel and then subsequently interacting with different touchpoints within other channels is reality in today's omnichannel retail landscape (John and Scheer 2021). However, by investigating digital touchpoints, literature is limited to single device cases like mobile devices and applications (Herhausen et al. 2019; Hubert et al. 2017) or digital signages (Dennis et al. 2012) and focusses on store-based solutions. This research takes into account an holistic overview of digital technologies in retail agglomerations (Dizdarevic, Evanschitzky, and Backhaus 2018).

First, digital services are studied that can be classified by the device delivering the digital touchpoint, accessible through mobile devices like mobile phones or laptop- and tablet-based applications as well as through fixed devices like digital signage/ wall, self-service machines, mounted tablets and customer service terminal. Second, classified by the ownership, devices can be provided by the shopping area or by the customers themselves. Third, by using these devices, the digital services can be offered via different platforms: a retail destinations' website, app, social media account and/or email newsletter. To conclude, QDS encompassed all services offered on a digital level at a physical retail destination provided through mobile and fixed devices. As depicted in Figure 8, QDS is conceptualized as second-order construct composed of two scales each measured by perceived and evaluated descriptive features or functionalities characterizing the digital services. All items, dimensions and both sub-scales aggregate to form a holistic measure of the QDS.

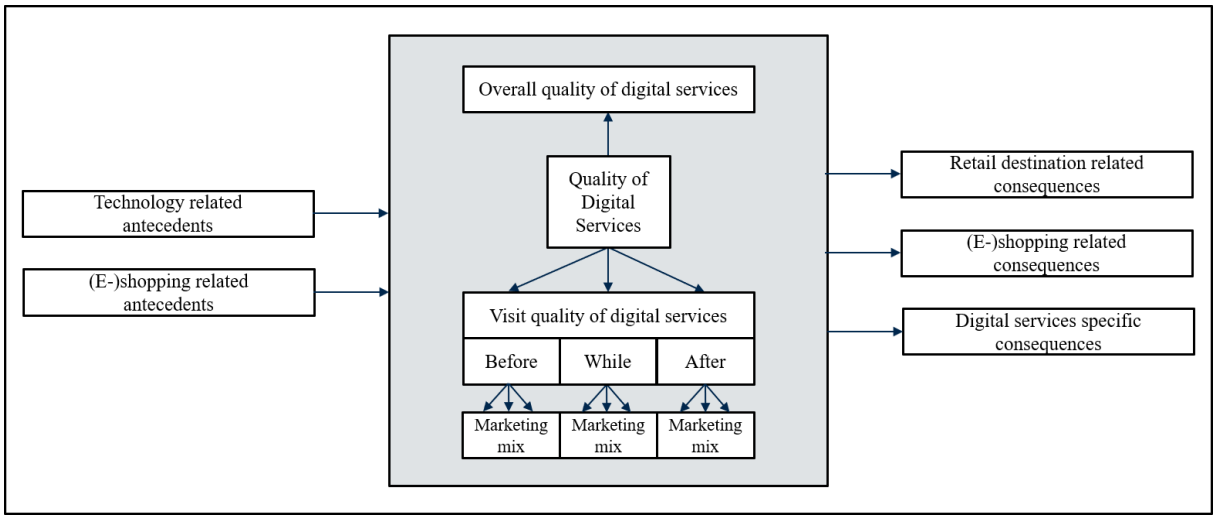

Figure 8: Conceptual framework for the QDS and related marketing constructs

5.3. Scale Development and Validation

While previous studies have contributed significantly to the understanding of drivers of the attractiveness of retail destinations, they (1) do not consider fixed and mobile digital touchpoints, (2) do not build their models along the comprehensive customer journeys and the marketing mix in the digital area, and (3) do not relate to different retail agglomeration formats. By addressing these gaps, the main research objective of the following chapter is the development of a valid, reliable and easy-to-administer measure assessing the QDS applicable in shopping centers, High Streets and town centers. Further, the nomological

network of related marketing constructs is examined. For this purpose, a scale development process deriving the necessary dimensions and items is conducted. By following established scale building studies (Churchill 1979; Nenkov, Inman, and Hulland 2008), newer approaches (Böttger et al. 2017) and further reliability and validity recommendations within the process (Bagozzi, Yi, and Phillips 1991; Fornell and Larcker 1981), the performed research steps and resulting item numbers are summarized in Table 7. Based on the above discussed theoretical and conceptual background, four item generation and three measure purification and validation rounds were completed.

Table 7: Research design

Part	Study	Step	Technique/N	Analyses	Items
I	1	Item generation	Consumer interviews (N=30)	Qualitative content analysis	69
	2		Online panel survey (N=221)	Qualitative content analysis	87
	3		Expert judges (N=14)	Rating averages: face and content validity	56
	4		Expert judges (N=14)		50
II	5	Measure purification	Survey of undergraduate students (N=303)	EFA: dimensionality	39
				CFA: convergent and discriminant validity	29
				Correlations: predictive validity	
		Scale reliability	Survey of undergraduate students (N=303)	Coefficient alpha: internal consistency	
	6	Scale validity	Online panel survey (N=403)	CFA: construct validity	29
				Inter-construct correlations: discriminant and nomological validity	
	7	Scale validity	Online experiment (N=282)	CFA: construct validity	29
				T-tests, ANOVA: predictive and experimental validity	

5.3.1. Part I: Item Generation Study 1-4

5.3.1.1. Study 1

For the item generation process, 30 face-to-face out-destination surveys with UK-based consumers have been conducted. The sample size was chosen in dependence of the data saturation point (Saunders and Townsend 2016). Respondents (50% female), chosen on a purposive basis, were 18 to 56 years old (mean age 32). A standardized interview guide was used with open questions along the customer journey asking about a customer's latest shopping trip before, during and after visiting a retail agglomeration. The offline interview setting was selected to ensure a proper understanding of the abstract construct of QDS. By following the guidelines of Braun and Clarke (2006) in conducting a thematic analysis, the offline interviews were transcribed and evaluated with the data analysis software NVivo. Using the same method of analysis as for the consumer interviews of project one (see 4.3), the process followed the same six steps, namely: (1) transcription and reading, (2) data coding, (3) interpretative analysis generating initial thematic map, (4) final thematic map, (5) defining and naming themes, and (6) producing a report. Again, in order to ensure intercoder reliability, the author has shown and discussed the results of every step with the research team. By means of a data-driven coding, the first round resulted in 2615 codes. The final map adjusted from duplicates and overlapping items consists of 69 digital-based items along the customer journey, grouped into 3 marketing-mix dimensions (Teller and Reutterer 2008).

5.3.1.2. Study 2

To reach a wider audience, an online panel survey with 221 participants (50% male, mean age 34) was conducted. The sample is chosen through a quota method and interviewed with the help of a pre-tested online questionnaire. Participants were asked to name a retail agglomeration they have visited in the last three months and to indicate the perceived attractiveness and digital services. This time, the analysis has been different as in study 1 as the sampling process has been online and not in-person. Hence, a transcription of the data was not necessary. Also, in contrast to the previous study, the data has been coded with trying to fit it into the pre-existing coding frame developed in study 1. After matching the coding structure of study 1 and 2, 18 statements were added, leading to an 87-item scale. Hereby, two scale parts emerged, the above discussed O-QDS scale capturing the *overall quality of digital services* dimension. The V-QDS scale captured the remaining six marketing mix dimensions reflecting content-based items along the customer journey (see "Framework" for operationalization of dimensions).

5.3.1.3. Study 3

Next, a panel of 14 experts evaluated each statement for content and face validity. In order to ensure that the items were relevant for marketing research as well as for practice, the panel included seven senior marketing academics from peer universities, and seven top managers who were either agglomeration or city/town managers. The experts rated each item within the respective dimension using a 5-point fit scale. For each item, scores were averaged separately for managers and academics to calculate a managerial score and an academic score. Items were retained if either the academic score or the managerial score indicated an at least good fit in average (equal or above 4.0). This procedure shortened the list to 56 items.

5.3.1.4. Study 4

To further increase content and face validity, the remaining items were subject to a second follow-up expert panel with the same participants. Using the same guidelines as the first round, participants were asked to indicate whether the remaining items are an adequate fit to measure the QDS provided by an agglomeration. However, this time the questionnaire has been structured along the overall dimension and the three customer journey phases before, while and after the visit to a retail destination. As the customer journey structure produced duplicate dimensions, the number of dimensions increased from 7 to 13. Items were retained if the mean score of both rater groups indicate a at least good fit (equal or above 4.0) or if the academic score or the managerial score indicate a at least very good fit in average (equal or above 4.5). This procedure shortened the list to 50 items.

5.3.2. Part II: Measure Purification and Validation Study 5-7

5.3.2.1. Study 5

In line with the measure development guidelines of Böttger et al. (2017), the remaining 50 statements were subject to separate item analysis including explanatory (EFA) and confirmatory factor analyses (CFA) to assess the reliability and convergent validity, and tests for discriminant validity. A total of 342 undergraduate students were engaged to participate in the study. Thirty-nine participants failed an instructional check, leaving a final sample of 303 participants (53% female, mean age 20). Hereby, this study met the recommended sample ratio of 5:1 participants to questionnaire items (Hair et al. 2013).

Participants were asked to name their most recent visit to a retail destination where they have perceived digital services, and to relate all subsequent questions to this trip. To minimize a potential recall bias and based on the research framework, participants were asked to select from a predefined list all devices and platforms they have used and to indicate the access time (Herhausen et al. 2019). Next, participants were asked to rate the 50 potential scale items along with single item scales for the overall quality of the digital services (1-QDS) and for the overall attractiveness of the retail destination. All multi-item measures used a seven-point response scale ranging from 1 to 7 and were pretested.

Results show that all objects of investigation have been visited by the survey participants (58.1% shopping center, 32.5% town/city center, 20.5% High Street), supporting the research objective to develop and purify the QDS measure across all three retail destinations. Further, all devices and platforms have been used along the three customer journey phases with mobile phone (95.7%) via website (56.2%) or app (53.4%) being prevalent.

Next, using SPSS, the remaining 50 statements were subjected to principal component analysis (PCA) with varimax rotation applying a minimum eigenvalue of 1 as the criterion for inclusion (Hair et al. 2013). For the O-QDS scale, one item has been discarded due to cross loading with nearly equal distribution on both factors. Also, against the initial assumption of a one factor structure, but in support of the recommendation of an expert within study 3, the PCA proposes a two factor structure. Hence, the initial one-dimensional conceptualization of overall QDS is split into a two-dimensional assessment of an 1) extrinsic functional value (Newman et al. 2010) and an 2) intrinsic emotional value (Kumar and Lim 2008) evoked by the digital services offered by a retail destination.

Applying a second EFA, the remaining 9 items provide acceptable factor loadings that range from .84 – .65 and are significantly practical with communalities greater than .50 (Hair et al. 2013). The two factors extracted accounted for more than 70% of total variance. All items had corrected item-to-total subscale correlations above .50 with Cronbachs α of .86 indicating scale reliability.

Then, the three V-QDS phases were separately investigated. Against the initial assumption of a five factor structure for the before and while phase respectively, the PCA proposes for both phases a three factor structure. Hence, the factor service has been removed and products and tenant mix (1), retained location (2) as well as pricing and incentives (3) collapsed. Within two rounds of EFA for the before phase, 3 items have been removed due to cross loadings with nearly equal distribution on multiple factors. The final before structure produced an increased explanation of the variance (68% instead 64%) and higher communalities (>.50).

Within three rounds of EFA for the while phase, 2 items with low corrected item-total correlation (<.50) and low communalities (<.50) have been removed, 5 items with cross-loadings <.25 deleted, and 1 item renamed due to domain representativeness. A third EFA produced an increased explanation of the variance (71% instead 67% and 62%) and higher communalities (>.50). The remaining items provide acceptable factor loadings that range from .51 – .78 for the before and from .41 – .87 for the while phase. For both, all items had corrected item-to-total subscale correlations above .50 with Cronbachs α respectively of .92 indicating scale reliability. Thus, this procedure resulted in the retention of 26 items.

For the after phase, as conceptualized, the PCA proposed a one factor structure with 4 items. The items provide acceptable factor loadings that range from .91 – .78 and are significantly practical with communalities greater than .50. All items had corrected item-to-total subscale correlations above .50 with Cronbachs α of .88 indicating scale reliability. In summary, the EFA resulted in the retention of 39 items with 9 dimensions in total, hereof 9 items assigned to the O-QDS and 30 allocated to the V-QDS.

Next, iterative CFA (n = 303) is used to assess the dimensionality, convergent validity, and reliability of the two scale parts and factor solutions, as well as to consolidate similar items (e.g., Böttger et al. 2017). The two-dimensional confirmatory O-QDS model with 9 items and the seven-dimensional V-QDS model with 30 items was estimated using AMOS. The model fit indices of the initial O-QDS model (confirmatory fit index [CFI] = .92; Tucker–Lewis index [TLI] = .86; root mean square error of approximation [RMSEA] = .13; standardized root mean residual [SRMR] = .076) missed acceptable thresholds (Hu and Bentler 1999). In order to refine the scale, the modification indices were inspected, and those items consolidated that appeared to belong to the same facet of the respective factor. On this basis, 2 items were eliminated that accounted for a single high modification index (> 30).

The remaining 7 items (4 for function; 3 for emotion) were again subjected to a CFA, which revealed acceptable model fit (CFI = .97; TLI = .95; SRMR = .062), apart from RMSEA (.082) which was slightly above the recommended threshold of .08, but below .10 (Hu and Bentler 1999). Although removing E1 (see Table 8) would produce an excellent RMSEA of .057, E1 is kept due to domain representativeness, face validity and three-indicator rule (Hair et al. 2013).

All items loaded significantly on their designated constructs, with standardized loadings ranging from .59 to .94 meeting acceptable thresholds, indicating convergent validity (Hair et al. 2013). Further, composite reliability (CR) and average variance extracted (AVE) for function (CR= .86; AVE = .61) and emotion (CR= .85; AVE = .67) were above recommended thresholds, providing evidence of convergent validity and scale reliability (Fornell and Larcker 1981).

The author ran three tests to assess the discriminant validity of the O-QDS scale. First, the AVE for function (.61) and emotion (.67) both exceeded the squared correlation between the constructs of r2 = .28 (Fornell and Larcker 1981). Second, the square root of AVE for function (.78) and emotion (.82) both exceeded the inter-construct correlations of .53. Third, the two-factor model was contrasted with a one-factor model in which all items loaded on one latent variable. A comparison of the chi square statistics indicated a significantly better fit of the baseline model ($\Delta \chi 2 = 273.23$, Δ df = 1; $p < .000$), proving further evidence of discriminant validity (Böttger et al. 2017; Hair et al. 2013).

The model fit indices of the initial V-QDS model (CFI = .84; TLI = .81; RMSEA = .08; SRMR = .068) missed acceptable thresholds. Based on the modification indices, 9 items were eliminated in total. The remaining 21 items (9 for before, 9 for while and 3 for after visit) were again subjected to a CFA, which revealed acceptable model fit (CFI = .93; TLI = .90; RMSEA = .06; SRMR = .056). With regard to the next study, the researcher decided to add a fourth item to the after phase in order to increase the domain representativeness. While AS2-3 reflect the review part of after sales services, only AS4 describes the possibility to get further information (see Table 9). Hence, in line with electronic service quality literature (Bauer, Falk, and Hammerschmidt 2006), AS5 is added reflecting a further facet of non-review related responsiveness. For the V-QDS scale, all items loaded significantly on their designated constructs, with standardized loadings ranging from .64 to .91 meeting acceptable thresholds, indicating convergent validity. Further, CR and AVE for all 7 factors were above recommended thresholds, providing evidence of convergent validity and scale reliability.

Three tests have been performed to assess the discriminant validity of the V-QDS scale. First, the AVE of most factors exceeded the squared correlation between the constructs, except for equal values of the before visit location factor (AV = .56, r^2 = .56) and of the before visit products and tenant mix factor (AV = .56, r^2 = .56). Second, the square root of AVE for most factors exceeded the inter-construct correlations, except for the before visit location factor which is equal to its correlation with the while visit location factor (.75) and for the before visit products and tenant mix factor which is equal to its correlation with the while visit products and tenant mix factor (.74). This is acceptable as both location factors consist of items investigating the location of a retail destination, only applicable in different stages of the customer journey. The same situation applies to the two products and tenant mix factors. In addition, later surveys (study 6) statistically discriminant between the factors. Third, a $\chi 2$ difference test was performed for all pairs of factors investigated, and in all cases resulted in a significant difference, suggesting that the seven factors are separable factors. Hence, all tests indicated sufficient discriminant validity for all seven factors.

To summarize, the CFA procedure shortened the list to 29 items, hereof 7 items assigned to the O-QDS and 22 allocated to the V-QDS. The “Study 5” column in Table 8 and 9 provides detailed results.

Further, the author followed recommendations to examine the convergent validity and predictive power of QDS through a single-item measure (Parasuraman, Zeithaml, and Berry 1994), using Spearman’s rho correlation coefficient. There was a strong level of association between the 1-QDS and the O-QDS scale (r = .498, p = .000) and between the 1-QDS and the V-QDS scale (r = .647, p = .000). Further, the single item overall attractiveness destination question displayed a strong relationship with the O-QDS (r = .439, p = .000) and the V-QDS (r = .474, p = .000) scales. These analyses indicated initial predictive validity of the QDS.

Table 8: O-QDS Scale: Confirmatory factor analysis and item loadings

Item	Study 5	Study 6	Study 7
Overall, the digital services provided by the retail destination…			
Function (CR; AVE)	(.86; .61)	(.89; .66)	(.83; .56)
F1 ...are up-to-date.	.68	.79	.68
F4 …are useful.	.84	.87	.86
F5 …are easy to use.	.82	.78	.69
F6 …deliver all relevant information.	.77	.80	.75
Emotion (CR; AVE)	(.85; .67)	(.93; .83)	(.92; .80)
E1 …make me feel entertained.	.58	.87	.84
E2 …make me feel good.	.94	.92	.93
E3 …give me pleasure.	.88	.92	.90
Observations	303	403	282
Chi-square	39.40	24.64	19.81
Degrees of freedom	13	13	13
Comparative fit index (CFI)	.98	.99	.99
Tucker-Lewis index (TLI)	.95	.99	.99
Root mean square error (RMSEA)	.08	.05	.04
Standardized root mean square error (SRMR)	.062	.027	.030

Notes: CR = composite reliability; AVE = Average variance extracted. All factor loadings and factor correlations are significant at p <. 001.

Table 9: V-QDS Scale: Confirmatory factor analysis and item loadings

Item	Study 5	Study 6
Prior to my visit, the digital services I used were [poor/excellent] with regard to allowing me to…		
Before_Location (CR; AVE)	(.79; .56)	(.81; .59)
L1 …get information about public transport connections.	.78	.81
L2 …get directions to the retail destination.	.82	.76
L3 …get information about parking.	.64	.73
Before_Pricing & Incentives (CR; AVE)	(.88; .70)	(.87; .69)
PI1 …check for sales or special deals.	.76	.72
PI2 …get exclusive discounts.	.91	.90
PI3 …get exclusive coupons.	.83	.85
Before_Products & Tenant mix (CR; AVE)	(.79; .56)	(.80; .58)
PT1 …use click & collect to order products or services.	.69	.72
PT5 …check which brands are available.	.77	.84
PT6 …browse information about shops.	.77	.72
While visiting, the digital services I used were [poor/excellent] with regard to allowing me to…		
While_Location (CR; AVE)	(.84; .63)	(.85; .66)
L2 …check for information how to best get around in the area.	.83	.85
L3 …use the digital navigation to find a shop or a facility.	.82	.83
L4 …get information about public transport connections.	.73	.74
While_Pricing & Incentives (CR; AVE)	(.80; .58)	(.89; .74)
PI1 …check for sales or special deals.	.82	.83
PI2 …receive location-based promotions.	.77	.89
PI3 …share information provided by the retail destination (e.g., on sales or discounts) with my friends/family via social media.	.69	.85

While_Products & Tenant mix (CR; AVE)	(.86; .67)	(.83; .62)
PT1 …check which products are available.	.87	.79
PT2 …check which brands are available.	.88	.89
PT3 …check which shops are available.	.69	.67
After my visit, the digital services I used were [poor/excellent] with regard to allowing me to…		
After-Sales-Service (CR; AVE)	(.85; .65)	(.88; .64)
AS2 …write reviews about an experience.	.81	.73
AS3 …complain about a purchase or an experience.	.89	.78
AS4 …check purchasing information like invoice details, return policies or delivery times.	.71	.83
AS5 …establish contact to get support or make requests (for e.g., returns).		.87
Observations	303	403
Chi-square	376.02	593.73
Degrees of freedom	168	188
Comparative fit index (CFI)	.93	.90
Tucker-Lewis index (TLI)	.90	.87
Root mean square error (RMSEA)	.06	.07
Standardized root mean square error (SRMR)	.056	.069

Notes: CR = composite reliability; AVE = Average variance extracted. All factor loadings and factor correlations are significant at $p < .001$.

5.3.2.2. Study 6

The objective for the sixth study was twofold. First, the research intended to test the discriminant validity and unique position of the QDS construct within the nomological network of related marketing constructs. Second, the author sought to validate the measurement properties of the two sub-scales O-QDS and V-QDS by means of a new sample, distributing a questionnaire to consumers with different demographics and shopping preferences.

To collect data, 573 U.K.-consumers (53% female, mean age 30) were recruited from an online panel to take part in this study in exchange for nominal payment. Hereof, 73 indicated that they have not used a digital service for their last visit of a retail destination and where hence

immediately directed to the end of the study. Further 97 participants failed one of the two attention checks included to ensure that participants read each item carefully, leaving a final sample of 403 participants (51% male, mean age 30).

According to Hair et al. (2013), the nomological validity is tested by examining whether a core construct correlates in an anticipated manner with and related by different constructs. The author expect established marketing constructs to relate to QDS either as antecedents or as consequences (see Figure 8). To test the predictions, measures for one technology related antecedent (positive attitude) and one (e-)shopping related antecedents (social expertise) were included. Five consequences were examined, hereof three digital services related (behavioral intention, satisfaction, and perceived value) as well as one (e-)shopping related (user engagement) and one retail destination related (overall attractiveness).

The questionnaire contained the proposed 29-item QDS scale, along with 9 predictor items and 15 outcome items for the theoretically related constructs. In the group of antecedents, participants' positive attitudes toward technology is assessed on a six-item scale (Rosen et al. 2013) and social expertise in the (e-)shopping task on a three-item scale (Barrutia and Gilsanz 2012). Within the outcomes, participants' behavioral intentions to recommend and reuse digital services and to remain loyal to them were measured with a three-item scale (Cronin, JR., Brady, and Hult 2000). Value perceptions of digital services were measured with a three-item scale (Barrutia and Gilsanz 2012; Parasuraman, Zeithaml, and Malhotra 2005), as well as satisfaction with digital services (Cronin, JR., Brady, and Hult 2000), and user engagement as felt involvement in shopping task (O'Brien 2010). The customer-perceived overall attractiveness of the retail destination is measured by an adapted three-item scale proposed by Teller and Reutterer (Teller and Reutterer 2008). All measures used a seven-point scale ranging from 1 to 7 and were pretested.

The remaining questionnaire content of study 6 corresponded to study 5, except for replacing the single item overall attractiveness of the retail destination scale by the adapted multi-item overall attractiveness measure proposed by Teller and Reutterer (2008). To address potential misperception bias, definitions of all constructs and dimensions used were provided and the questionnaire pretested (Herhausen et al. 2019).

Because the two sub-scales O-QDS and V-QDS belong to the same second-order construct QDS, the author expects correlations respectively with the same related constructs. Both examined antecedents and five consequences are predicted to have a positive correlation with the perceived performance of the digital services provided by a retail destination (see Table 10). However, differences in the relative strength of the correlations are also predicted.

For O-QDS, the technology and digital services related drivers and outcomes are expected to correlate more strongly with the function dimension due to items focusing on cognitive evaluations. In contrast, the (e-)shopping related driver social expertise and the outcome user engagement are expected to correlate more strongly with the emotion dimension as the constructs refer to receiving intelligent support for e-commerce purposes from social environment and to feelings of being involved in shopping experiences. Both O-QDS dimensions are expected to correlate similar to destination attractiveness.

Table 10: Hypothesized nomological validity O-QDS and V-QDS

		Hypothesized Relationship				
		O-QDS		V-QDS		
Construct	Conceptual Category	Function	Emotion	Before Visit	While Visit	After Visit
Positive Attitude	Technology	++	+	o	o	o
Social Expertise	(E-)Shopping	+	++	o	o	o
Behavioral Intention	Digital Services	++	+	++	++	++
Satisfaction	Digital Services	++	+	++	++	++
Value	Digital Services	++	+	++	++	++
User Engagement	(E-)Shopping	+	++	+	+	+
Overall Attractiveness	Retail Destination	+	+	++	++	++

Notes: ++ strong positive correlation, + positive correlation, o weak positive correlation; Further details on each of the related constructs are available in the Appendix (5.6.2).

Many studies have offered theoretical and empirical justification that (electronic) service quality is significantly related to behavioral intention, perceived value and satisfaction (e.g., Cronin, JR., Brady, and Hult 2000; Fornell et al. 1996; Lin and Hsieh 2011; Parasuraman and Grewal 2000). Hence, the three outcome constructs are expected to correlate strongly with all three visit parts and seven dimensions of V-QDS. Also, it is argued that QDS will evoke greater felt involvement in the shopping task. As adapting user engagement (O'Brien 2010) to the context

of digital services represents a new approach, a positive correlation between the construct and all dimensions of V-QDS is anticipated. Further, all V-QDS dimensions are expected to correlate similar strong in a positive direction to retail destination attractiveness. The impact of the positive attitude towards technology and social expertise on the construct electronic service quality has not yet get much attention in the academic literature, however a weak positive correlation between the two drivers and all dimensions of V-QDS is expected. For further details on the constructs, see the Appendix (5.6.2).

The findings indicate, in line with study 5, that participants have visited all three objects of investigation (55.6% shopping center, 23.1% town/city center, 21.3% High Street). Further, mobile phones (78.2%) via app (62.9%) or website (62.2%) as mobile and display boards (41.7%) as fixed devices are predominantly used.

Replicating the QDS scale from Study 5 resulted in an acceptable overall fit for the 7-item overall quality sub-scale (CFI = .99; TLI = .98; RMSEA = .04; SRMR = .027) and for the 22-item visit quality sub-scale (CFI = .90; TLI = .87; RMSEA = .07; SRMR = .069). For both scales, all items loaded significantly on their hypothesized constructs, with standardized loadings above .78 for O-QDS and above .67 for the V-QDS ("Study 6" column in Table 8/9).

All factors of O-QDS show high CRs (function: .88; emotion: .93) and AVEs (function: .66; emotion: .82). For V-QDS, also all factors display high CRs with above .80 and AVEs with above .59, indicating convergent validity (Bagozzi and Yi 1988). In addition, Spearman's rho correlation coefficient again displayed a strong level of association between the 1-QDS measure and the O-QDS scale ($r = .707$, $p = .000$) and the V-QDS scale ($r = .553$, $p = .000$), indicating predictive validity of the QDS.

Next, the author assessed whether the factors of both QDS sub-scales are empirically distinct from the 5 consequences and 2 antecedents. The correlations between the seven related constructs and the two components of O-QDS are compared to their AVEs, for a total of 14 comparisons (Böttger et al. 2017; Fornell and Larcker 1981). All correlations with the two QDS states were smaller than the square root of the AVEs for each construct. A comparison between the seven related constructs and the seven components of V-QDS to their AVEs, for a total of 49 comparisons, also showed that all correlations with the QDS states were smaller than the square root of the AVEs for each construct. In summary, the results indicated discriminant validity (for further details see the Appendix 5.6.3).

To assess the nomological validity of O-QDS and the two antecedents and five outcome variables, the inter-construct correlations (see Table 11 and for further details the Appendix 5.6.4) are examined. For O-QDS, all conceptually related outcomes correlated significantly at $p < .05$ and in the expected positive direction with the components of QDS, showing

correlations ranging from .15 to .72. Only for overall attractiveness a stronger correlation with function than emotion can be observed in contrast to the prediction of a similar relationship. This might be an indicator that retail destination attractiveness is stronger influenced by e.g., useful digital services than entertaining ones, supporting results of related studies (Dizdarevic, Evanschitzky, and Backhaus 2018).

In addition, assessments for significant differences in the strength of the correlations with the related constructs by means of chi-square difference tests are conducted (Anderson and Gerbing 1988; Bentler 1990). For the O-QDS, as predicted most of the related marketing constructs correlated significantly more strongly with the function component at p <.05 with only the two (e-)shopping related constructs correlating more significantly more strongly with the emotion component at p <.05 (see Table 11). In summary, all measures correlated in a positive manner predicted by theory, supporting nomological validity of O-QDS.

Table 11: Supported nomological validity O-QDS

		Empirically Examined Relationship O-QDS			
Construct	Conceptual Category	Function	Support	Emotion	Support
Positive Attitude	Technology	.36*** >	✓	.20***	✓
Social Expertise	(E-)Shopping	.15* <	✓	.38***	✓
Behavioral Intention	Digital Services	.70*** >	✓	.44***	✓
Satisfaction	Digital Services	.68*** >	✓	.41***	✓
Value	Digital Services	.72*** >	✓	.48***	✓
User Engagement	(E-)Shopping	.41*** <	✓	.59***	✓
Overall Attractiveness	Retail Destination	.63*** >	✓	.40***	✓

Notes: †$p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$;
Significant differences at p < .05 between correlations are indicated with < and >

To assess the nomological validity of V-QDS and the two antecedents and five outcome variables, the inter-construct correlations are examined (see Table 12 and the Appendix 5.6.5). For V-QDS, all conceptually related outcomes correlated in the expected positive direction with the components of QDS and for the most parts significantly at p <.05. with correlations from .08 to .49.

As predicted, the author saw weak or for single values no correlations for the two drivers. Further, as anticipated, user engagement correlated positive with all V-QDS dimensions, but showed the weakest values among all outcome constructs, especially for the after sales dimension. This might be an indicator that making users of digital technologies engaged along the retail destination visit is more important before and while the visit as afterwards. In summary, all measures correlated in a positive manner predicted by theory, supporting nomological validity of V-QDS.

Table 12: Supported nomological validity V-QDS

		Empirically Examined Relationship V-QDS													
		Before visit						While visit						After visit	
Construct	Conceptual Category	Location	Support	Pricing & Incentives	Support	Products & Tenant Mix	Support	Location	Support	Pricing & Incentives	Support	Products & Tenant Mix	Support	After Sales Services	Support
Positive Attitude	Technology	.17**	✓	.13*	✓	.21**	✓	.08	X	.08	X	.21**	✓	.13†	✓
Social Expertise	(E-)Shopping	.09	X	.09	X	.14*	✓	.17**	✓	.19**	✓	.13*	✓	.12†	✓
Behavioural Intention	Digital Services	.46***	✓	.31***	✓	.47***	✓	.45***	✓	.33***	✓	.38***	✓	.47***	✓
Satisfaction	Digital Services	.45***	✓	.35***	✓	.42***	✓	.44***	✓	.41***	✓	.43***	✓	.43***	✓
Value	Digital Services	.43***	✓	.44***	✓	.44***	✓	.46***	✓	.42***	✓	.49***	✓	.42***	✓
User Engagement	(E-)Shopping	.28***	✓	.23***	✓	.31***	✓	.32***	✓	.30***	✓	.33***	✓	.18*	✓
Overall Attractiveness	Retail Destination	.40***	✓	.38***	✓	.48***	✓	.46***	✓	.35***	✓	.39***	✓	.32***	✓

†p < .10; *p < .05; **p < .01; ***p < .001

5.3.2.3. Study 7

This study extends the assessment of the proposed QDS scale by providing evidence for its predictive validity. The author assesses whether the QDS can improve predictions of the following consequences: 1) satisfaction with, 2) perceived value of, and 3) behavioral intentions regarding digital services as well as 4) user engagement in the shopping center website visit. Hereby, it is anticipated that QDS can explain variance in all four consumer outcome behaviors and perceptions.

282 U.S.-consumers (53% female, mean age 30) were recruited from an online panel to take part in this study. Two websites from different shopping centers operated by the same management are sampled. Both websites were designed alike with the navigation bar displaying buttons for stores, food&drink, what's on, entertainment, center info and gift cards. In the low QDS condition, the website enabled the visitor to only browse store names of the shopping center with no possibility to check for products offered. In the high QDS condition, the button "store online" was displayed additionally in the first place. Hence, an online shop was accessible via the website providing product availabilities at the shopping center.

The experiment uses a between-subject design. To manipulate the QDS content (high vs. low), two versions of an online questionnaire were programmed with each participant randomly assigned to one of the two experimental conditions. Participants were asked to imagine they want to visit a shopping centers' website to look up which products are provided by the stores and instructed them to look around one of the two websites. After the visit, participants indicated if they were able to look up which products are provided by the stores of the shopping center, rated the perceived QDS, the efficiency and design of the website and answered questions about the four outcomes on 7-point scales.

To measure QDS, the proposed two-component 7-item scale and a single item scale for the overall quality of the digital services (1-QDS) are used. To assess participants' behavioral intentions (Cronin, JR., Brady, and Hult 2000), value perceptions (Barrutia and Gilsanz 2012; Parasuraman, Zeithaml, and Malhotra 2005) and user engagement (O'Brien 2010), the three-item scales introduced and applied in study 6 are used, only slightly reworded to fit the website specific context of study 7. The three-item construct measuring participants' satisfaction with digital services was adapted from Johnson, Bardhi, and Dunn (2008). The two measures used for manipulation checks, website efficiency and design, were four-item scales (Barrutia and Gilsanz 2012). All measures used a seven-point scale ranging from 1 to 7 and were pretested. Further details on standardized item loadings of all related constructs can be find in the Appendix (5.6.3).

As attentional manipulation check, participants were asked whether they were able to look up which products are provided by the stores of the shopping center. Further, the perceived website efficiency and design were examined.

As expected, participants in the high QDS condition rated the general website efficiency as of the ease and speed of accessing and using the site similar (MHighEffi = 5.70) to those in the low condition (MLowEffi = 5.54, t(280) = 1.380, p = .169). Also, participants in the high QDS condition rated the general website design as of the clarity of the site similar (MHighDes = 5.65) to those in the low condition (MLowDes = 5.54, t(280) = 0.879, p = .380). In addition, in line with studies 5 and 6, the 1-QDS had a strong correlation with the O-QDS question (r = .689, p = .000), indicating convergent validity. Importantly, the manipulation checks showed that participants in the high QDS condition indicated a higher level of QDS (MHighQDS = 5.64) than those in the low condition (MLowQDS = 4.74, t(205, 943) = 5.758, p = .000).

Replicating the QDS scale from Study 5 and 6 resulted in an acceptable overall fit for the 7-item overall quality sub-scale (CFI = .99; TLI = .99; RMSEA = .04; SRMR = .030). All items loaded significantly on their hypothesized constructs, with standardized loadings above .68 (see “Study 7” column in Table 8). Both factors of O-QDS show high CRs (function: .83; emotion: .92) and AVEs (function: .56; emotion: .80) indicating construct validity.

To examine the predictive validity, the author analyzed whether QDS could explain variance in the three digital services and one e-shopping related outcomes (see Table 13), beyond the in study 6 displayed predictive power of established correlates. One-way ANOVA (QDS: high vs. low) revealed a statistically significant difference between the two QDS conditions and satisfaction ($F(1,280) = 54$, $p = .000$)), behavioral intention ($F(1,280) = 12$, $p = .000$)), perceived value ($F(1,280) = 30$, $p = .000$)) and user engagement ($F(1,280) = 21$, $p = .000$)).

To summarize, the results are consistent with the expectations and support the reliability and validity of the QDS. In particular, the research finds that changes in QDS cause changes in relevant customer outcomes, confirming predictive validity of the scale.

Table 13: Predictive validity of QDS (ANOVA)

		Sum of Squares	df	Mean Square	F	Sig.
Satisfaction	Between Groups	26.326	1	26.326	12.422	.000
	Within Groups	593.420	280	2.119		
	Total	619.747	281			

Behavioral Intention	Between Groups	86.005	1	86.005	48.395	.000
	Within Groups	497.602	280	1.777		
	Total	583.606	281			
Perceived Value	Between Groups	41.298	1	41.298	29.972	.000
	Within Groups	385.815	280	1.378		
	Total	427.113	281			
User Engagement	Between Groups	39.282	1	39.282	21.020	.000
	Within Groups	523.260	280	1.869		
	Total	562.542	281			

The empirical research part of this project ends with study 7. A look back shows that the findings of the consumer interviews (study 1) have served as a first item pool deriving from initial 2615 codes 69 items grouped into 3 marketing mix dimensions (Teller and Reutterer 2008). The subsequent online consumer survey (study 2) validated the existing items and generated additional insights extending the pool to 87 items. Also, the two scale parts O-QDS with one overall dimension reflect functional items and V-QDS with six marketing mix dimensions reflecting content-based items emerged. Showing the statements and dimensions so far to expert judges (study 3 and 4) for face and content validity resulted in 50 items, hereof 10 for O-QDS and 40 for V-QDS within 13 dimensions. The number of dimensions increased from 7 to 13 as the items were from here on structured along the three phases of the customer journey producing duplicate dimensions like e.g., products used for the before and while phase.

The student survey (study 5) as the first quantitative study has served as purification process testing the QDS measure by means of multiple rounds of factor analyses and deriving the final scale with 29 items in total, 7 for O-QDS and 22 for V-QDS. Also, the initial one-dimensional conceptualization of O-QDS is split into a two-dimensional assessment of an extrinsic functional value and an intrinsic emotional value evoked by the digital services offered by a retail destination. The following online panel survey (study 6) and experiment (study 7) have validated the item structure that resulted from study 5 as well as the model fit and discriminant validity. By conceptualizing and testing two drivers of QDS and 5 outcomes (study 5) and respectively 4 outcomes (study 6) the nomological and predictive validity of the scale has been supported. Consequently, QDS is able to explain variance in consumer outcome behaviors and perceptions making it valuable for marketing theory and practice.

5.4. General Discussion

5.4.1. Implications for Marketing Theory

Recent research emphasizes the value for firms when embedding AI and technologies into products and services (Puntoni et al. 2021). Following the demands for technology related research in marketing, this study draws attention to the measurement of digital services offered by retail destinations. The author shows that the QDS is not yet studied in marketing research and define the construct as the extent to which a consumer believes that the digital service offered by a retail destination performs well. If the perception of a digital services' performance is able to meet a consumer's preferences, a positive evaluation of the digital service occurs leading to a perceived QDS. The research builds on four qualitative and three quantitative studies to develop, refine and test a two-part scale reflecting the second-order construct QDS. To capture a customer's general assessment of the perceived performance of a digital service offered by a retail destination, the O-QDS is introduced as 2-dimensional, 7-item scale reflecting functional attributes. By holistically studying all applicable marketing mix disciplines, the author develops and validates a V-QDS scale compromising of 7 dimensions with 22 feature-describing items structured along the customer journey. Results reveal sound psychometric properties of the scale, demonstrate its unique position in relation to key marketing constructs such as perceived value, satisfaction, behavioral intentions to re-use the digital services and attest its predictive validity of behavioral outcomes.

By drawing on different research streams, this study contributes to the academic research literature within retail and service marketing, management and information systems. The primary contribution to theory lies in developing and testing a QDS scale that captures consumer perceived performance of digital services. By following the call for developing a scale measuring customer experiences in retail agglomerations (Stocchi, Hart, and Haji 2016), the QDS is identified and conceptualized as predictor of the attractiveness of a retail destination. Recent studies in marketing science present initial approaches of capturing consumer-perceived applications of digital technologies within retail destinations, but due to sole explorative research approaches and lacking coherent definitions of the investigated construct (e.g., Dennis et al. 2012), the development of a reliable and easy-to-administer scale had yet to emerge.

Second, boundaries in marketing concepts are pushed in new directions by challenging conventional thinking in retail agglomeration literature. Previous research has considered retail destination attractiveness through attributes like tenants, anchors, and competitors (e.g., Teller, Wood, and Floh 2016). In contrast, this study focuses on digital services that enhance

destination attractiveness in order to advance retail agglomeration research and evoke a shift of traditional retailing to a contemporary digital perspective.

Third, the author follows service literature's recommendations to advance customer experience research (Lemon and Verhoef 2016) and to study the concept of customer journeys as one of the most recent and influential topics in contemporary marketing (Herhausen et al. 2019). Specific digital elements of the customer experience within three retail agglomeration formats are identified and the customer journey framework is applied to this research. By doing so, a comprehensive measure of the performance of digital services before, while and after the visit of a retail destination is provided.

Fourth, research highlights the growing quantity and complexity of customer touch points and proposes that creating strong, positive experiences delivered by these touch points within the customer journey will result in improvements of customer loyalty and word of mouth (Lemon and Verhoef 2016). Hence, in order to draw on a holistic application of devices and platforms that can potentially deliver digital service, digital services provided by mobile and fixed devices via different platforms are taken into account. Thus, research on information systems is advanced by broadening the narrow view of studies merely focusing on the shopping process via mobile devices within a store or retail destination.

To summarize, by drawing on different literature streams to introduce, measure and validate a contextualized conceptualization of the QDS, this research aims to trigger a discussion of ideas across these disciplines and open a new field of study for retail and service marketing as well as technology management scholars alike.

5.4.2. Implications for Marketing Practice

This study provides managerial implications that can inform town center management, center managers/marketers and retailers. Conceptualizing QDS as a multidimensional construct has benefits at both the conceptual and managerial level. The SERVQUAL can be highlighted as one of marketing theories that have had a key impact in practice (Lemon and Verhoef 2016). The QDS measure builds on this and other established service quality models to advance retailing and marketing knowledge of town centers, which is essential to arresting the decline of the High Street. The developed QDS measure provides a helpful tool for decision makers to assess the QDS in order to evaluate customer-perceived weaknesses and strengths of the managed retail destination. The two scale parts enable agglomeration and store management to study the performance of applied digital services from two different content-related perspectives and in dependence of the available resources. The O-QDS scale is favorable due

to its shorter structure with 2 dimensions and 7 items. Applying this scale part in practice can potentially save time and costs. Further, as the measure focusses on the general perception customers have of the QDS offered by the retail destination, it is detached from the customer journey phases or specific features digital services could potentially deliver. Hence, the application is reasonable for every retail destination that uses at least one digital service. However, understanding the role of digital customer experiences at each stage of the customer journey should be the focus of retailers to survive and thrive in this technology intensive environment. Hence, for businesses aiming to holistically measure the performance of digital services before, while and after the visit of the retail destination along the marketing mix, the application of the V-QDS scale is proposed.

In addition, the author finds substantial evidence for both QDS scales to have a strong relationship with the customer-perceived attractiveness of the retail destination (Study 5 and 6). By applying marketing mix dimensions delivered by digital services, consumers' expectations of an ideal shopping place can be met. The increase of a retail agglomerations overall attractiveness leads in turn to higher visits, sales and competitive advantages.

Furthermore, the results suggest that QDS can significantly improve agglomeration managements' prediction of relevant consumer outcome behaviors and perceptions, such as behavioral intentions as well as perceived value, satisfaction, and involvement in the shopping task (Study 6 and 7). By monitoring customers' perception of digital services, reactions after the visit of a retail agglomeration can be positively shaped. Satisfied consumers are more likely to show behaviors like saying favorable things about the retail agglomeration and its retailers and service providers, recommend them, remain loyal and spend more with them.

With regard to the drivers of QDS, the studies identify in particular two ways for retail agglomerations to elicit QDS (study 6). First, consumers having favorable beliefs about the usage of technologies positively impacts the QDS. Management and retailers are advised to communicate the functional benefits of using digital services to visitors in order to enhance the customer-perceived performance of the offered digital services. Second, retail agglomerations can address the emotional component of O-QDS by providing intelligent social support of e-shopping tasks. By increasing the understanding of and favourability for digital services, consumers tend to assess the perceived performance of a digital service offered by a retail destination better.

With this newfound knowledge, vitality and viability of town and city centers can be increased for the purpose of enhancing sustainability and thereby strengthening the economic potential of town and city communities. In doing so, the research project results will help boost local economies and guide investment decisions to be made in order to establish competitive

advantages. To conclude, the author suggests that a valid and reliable measure of QDS, and the understanding that such measures are important to outcomes in practice, may serve as the underpinning for an up-to-date technology-based marketing.

5.4.3. Avenues for Future Research

The evolution of marketing provides insights that technologies have always pushed the nature of marketing. Past studies have investigated innovations like the radio, TV, computers or the Internet (Ferrell and Ferrell 2020). Today, artificial intelligence and robotics are altering institutions and business models (Davenport et al. 2020). In this context, as valid and reliable tool, the developed measure can be considered as trigger for future studies investigating the role and impact of digital services alongside the customer journey of retail agglomerations. By determining town centers, High Streets and shopping centers as objects of investigation, the research focuses on traditional retail agglomeration formats (Dizdarevic, Evanschitzky, and Backhaus 2020). As the performance of digital services offered by specialized retail agglomerations is beyond the scope of this study, a fruitful area for future investigation is the replication of the research design and the developed QDS measure for e.g., retail parks or outlet center. In addition, while this study has identified several key drivers and outcomes of the QDS, the presence of a broader nomological network is recognized. By assessing further established marketing constructs within the nomological network of the QDS, the research of inner-city shopping areas can be carried forward and brought to the next, digital, level.

5.5. Conclusion

Attracting visitors to retail destinations by applying up-to-date digital services should be the focus of retail marketing in the digital area. However, the role of digital services has received little attention in prior retail agglomeration research. By conceptualizing the QDS and by developing and validating a comprehensive measure, this study adds to marketing theory as well as management practice. The research shows that the shopping journey of a consumer can be facilitated by digital services before, while and after the visit of a retail agglomeration, leading to satisfied and loyal customers.

By drawing on the proposed classification framework of project 1, project 2 has conceptualized the QDS based on retail agglomeration, service and information management literature. Further, a corresponding 7-item overall quality and 22-item visit quality measure has been developed and tested within an empirical scale development process.

Project 1 and 2 are complemented by project 3 identifying best practices of innovative digital technologies applied within retail agglomerations. So far, studies of the implementation of digital services in brick-and-mortar retailing only pay attention to the diffusion of technologies at the store- or firm level. Shifting the view to a broader retail context, project 3 investigates technological diversification in retail agglomerations in order to add to the understanding of the impact digital services currently and prospectively have on retail destination attractiveness. Specifically, the absence of (6th) demonstrating current potentials and applications of the utilization of digital service innovations in town centres, High Streets and shopping centres, and thereby (7th) considering international cases in the existing literature is addressed.

5.6. Appendix

5.6.1. Extended Literature Review

Author	Construct	Nominal definition	Conceptualization	Operationalization	Transferability
Stores & products					
Burke (2002)	Value consumers place on technology	Value of new technology as innovations providing an immediate, tangible benefit to consumer related to current need state	New technologies driving in-store shopping experience along purchase process: (1) entering the store; (2) entering a specific aisle, section, or department of the store; (3) checking out and paying for items; and (4) post purchase customer service	Online consumer panel, alongside each stage in shopping process, aiming to design ideal shopping experience by (1) rating importance and satisfaction of different aspects of shopping experience, (2) rating preference of using various channels and (3) classifying online and in-store features from critical to undesired features	Organizing the research according to the stages of shopping process is reasonable and hence adapted, but not only a store perspective, rather a broader agglomeration view is pursued
Dennis et al. (2014)	Effect of digital signage	Effect used synonymously for role; digital signage as part of service design applied as experience provider in retail spaces	In-store response model: Brand-related cognitive informational cues provide intellectual experiences for shoppers that affect consumer approach behavior through deliberative route;	Survey-based field experiment within department store with 3 types of ad: (1) high-cognitive/low affect, (2) high affect/low cognitive, (3) high cognitive/high affect	This research is designed around the informational content provided by digital screens, what is less the focus in this study

			brand-related emotional informational cues provide affective experiences for shoppers that affect consumer approach behavior through an experiential route		
Roggeveen et al. (2016)	Impact of in-store digital displays	Digital screens enhance in-store environment, promote certain items and display other information to customers	In-store digital displays impact shopping behavior (sales receipts, time customers spent in the store, and items sold) in dependence of message content (price) and retail format (hypermarkets)	Three field experiments with (1,2,3) on/off manipulation of digital display and (3) manipulation of content promoted	The authors describe briefly digital screens themselves, which is justified as only the generic term "impact" is used
Seegebarth et al. (2019)	Acceptance of innovations using emerging technologies	Acceptance formed by consumers' perceptions of usefulness and risk; innovation based on emerging technologies are defined as science-based innovations with potential to create new industry or transform existing one	By extending the Technology Acceptance Model (TAM), perceived usefulness and risk are anticipated to influence purchase intentions through the mediating mechanism of positive/ negative emotions	Scenario-based study testing model across 3 nanotechnology-based product innovations	Drawing on TAM as basis is a common approach in technology literature, however, by analyzing emotions as mediators of purchase behavior, the author pursues a different research objective
Mobile & multichannel					
Dacko (2017)	Experiential value/	Value defined as something that customer	MAR shopping app users benefit from customer-	2 large-scale surveys of smartphone users in US	Approach to examine experimental value

	benefits/ usage of mobile augmented reality (MAR) apps	controls and where the company goes beyond simple exchange to support customers' value creating processes; different kind of values exist and can be created; as retail shopping is an experience, it can as such can involve multiple forms of experiential value; MAR as a mobile service	valued benefits in shopping experience: Intrinsic value - Active value (Playfulness), Intrinsic value - Reactive value (Aesthetics), Extrinsic value - Active value (Consumer ROI), Extrinsic value - Reactive value (Service Excellence); usage of MAR apps increases valuations of retailers offering it (footfall)	with 2 x questionnaire with 10-item scale assessing level of use, experiential benefits offered, and retail consequences	interesting but considered as not appropriate for measure development; further no clear distinction between value and benefit
Herhausen et al. (2015)	Perceived service quality	Service quality perceptions as overall assessments of the perceived performance of the Internet store	Perceived service quality and perceived risk as customer evaluations of the Internet store mediate the impact of online–offline channel integration	Perceived service quality measured by a single item within an experimental design	Considering perceived service quality as a customer evaluation process can be transferred to this research context
Hubert et al. (2017)	Acceptance of smartphone-based mobile shopping	Mobile shopping acceptance based on TAM shaped by consumers' perceptions of usefulness and ease of use of the technology; mobile shopping defined as any kind of commercial transaction conducted through smartphone if	Mobile and personal benefits (instant connectivity, contextual value, and hedonic motivation), customer characteristics (habit), and risk facets (financial, performance, and security risk) as antecedents of usefulness and ease of	Online survey with multi-item questionnaire assessing recent mobile shopping experiences in different product categories	Drawing on TAM as basis is a common approach in technology literature; however, by analyzing customer characteristics and risks in purchase behavior, the author

		device connected to internet	use of mobile technologies, with in turn affect usage intention and behavioral outcomes		pursues a different research objective
Hult et al. (2019)	Overall quality	Customers' overall assessments of recent consumption experience, how well their personal requirements were met, and the reliability of the product/ service	Perceived overall quality, as direct antecedents of customer satisfaction, moderated by purchase channel, with customer loyalty as immediate consequence	Overall quality measured by 6-item questionnaire asking about online or offline retail purchases of electronic goods	Construct of overall quality in general suitable as assessments of experience and match with personal requirements fit; but this research compares rather perceptions than experiences
Retailing & Marketing					
Bauer, Falk, and Hammer-schmidt (2006)	eTransQual	A transaction process-based scale for measuring service quality	Functionality/design, enjoyment, process, reliability and responsiveness as dimensions of construct	Measure development of 25-item scale	Conceptualization and operationalization of the construct focuses on online shopping context, a broader approach needed
Lin and Hsieh (2011)	SSTQUAL	Customer evaluation process of new technologies	Functionality, enjoyment, security, assurance, design, convenience, and customization as dimensions of construct	Measure development of 20-item scale	Considering SSTQUAL as customer evaluation process of new technologies transferable to this

					research of customer evaluation process of multiple digital services in retail agglomerations; but construct dimensions show little overlap
Parasuraman et al. (2005)	E-S-QUAL	The extent to which a website facilitates efficient and effective shopping, purchasing, and delivery	e-SQ evaluation occurs on perceptual and dimensional levels, with concrete cues as antecedents influencing the process and higher-order abstractions as consequences	E-S-QUAL scale as 22-item scale, E-RecS-QUAL (recovery) as 11-item scale	Conceptualization and operationalization of the construct is too website specific, a broader approach needed
Parasuraman (2000)	Technology Readiness	People's propensity to embrace and use new technologies for accomplishing goals in home life and at work	Optimism and innovativeness as drivers of technology readiness; discomfort and insecurity are inhibitors of technology readiness	Measure development of 36-item scale consisting of 10 items for optimism, 7 items for innovativeness, 10 items for discomfort, and 9 items for insecurity	The authors follow the approach that technology triggers both positive and negative feelings, whereas this research do not focus on incorporating feelings, but rather the offer of digital services along the marketing mix which result in a favorable evaluation of the destination

Wolfinbarger and Gilly (2003)	eTailQ	Online etail quality as website characteristics important to consumers	Website design, customer service, reliability, privacy as dimensions of construct	Measure development of 14-item scale	Conceptualization and operationalization of the construct is too website specific, a broader approach needed
Yoo and Donthu (2001)	SITEQUAL	Perceived quality of an Internet shopping site	Ease of use, design, speed, and security as dimensions of construct	Measure development of 9-item scale	Conceptualization and operationalization of the construct is too Internet specific, a broader approach needed
Business & Management					
Venkatesh and Davis (2000)	Output Quality	The degree to which an individual believes that the system performs his or her tasks well	Output quality as cognitive instrumental processes influencing user acceptance	2-item scale to measure output quality, adapted from Davis et al. (1992)	Although the authors concentrate on a theoretical extension of the TAM, the definition of output quality is transferable
This Study	Quality of Digital Services	The extent to which a consumer believes that the digital service offered by a retail destination performs well.	O-QDS: General perception customers have of the QDS offered by the retail destination V-QDS: Feature-specific perceptions customers have of the QDS offered by the retail destination before/ while/ after the visit	O-QDS: 7-item scale to measure functions and emotions V-QDS: 22-item scale reflecting features along marketing mix and customer journey	Transferred from technology acceptance and service quality models as well as customer experience and retail agglomeration literature

5.6.2. Related Marketing Constructs

Construct	Description	Operationalization	Delineation from QDS	Hypothesized Relationship
Technology related antecedents				
Positive attitude	Positive attitudes toward technology includes favorable beliefs about the usage of technologies, e.g., that technology will provide solutions to problems (Rosen et al. 2013)	Rosen et al. (2013) developed and validated a 16-item attitude scale consisting of a 6-item scale measuring positive attitude towards technology	The assessment of the general usage of technologies is operationalized by the extent of positive attitude towards the technology. Perceiving the performance of digital services implies the usage of the technology providing the service.	Positive attitudes toward technology refers to consumers that are familiar with technology and/or open to change. As a consequence, the construct of positive attitude is expected to have a positive impact on the QDS, especially with O-QDS due attitudinal component O-QDS: Positive correlation with emotion, strong positive correlation with function V-QDS: Weak positive correlation with all dimensions
(E)-Shopping related antecedents				
Social expertise	The degree to which consumers receive intelligent social support for electronic commerce purposes (Barrutia et al. 2012)	Barrutia et al. (2012) develop and validate a 3-item scale to measure social expertise	The concept of social expertise relies on research showing that consumers as influenced by their social context. Studies recognize that knowledge is transferable, individuals learn from other people. The expertise gained may then be used to perform e.g., e-shopping tasks. Hence, social expertise can be seen as condition enabling consumers to assess the performance of technologies.	Research shows the relevance of social expertise in the context of e-service quality (Barrutia et al. 2012). The author argues that consumers who receive intelligent social support for e-commerce purpose from people around them, tend to assess the performance of a digital service better. Thus, it is anticipated that social expertise is a predictor of QDS, especially of O-QDS due to social component O-QDS: Positive correlation with function, strong positive correlation with emotion V-QDS: Weak positive correlation with all dimensions

Digital services specific consequences

Behavioral intention	Positive behavioral intentions are associated with a service provider's ability to get its customers to say favorable things about them, recommend them, remain loyal to them, spend more with the company, and pay price premiums (Cronin at al. 2000; Zeithaml et al. 1996)	Cronin et al. (2000) develop and test a 3-item scale to measure behavioral intention	Behavioral intentions are considered as shoppers' reactions after usage like e.g., retention and recommendation of the used digital service, but not the perception and assessment of the usage itself.	Many studies have offered theoretical and empirical justification that service quality is significantly related to behavioral intention (e.g., Cronin et al. 2000; Fornell et al. 1996; Lin et al. 2011). In line with prior literature, this research expects that the QDS has a positive influence on behavioral intentions. O-QDS: Positive correlation with emotion, strong positive correlation with function V-QDS: Strong positive correlation with all dimensions
Satisfaction	Evaluation of emotions reflecting the degree to which a consumer believes that the use of a service evokes positive feelings (Cronin et al. 2000; Oliver 1977)	Cronin et al. (2000) develop and test a 3-item scale to measure an "evaluative" set of satisfaction (and a 5-item scale for "emotion-based" measures)	While satisfaction as evaluative and emotion-based response to a service is a post-experience process, the perception and assessment of the QDS occurs before and/or while usage.	Following Bagozzi's (1992) suggestion that cognitive evaluations precede emotional responses, the focus lies on cognitively-oriented service quality and satisfaction measures. In line with prior literature (e.g., Cronin et al. 2000), the QDS construct is expected to be a determinant of satisfaction. O-QDS: Positive correlation with emotion, strong positive correlation with function V-QDS: Strong positive correlation with all dimensions

Perceived value	A customer trade-off between benefits and costs (Parasuraman et al. 2005; Zeithaml 1988)	Parasuraman et al. (2005) test and validate a 4-item scale to measure perceived value of websites; Barrutia et al. (2012) adopt the measure and validate a 3-item scale	With perceived value examining customers' evaluations of price range, convenience, and control of a websites, the QDS refers to features and functions of digital services, neglecting possible costs involved.	Literature suggests that customer assessments of service quality are strongly linked to perceived value and behavioral intentions (e.g., Cronin et al. 2000; Parasuraman and Grewal 2000). In line with Parasuraman et al. (2005) and Barrutia et al. (2012), value is modeled as a consequence of e-service quality and argued greater QDS is associated with greater perceived value. O-QDS: Positive correlation with emotion, strong positive correlation with function V-QDS: Strong positive correlation with all dimensions
(E-)Shopping related consequences				
User engagement: felt involvement	Engagement as quality of user experience when interacting with a digital system, compromised among other dimensions of felt involvement defined as the sense of being drawn in and having fun (O'Brien 2010; O'Brien et al. 2018)	O'Brien (2010) develops and validates a 3-item scale for felt involvement in online shopping experiences	The construct of engagement makes the users feel involved in an interaction. It allows for reception and reflection of experiences they made with e.g., a technology. The process of felt involvement is linked to the QDS, but as a trait of experience reflection takes place after perceiving the performance of the technologies.	User engagement is a pervasive theme in Human–Computer Interaction research (e.g., Wiebe et al. 2014). Adopting user engagement to the context of digital services is a new approach. The author argues that greater QDS will evoke greater felt involvement in the shopping task. O-QDS: Positive correlation with function, strong positive correlation with emotion V-QDS: Positive correlation with all dimensions

Retail destination related consequences

Overall attractiveness	The satisfaction with an agglomeration is considered as operationalized version of overall attractiveness (Teller and Reutterer 2008); overall satisfaction with the agglomeration is the extent to which it meets consumers' expectations and the ideal place in the mind of individual consumer (Teller and Elms 2012)	Teller and Reutterer (2008) develop a 3-item scale for overall attractiveness of a retail agglomeration perceived by consumers	While overall attractiveness is put on a level with satisfaction with a retail agglomeration, the QDS highlights the performance of digital services what is in turn a predictor of the attractiveness of the retail agglomeration and not the attractiveness or satisfaction itself.	The study of Teller and Reutterer shows that marketing mix factors like tenant mix and merchandise value exert impact on the evaluation of agglomeration attractiveness. By examining marketing mix dimensions delivered by digital services, this research anticipates that greater QDS increases the overall attractiveness of the retail agglomeration providing such digital services, especially for V-QDS due to the scale parts content-related dimensions O-QDS: Positive correlation with function & emotion V-QDS: Strong positive correlation with all dimensions

5.6.3. Standardized Item Loadings for Related Constructs

Construct (Source) / Item	Study 6	Study 7
Positive Attitude (Rosen et al. 2013)		
A1. I feel it is important to be able to find any information whenever I want online.	.86	
A2. I feel it is important to be able to access the Internet any time I want.	.87	
A3. I think it is important to keep up with the latest trends in technology.	.56	
A4. Technology will provide solutions to many of our problems.	.69	
A5. With technology anything is possible.	.36[4]	
A6. I feel that I get more accomplished because of technology.	.58	
Social Expertise (Barrutia et al. 2012)		
X1. People around me know much about how to acquire products/services online.	.33[5]	
X2. I usually speak with colleagues and friends about how to use the Internet for online shopping.	.80	
X3. I get useful information on online shopping through colleagues and friends.	.87	
Behavioral Intention (Cronin et al. 2000)		
B1. The probability that I will use this retail destination's/website's digital service again is	.88	.77
B2. If I had to do it over again, the likelihood that I would make the same choice is	.80	.75
B3. The likelihood that I would recommend this retail destination's/website's digital service to a friend is	.79	.87

[4] Removing item A5 of positive attitude due to low AVE (<.50) and factor loading (<.50) would increase AVE of the construct from .46 to .51. However, as the already acceptable model fit and discriminant validity between positive attitude and the dimensions of the O-QDS and V-QDS just slightly changed (e.g., TLI with V-QDS increases from .88 to .89), the researcher decided to keep the six-item structure of the construct as originally proposed by Rosen et al. (2013).

[5] Removing item X1 of social expertise due to low factor loading (<.50) would increase the AVE of the construct from .50 to.70. However, as the already acceptable model fit and discriminant validity between social expertise and the dimensions of the O-QDS and V-QDS just slightly changed (e.g., TLI with V-QDS increases from .900 to .902), the researcher decided to keep the three-item structure of the construct as originally proposed by Barrutia et al. (2012).

Satisfaction (Cronin et al. 2000)		
S1. My choice to use this digital service was a wise one.	.94	
S2. I think that I did the right thing when I used this digital service.	.94	
S3. This digital service is exactly what is needed for this retail destination.	.84	
Satisfaction *(Johnson et al. 2008)*		
S1. Displeased:Pleased		.92
S2. Discontented:Contented		.88
S3. Dissatisfied:Satisfied		.94
Value (Barrutia et al. 2012; Parasuraman et al. 2005)		
V1. What do you think about the overall convenience of using this (website's) digital service?	.84	.84
V2. What do you think about the extent to which the (website's) digital service gives you a feeling of being in control?	.81	.73
V3. What do you think about the overall value you get from this (website's) digital service for your effort?	.86	.84
User Engagement (Brien 2010)		
U1. I was really drawn into my shopping task/ the shopping center's offerings when using the website's digital services.	.87	.85
U2. I felt involved in this shopping task/ when interacting with the website's digital services.	.90	.80
U3. My shopping experience was fun (when using the website's digital services).	.78	.85
Overall Attractiveness (Teller and Reutterer 2008)		
O1. I am satisfied with the retail destination.	.91	
O2. The retail destination meets my expectations.	.88	
O3. The retail destination comes close to my ideal shopping street/mall.	.68	
Fit Measures Nomological Net With O-QDS		
Chi-square	1100.11	254.19
Degrees of freedom	398	137
Comparative fit index (CFI)	.92	.97

Tucker-Lewis index (TLI)	.90	.97
Root mean square error (RMSEA)	.07	.05
Standardized root mean square error (SRMR)	.061	.039

Results for “Function” and “Emotion” omitted (see Table 8 for details).

Fit Measures Nomological Net With V-QDS

Chi-square	1984.16
Degrees of freedom	898
Comparative fit index (CFI)	.90
Tucker-Lewis index (TLI)	.88
Root mean square error (RMSEA)	.06
Standardized root mean square error (SRMR)	.061

Notes: All items measured on 7-point scales. All factors loaded significantly ($p < .001$) on their designated constructs. Results for V-QDS dimensions omitted (see Table 9 for details).

5.6.4. Inter-Construct Correlations and Descriptive Statistics: O-QDS

	O-QDS		Drivers		Outcomes				
	Function	Emotion	Positive Attitude	Social Expertise	Behavioral Intention	Satisfaction	Value	User Engagement	Overall Attractiveness
Function	**.81**								
Emotion	.49***	**.91**							
Positive Attitude	.36***	.20***	**.68**						
Social Expertise	.15*	.38***	.16**	**.71**					
Behavioral Intention	.70***	.44***	.40***	.23***	**.82**				
Satisfaction	.68***	.41***	.44***	.16**	.81***	**.91**			
Value	.72***	.48***	.44***	.16**	.78***	.89***	**.84**		
User Engagement	.41***	.59***	.36***	.40***	.51***	.45***	.51***	**.85**	
Overall Attractiveness	.63***	.40***	.45***	.07	.63***	.62***	.65***	.59***	**.83**
Number of items	4	3	6	3	3	3	3	3	3
Mean	5.72	3.99	5.45	4.01	5.27	5.30	5.19	4.61	5.27
Stand. Derivation	1.29	1.73	1.33	1.61	1.51	1.43	1.45	1.53	1.27
Cronbachs α	.89	.93	.83	.73	.86	.93	.87	.89	.87
Avg. Var. Extracted	.66	.83	.46	.50	.68	.83	.70	.72	.69

†p < .10; *p < .05; **p < .01; ***p < .001

5.6.5. Inter-Construct Correlations and Descriptive Statistics: V-QDS

	Before			While			After	Drivers		Outcomes				
	Location	Pricing & Incentives	Products & Tenant Mix	Location	Pricing & Incentives	Products & Tenant Mix	After Sales Services	Positive Attitude	Social Expertise	Behavioral Intention	Satisfaction	Value	User Engagement	Overall Attractiveness
Location	**.77**													
Pricing & Incentives	.64***	**.83**												
Products & Tenant Mix	.63***	.61***	**.76**											
Location	.71***	.46***	.66***	**.81**										
Pricing & Incentives	.48***	.72***	.63***	.69***	**.86**									
Products & Tenant Mix	.52***	.54***	.75***	.63***	.72***	**.79**								
After Sales Services	.59***	.59***	.67***	.62***	.68***	.51***	**.80**							
Positive Attitude	.17**	.13*	.21**	.08	.08	.21**	.13†	**.68**						
Social Expertise	.09	.08	.14*	.17**	.19**	.13*	.12†	.17***	**.71**					
Behavioral Intention	.46***	.31***	.47***	.45***	.33***	.38***	.47***	.39***	.22***	**.82**				
Satisfaction	.45***	.35***	.42***	.44***	.41***	.43***	.43***	.44***	.15**	.81***	**.91**			
Value	.43***	.44***	.44***	.46***	.42***	.49***	.42***	.44***	.15**	.78***	.89***	**.84**		
User Engagement	.28***	.23***	.31***	.33***	.30***	.33***	.18*	.36***	.40***	.51***	.45***	.51***	**.85**	
Overall Attractiveness	.40***	.38***	.48***	.46***	.35***	.39***	.32***	.45***	.07	.64***	.62***	.65***	.58***	**.83**
Number of items	3	3	3	3	3	3	4	6	3	3	3	3	3	3
Mean	5.29	5.16	5.73	5.22	4.96	5.58	4.89	5.45	4.01	5.27	5.30	5.19	4.61	5.27
Stand. Derivation	1.55	1.55	1.42	1.59	1.66	1.47	1.72	1.33	1.61	1.51	1.43	1.45	1.53	1.27

Cronbachs α	.81	.87	.80	.85	.89	.83	.88	.83	.73	.86	.93	.87	.88	.87
Avg. Var. Extracted	.59	.69	.58	.66	.74	.62	.64	.46	.50	.68	.83	.70	.72	.69

†p < .10; *p < .05; **p < .01; ***p < .001

6. Project 3: Technological Diversification in Retail Agglomerations: Cases Alongside the Digital Marketing Mix

Within project 1, a research framework of devices and platform delivering digital services and a model of antecedents preceding the acceptance of digital services have been established. These findings have been enriched by the work of project 2, conceptualising and developing the quality of digital services as a measure of the performance of digital services offered by retail destinations.

Project 3 complements the previous studies by investigating the application of digital service innovations and in this context explicitly assessing potentials of the utilisation of digital services in different countries. The chapter draws on nine cases in the retail settings of High Streets, shopping centres and town/city centres to address the following research question: *What are best practice examples of the implementation of services based on digital innovations?*

Abstract

The degree to which technologies are spread across retailing, the so-called technological diversification, is mainly considered at the firm- or store level in the retailing and marketing literature. However, also physical clusters of business and service providers composed as retail agglomerations are increasingly capitalising on the advantages of digital services. In this chapter, selected examples of innovative digital technologies applied within retail agglomerations are presented and discussed in order to illustrate how traditional retailing is evolving in the digital age. The cases presented aim at providing students, academics as well as agglomeration managers and policy-makers with an overview of the current status quo of digital service innovations and their use in retail agglomerations.[6]

[6] This project has been published as book chapter in *Retail Futures,* 2020, Eleonora Pantano, ed. Bingley, U.K.: Emerald Publishing Limited, 37–50. Also, the work has been presented at the BAM 2019 Annual Conference, Birmingham, UK, where it has been awarded the Best Developmental Paper Award of the Marketing and Retail SIG.

6.1. Retailing in the Digital Age

The adoption of technologies in online as well as offline retailing is steadily increasing. The use and diffusion of digital service innovations have mainly been considered at the firm- or store level in the retailing and marketing literature (e.g., Evanschitzky et al. 2015; Grewal et al. 2019; Vannucci and Pantano 2019). Simultaneously, technological competencies and the extent to which technology is spread across different areas, reflected as digital diversification, have been discussed from a firm's perspective (Ceipek et al. 2019). By shifting the perspective from the firm and in-store to the retail agglomeration level, technologies adopted across a range of different areas of retailing are examined. Hereby, services such as AR or innovative events (intu 2019) move into focus. In times in which brick-and-mortar retailing tends to weaken, such innovations provide opportunities for both retailers and agglomeration management through supporting the creation of authentic, engaging and inspiring shopping experiences – which in turn contribute to footfall and sales (Dizdarevic, Evanschitzky, and Backhaus 2018).

6.1.1. Retail Agglomerations

Retail agglomerations represent physical clusters of separate businesses in one place. Characterised by a combination of diverse retail offerings such as supermarkets, department stores, small owner-managed businesses or restaurants and cafés as well as service providers like shoemakers and hairdressers, retail agglomerations appeal to different target groups (Dizdarevic, Evanschitzky, and Backhaus 2018; Teller, Wood, and Floh 2016). With regard to their diverse forms, retail agglomerations can be categorised as either 'planned' or 'naturally grown' (or 'planned' and 'unplanned' as well as 'created' and 'evolved' agglomerations, see Table 14). Shopping centres as a planned sets or portfolios of stores and surrounding infrastructure represent created agglomerations, in which a centre management ensures an adequate overall appearance by determining the tenant mix, as well as providing centrally organised services such as cleaning or safety and security services. High Streets and town centres, in turn, usually represent grown retail agglomerations which are borderless, self-organising and have evolved from bilateral interactions within the respective area (Berman and Evans 2013; Teller, Wood, and Floh 2016). Located centrally within a town or village, they function as important retail areas and also as cultural hubs for the community.

Table 14: Features of the examined retail agglomerations

Features	Shopping Centre	High Street	Town Centre
Location	In town, out-of-town	In town	In town
Agglomeration type	Planned with salesroom	Unplanned with salesroom	Unplanned with salesroom
Management	One central management	City management	City management
Suppliers	Different operating types in food, non-food and service sectors	Different operating types in food, non-food and service sectors	Different operating types in food, non-food and service sectors
Format characteristics	Traditional, very large to medium-sized, from 20,000 m²	Traditional, very large to medium-sized, in major cities	Central commercial area

In some cases, areas within city centres are specialised with regard to assortment or layout. The Jewellery Quarter in Birmingham, for example, is home to over 100 specialist retailers, designers and craftsmen. Further, both agglomeration formats are usually not subject to one central management, but to the city management.

6.1.2. The Digital Marketing Mix

City and town centres play a central role in the economic health of towns and cities. To further keep this position in light of a generally weakening competitive position due to the rise of online retailing, several retail agglomerations have started to embrace digital opportunities. Considering the above-described diverse audiences, agglomerations might capitalise on digital technologies that can appeal to a broader mass, or also implement niche applications targeted at improving the customer experience at particular touchpoints of the visitor journey.

In order to classify examples of digital services offered to visitors and customers of a shopping centre, High Street or town centre, the following cases are structured alongside the marketing mix (Blut, Teller, and Floh 2018). The marketing mix is a well-established model that facilitates the coordination of individual marketing instruments in order to transform marketing strategies into concrete actions. Depending on the context, several modifications of marketing mix instruments have emerged, with product, price, place and promotion most commonly used. As the literature on digital technologies in retail agglomerations is at an early stage and hence scarce, the adoption of the marketing mix concept in this context represents a new approach.

By shifting the traditional application of instruments to a digital level, retail agglomerations are developing up-to-date solutions to positively influence short- and long-term performance of, e.g., sales and profits (Berman and Evans 2013). The later discussed examples are grouped alongside six elements of marketing instruments (see Figure 9).

A first group of digital service innovations relates to those innovations used for *information* purposes. Service innovations in this group add value by more effectively and/or efficiently informing visitors about the *tenant mix* of an agglomeration (e.g., digital information about stores and gastronomy), *products* offered within the agglomeration (e.g., digital information about brands, product range and assortments) as well as *pricing and incentives* (e.g., location-based promotions). Technologies that are not only primarily designed to deliver information but also to shape the *atmosphere* of a retail agglomeration are listed in the lower section of Figure 9. As navigation within an agglomeration plays a key factor to enable customers to quickly move around and find the desired store or service, digital technologies delivering location-based assistances like a digital wayfinder are subsumed under the digital marketing mix element *orientation.* Technologies put in place to advertise or more generally communicate content are assigned to the *communication* category. Typically, these devices are not interactive and display promotions or other messages that might be relevant to visitors within the area of implementation. The primary function of the technologies summarised in the last category is to entertain, rather than to communicate or inform. Correspondingly, the *entertainment* category summarises innovations such as VR and AR games that are applied to evoke a change in the atmosphere of a retail destination.

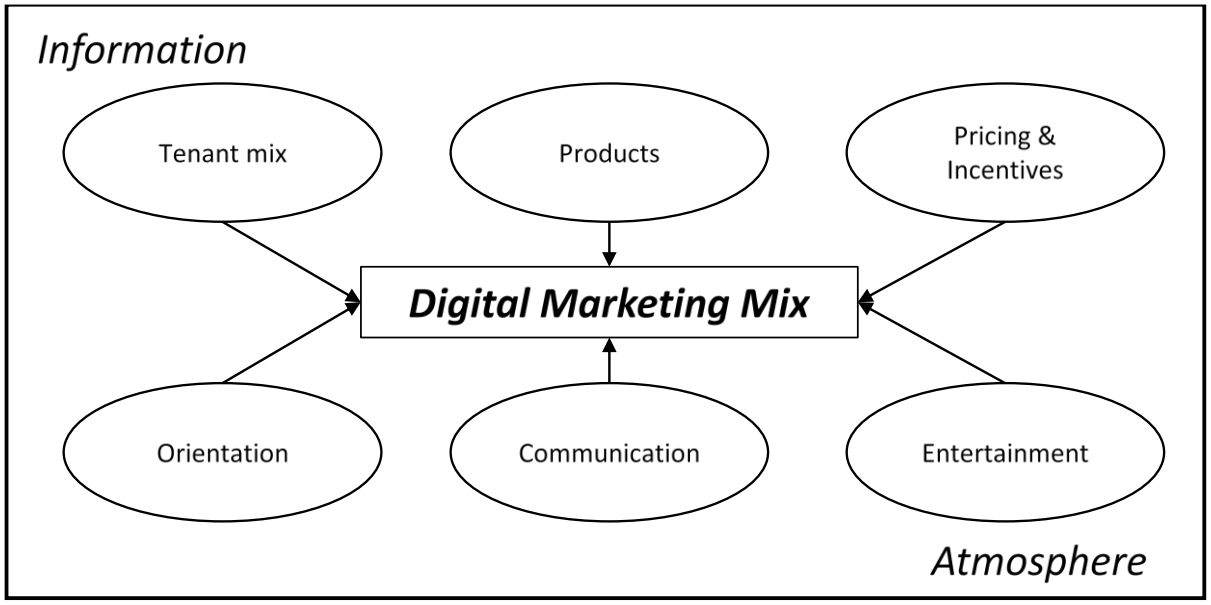

Figure 9: The digital marketing mix

The six groups of marketing instruments can be applied to one or more of the three journey phases – before, during and after visiting. Across these options, digital services can be delivered through mobile devices (e.g., smartphones) or also fixed devices (e.g., customer service terminals) or a mixture of these (Dizdarevic, Evanschitzky, and Backhaus 2018).

6.2. Cases

This chapter discusses cases characterising the application of good practice of digital service innovations as used by retail agglomerations. The digital services are presented alongside the above-described digital marketing mix elements (see Table 15). All innovations aim to deliver additional value to the visitors of a retail destination by means of better engaging, informing and/or entertaining. To gain experiences and better be able to evaluate whether and which digital services are able to impact key outcomes (e.g., customer experience, footfall or sales), particularly large-scale shopping centre operators have started to implement digital pilot projects within their networks of retail agglomerations. These projects not only add to the understanding of a digital services' functionality during live operations but also to aspects such as innovation acceptance by both visitors and tenants or collaboration between different stakeholders during design and implementation of the service innovation.

6.2.1. Information-related Digital Services

As one of the pioneers in the area of digital service innovations within retail agglomerations, the shopping centre operator ECE Projektmanagement (ECE) has started several pilot projects in Germany which aim at better connecting physical shopping centres with digital offerings (ECE 2019a). ECE manages 195 shopping centres across Europe, in Turkey and in Qatar.

The project 'Easy Dining' has been introduced in 2018 (ECE 2018). The digital system enables visitors of the Skyline Plaza's food court in Frankfurt, Germany, to order and pay for food and beverages online. During the ordering process, the customer selects from a variety of dishes offered by the participating restaurants via smartphone app or the centre website, decides on a collection date and pays mobile and cashless. The restaurant operator receives the order and prepares the dishes for the desired time slot. Subsequently, the customer is informed by SMS or push message when the order is ready for collection.

The ordering platform is accessible via smartphone app or centre website, and offers customers a simple and convenient solution for ordering food online in the shopping centre.

Table 15: Overview of cases

Classification		Digital Service		Impact	
Component	Operator	Activity	Technology	User	Provider
Information	ECE, Germany	Easy Dining	Ordering platform via smartphone app or centre website	Overview of restaurants and bars, ordering and paying online, convenience, time saving	Digitalisation of food court, bundling of offers, analysis of big data
	ECE, Germany	Digital Mall	Digital platform provided via centre website or app	Digital catalogue of products offered at a close centre, availability check and reservation option	Promotion of centre website, tenants and its assortment by holistic, cross-channel approach
Orientation	ECE, Europe	Easy to Park	RFID chip	Ticketless and cashless parking, no queuing, time saving	Provision of seamless shopping experience from beginning
	ECE, Europe	Car-Finder	Web-based via Internet-enabled mobile devices	Digital way guiding to vehicle, easy and convenient	Digitalisation of parking facility, analysis of big data
	Sello Shopping Mall, Finland	2D/3D wayfinding system	Animated routes with intelligent step-by-step technology via kiosk, app and web	Digital way guiding to facility, on-site and before visit	Provision of orientation support, information on locations

Communication	City of Dublin, IRL	Smart benches	Displays (not interactive), sensors	Seating possibility, advertisement, charging stations	Smart city approach, promotion of an area, additional advertisement space
	Intu, UK	Autism awareness campaign	VR headsets	Use of VR, experiencing autism conditions	Raising community issues, creating autism friendly centres, VR experience
Entertainment	Intu, UK	The Polar Expedition Grotto	AR camera and screen	Use of AR, interaction with wild animals	Provision of AR, Christmas and environmental experience, increase of dwell time/ footfall
	Liverpool One, UK	Dinosaurs Unleashed	AR app	Use of AR via app, hunting and collecting points, sharing photos with friends	Provision of AR and dinosaur experience, public interest, increase of dwell time/ footfall

Further, the ordering process promises to be time saving as it can be carried out from everywhere, even before entering the retail destination. Queuing, especially during busy lunch breaks, can thus be avoided. Advantages for the shopping centre and participating restaurant are the generation of customer data. Agglomeration and restaurant management can assess information on customer behaviour like products preferences or peak times as well as usage characteristics (e.g., time spent on the application, search histories).

The integration of all tenants within a retail agglomeration can be considered as challenge. As a platform service, the application's value to consumers largely depends on the number of participating restaurants. Another challenge relates to the need to regularly update products, prices and related information. This represents an additional task to be performed by the participating restaurants. Given such additional costs, clear benefits for participating and promoting the service innovation need to be incorporated in the business case underlying a digital service innovation. Such benefits could, for example, relate to the provision of analysed tenant-specific data including a benchmark of how a particular service provider performs compared to other tenants in this or other centres. From a customer perspective, nonparticipation of key tenants, incomplete offerings or poor usability can evoke a disappointing experience, leading to a one-time use.

Besides the attempt to digitalise the food court service offering, ECE has also started a pilot project aiming at bringing traditional retailing to the next level: The 'Digital Mall' started in 2016 at the Alstertal-Einkaufszentrum in Hamburg and connects shopping centres operated by ECE to a digital platform. The project has now been extended to 18 further centres in Germany with 200 connected stores. By the end of 2019, roll-out across 35 centres with 1,000 stores is envisaged (ECE 2019b). Visitors of a participating retail destinations can check the availability of a product in a centre, the available sizes and the price at any time, reserve a product for pick it up in the respective store. Notably, the digital platform is not provided by a particular store or retail chain, but via the centre website or app. This is made possible by linking the omnichannel platform of the centre with participating retailers, as well as by a direct connection of the merchandise management and cash register systems of the retailer with the omnichannel platform of the centre. Availability information are updated every 15 minutes.

The main idea behind this innovation is that customers looking for a product online will not automatically be led to the major e-commerce platforms, but to a centre website. Once there, they can digitally view the products offered at a centre nearest to them. The online product search currently comprises 1.2 million products from more than 200 stores of the 18 centres including department stores and major chains from diverse retail industries such as consumer electronics or fashion. After reserving, the products can be picked up in the centre immediately.

Further, participating tenants are able to reach a wider and potentially different target group by posting their products online. The major challenge for the retail agglomeration again relates to incorporating all store information of a centre into the general online search, which demands for sophisticated data management and software systems. Additionally, especially larger retail chains already operate their own systems and websites and might therefore be reluctant to participate in the platform initiatives headed by retail agglomerations. However, a seamless omnichannel experience leading to a true benefit for the consumer again demands for participation of as many stores as possible.

6.2.2. Orientation-related Digital Services

Aiming at delivering an enhanced parking experience, 11 ECE shopping centres in Germany are currently cooperating with the service provider Evopark GmbH. The ‘Easy to Park’ service enables centre visitors to pass the barrier to the parking facility automatically without having acquired a ticket (ECE 2019b). This is possible through the prior registration and following acquisition of a permanent parking card equipped with an RFID chip. If positioned within the car, an RFID antenna at the barrier recognises the chip and automatically opens as soon as the car approaches. There is therefore no need for the visitor to manoeuvre the car to the ticket machine or to lean out of the window to get a ticket. To make the experience even more convenient, the costs of the parking trip to the retail destination are payed automatically at the end of the month. Hence, there is no need to queue at the parking machine. By parking ticketless and paying cashless, a seamless, time-saving shopping experience can be delivered to users of the digital service. Further, and in comparison to the above-described technologies, this innovation can be implemented independently of any contributions of the tenants of the centre.

After passing the barrier ticketless and finding a parking space, the next digital innovation in cooperation with the software specialist 3d-berlin vr solutions facilitates the visitor journey at a retail agglomeration. The QR code-based ‘Car-Finder’ service enables the user to easily find the car in the parking facility (3d-berlin 2019; ECE 2019b). Having parked the car, a QR code is displayed besides the respective parking space. By scanning the code via with a smartphone or a tablet, the parking position is stored on the device. After finishing the shopping trip, the customer scans the QR code at a ticket machine in order to find the way to the vehicle. Through an interactive map across all levels of the parking facility, the user is guided to its car.

First introduced in 2015, the 'Car-Finder' service is offered in 18 centres across Europe, including the Adigeo Mall in Verona, Italy, the City-Arkaden in Klagenfurt, Austria, and the Árkád Pécs Center, Hungary. According the ECE, more than half of the visitors of a centre arrive by car. The Aquis Plaza in Aachen, for example, offers 600 parking spaces and counts around 1,700 scans per month. Although the number of users is not very high yet, the data collected can be used for further analysis such as user interactions and time spent within the centre. Further, the service delivers additional value to the visitor of a retail destination by offering quick orientation within the parking facilities. There is also no need to install an app as the application works via a web application. However, if the potential user is not carrying a mobile device or does not have a working Internet connection, the service is not available. In addition, the above-described advantage of not having to search and approach the ticket machine by using 'Easy to Park' vanishes when simultaneously using the 'Car-Finder' application, as customers need to scan the QR code at a ticket machine to start the way guiding back to the vehicle.

Besides offering digital routing within the parking facility, comparable solutions as of digital wayfinding within malls and centres are also already implemented. The 3d-berlin vr solutions provides indoor navigation solutions for around 50 shopping centres across Europe. Visitors of a retail destination can use 2D or 3D floor maps to search for the location of facilities like stores or restrooms and to navigate interactively to the desired search query. The centre maps are provided on-site via fixed devices as of kiosks, also called terminals, as well as via mobile devices and web applications without the need of being on-site (3d-berlin 2019).

Beside around 30 ECE centres, also other agglomeration operators have implemented the system in cooperation with the software company. Among those is the Sello Shopping Mall in Helsinki, which describes itself more as a city centre than a shopping centre due to the diverse utilisation mix. As Finland's most visited shopping centre with 24 million visitors annually and an offer of over 170 shops, as well as a concert hall, a library, hypermarkets and entertainment areas, it is not surprising that a visitor needs help to orientate. For this purpose, the management has implemented a digital navigation accessible via 12 (four double-sided) 55' Multitouch kiosk systems. Thus, visitors can explore the 189,000-m² area, find shops by entering keywords and navigate the way to the desired destination in 3D. Users who do not want to memorise the way displayed can transfer the 3D-video on a mobile device by scanning a QR code. In addition, a web application of the navigation via Sello's own website facilities a cross-channel customer experience before even entering the retail destination.

Shopping centre operators use digital wayfinding within shopping malls to make locations of particular stores and mall infrastructure easy to find. Further, as all activities on the systems

are saved, data in the form of workload and search behaviour can be statistically analysed to further improve the service. In addition, visitors of such destinations want to orient themselves quickly. Through the 2D/3D wayfinding system, this is made possible not only on-site but also before the visit when preparing the shopping trip. Further, any mobile device can access the web-based mobile service (HTML5) without installation.

6.2.3. Communication-related Digital Services

In order to take a step forward in becoming a smart town, the city of Dublin, Ireland, has installed smart benches in a number of places across the Dublin area (Smart Dublin 2019). The benches are part of a larger initiative that aims to bring smart city technology to life in Dublin's streets and parks in order to enhance the quality of life in the city. Introduced in 2019, the benches not only serve as seating but also deliver additional features to the public, tourists and locals. The main and most visible feature is a digital advertising space installed at the two legs of the bench. Already visible from the opposite side of the street, the digital display promotes different contents like information about retailers and services within the city. Further digital capabilities include Wi-Fi, phone and e-bike charging ports.

As eyecatchers, the benches promote diverse content, whereby the messaging can be changed depending on time and place, enabling communication with audiences in a contextualised manner. Further, the benches collect data by means of installed sensors. According to Smart Dublin, information on temperature, humidity and energy usage is recorded. The company states that these data can be used by local authorities to analyse the environment and bench usage. However, from a marketers' point of view, it would be interesting to examine other metrics like the impact of the advertisements displayed.

Another company that manages and develops shopping centres is London based intu properties (intu). Intu operates 17 shopping centres across the United Kingdom and three in Spain. Besides cross-channel strategies including the intu Online Shopping Centre in the form of a connecting platform to the respective retailers, item home delivery or free pick-ups of item orders at a local intu shopping centre, the company attracts attention by conducting augmented and VR events and exhibitions within the centres (intu 2019). Visitors of intu centres in United Kingdom have the opportunity to experience a shopping centre visit from the perspective of an autistic child. The 'Autism awareness via virtual reality' event is part of a pioneering initiative between intu and the National Autistic Society and aims to increase public understanding of autism as well as to make all centres autism-friendly. The charity provided the cutting-edge technology in order to explain how sensory overload can affect autistic people. By means of

simulations provided by VR headsets, customers are given an understanding of how the sights and sounds of a shopping centre feel like if you are autistic. The campaign is one of the first in which VR technology has been used to raise awareness of a condition like autism.

The aim of the campaign is to create autism-friendly shopping centres across the United Kingdom as well as to raise awareness of issues that have an impact on society. According to intu, two-thirds of people in the United Kingdom live within easy reach of an intu centre. For that reason, intu positions itself as the heart of any community they serve with the responsibility to bring attention to topics that are relevant to the people living in the catchment area. Additionally, the company allows its visitors to try out the latest technologies and thus attract customers.

6.2.4. Entertainment-related Digital Services

Besides functional applications delivering information or orientation to the visitor, retail agglomerations utilise technologies also to provide entertainment and fun. With 'The Polar Expedition grotto', intu Trafford Centre launched a fully immersive icy experience for small visitors of the centre (intu 2019). Installed as part of the 'Polar Expedition', a large-screen AR polar experience invited visitors to step into a detailed 3D environment featuring photo-realistic animals like polar bears and penguins. Within the frozen nature, visitors find themselves in an arctic-themed AR experience close to animals posing for petting on the glaciers or jumping around in the water. The AR camera and screen was provided by the UK-based company INDE.

Apart from the technological experience to find oneself within an AR, the expedition enables users to learn about the environment and humans' impact on it. Again, intu markets itself as a place of learning and playing at the same time. By enabling a unique interaction with wild animals and letting visitors touch these creatures, the centre attracts parents alongside with their children, who may then stay for further leisure and shopping activities.

AR events are also launched for other target groups like teenagers and adults. In cooperation with dinosaur educationalists Teach Rex and the National Museums Liverpool, an AR dinosaur invasion is taking place in 2019 in the city centre of Liverpool (Liverpool ONE 2019). With 170,000 m², Liverpool ONE is the largest open-air shopping centre in the United Kingdom, compromising shopping, residential and leisure parts. For the dinosaur invasion, the 'Discover at Liverpool ONE' AR app was designed and launched to provide visitors with a new experience. Due to the centre's size, participants of the dinosaur hunt are offered immersive

entertainment. By scanning the phone over triggers positioned around the venue, visitors can 'hunt' dinosaurs and collect points. Some features of the AR app include scanning real eggs to hatch a selection of dinosaurs, collecting food hidden around the centre and feeding dinosaurs to build up their wellbeing. Not only the virtual part of the centre has been taken over by dinosaur but also realistic models of prehistoric creatures, appropriate decoration and footprints on the ground are contributing to a primeval atmosphere. For further assistance, centre stuff dressed as rangers are helping the app users by means of troubleshooting and technical support.

In comparison to the grotto experience, the AR has been introduced for a different target group that is older and carries a mobile device. Here lies also a challenge as the visitors need to make sure their tablet or phone is compatible with the game and the new AR technology. Besides getting attention for the possibility to slip in a fully immersive world, an additional in-app function enables the user to share photos and movies easily on social media or to take selfies with AR makeovers. Hence, through this function, users can immediately share their participation experience with family and friends, ideally increasing the likelihood of revisiting or a first visit.

6.3. Key Terms and Definitions

(1) *Retail agglomerations:* physical clusters of separate businesses in one place characterised by a combination of diverse retail formats and providers like supermarkets, department stores, small owner-managed businesses or restaurants and cafés as well as service providers like shoemakers and hairdressers.
(2) *Digital marketing mix:* model facilitating the coordination of digital marketing instruments in six areas in order to transform marketing strategies into concrete actions.
(3) *Information-related digital services:* technologies implemented to deliver additional value to the visitors of a retail destination in the context of the offered tenant mix, products within the agglomeration and the pricing and incentives.
(4) *Orientation-related digital services:* technologies implemented to deliver additional value to the visitors of a retail destination in the context of the location in order to enable customers to quickly move around and find the desired store or service.
(5) *Communication-related digital services:* technologies implemented to deliver additional value to the visitors of a retail destination in order to advertise a specific content or an issue.

(6) *Entertainment-related digital services:* technologies implemented to deliver additional value to the visitors of a retail destination by providing atmosphere-changing activities in the form of entertainment.

6.4. Conclusion

Due to a changing retail landscape triggered by increasing digitalisation and shifting consumer needs and behaviours, traditional retailing needs to react now. This could be realised by harnessing strategies combining traditional with digital offerings. The chapter shows that retail agglomerations are predestined to capitalise on the combination of the strengths of traditional retailing and digital service innovations. Digital touchpoints can enhance the visitor experience throughout the whole customer journey, that is not only on-site but also before reaching as well as after having left the agglomeration. Thereby, digital technologies can deliver value to the visitor in the form of providing information, orientation, communication and/or entertainment. As outlined in this chapter, omnichannel strategies, shopping assistants in the form of digital wayfinder offered on mobile or fixed devices as well as virtual reality (VR) and augmented reality (AR) or virtual reality technologies aiming to enhance shopping experiences have already been put into practice. AR and VR can create unique and memorable customer experiences, ensuring that retailers and service providers as well as the retail agglomeration as a whole continue to thrive.

Although retail agglomerations also relate to High Streets, town centres and other forms, most of the examples shown relate to shopping centres. One reason for shopping centres being in a relatively more advanced position with regard to the implementation of digital technologies might relate to the aspect of a central management and a generally more centralised governance approach. In the case of large operators such as ECE or intu, it might also be easier to fund the high setup costs that are often associated with the design and implementation of digital service innovations.

For less centralised forms of retail agglomerations such as High Streets and town centres, the development of proprietary digital services will often not be a viable option. However, also for these agglomeration forms there are options to capitalise on digital technologies. South London Club, for example, provides a local discount card through which consumers as club members can explore offerings and discounts of more than 850 participating independent retailers and service businesses in the South of London. Another digital service strategy is to pool resources at a broader (e.g., national) level and jointly develop a portfolio of useful and easy-to-use digital services from which High Streets and town centres could draw, similarly to

the recommendation derived by the Digital High Street Advisory Board (Digital High Street Advisory Board 2015). In summary, key success factors for the implementation of digital services in the context of retail agglomerations include participative innovation processes, cooperation and the communication of clear benefits to stakeholders.

In light of changing consumer habits and an increasing need for convenience, digital technologies show ways to develop a genuine competitive advantage in the brick-and-mortar world. Thereby, across all forms of retail agglomerations, collaboration and participative innovation processes are key in order to ensure that retail agglomerations remain lively and attractive (Ommen et al. 2016). In the end, retail agglomerations will be successful if they succeed in giving customers a reason to visit, stay and visit again. To achieve this, retail agglomerations have to see themselves from the perspective of the customer and work towards the right mix of physical and digital marketing instruments.

In summary, the three-project approach has acted as the core of this thesis. The structure enabled the initial derivation of the research framework (project 1), followed by an examination and discussion of the three different key aspects of digital services: its acceptance (project 1), its measurement (project 2), and its application (project 3).

By conceptually drawing on the digital marketing mix to classify technological innovations of High Streets, shopping centre and town/city centre, the last project has complemented the previous chapters in showing that digital services currently and prospectively have an impact on retail destination attractiveness.

The thesis ends with the next chapter, summarising and highlighting the contribution and originality of each project.

7. General Discussion and Conclusion

This dissertation contributes to the academic research literature within retail marketing and management, and, in addition, provides managerial implications that can inform decision-making of High Street, town centre and shopping centre managers/marketers, and also retailers. Assessing the role of digital technologies is an important advancement of the retail agglomerations literature that has thus far focussed in the main on factors such as tenants (e.g., Finn and Louviere 1996), anchors (e.g., Nevin and Houston 1980), and competitors (e.g., (Teller, Wood, and Floh 2016). This study takes a novel, more up-to-date, approach by focussing on digital service technologies that are anticipated to enhance destination attractiveness. The chapter starts by summarising the purpose of each project and how the respective study's findings managed to meet the objectives and research questions. The contribution of the projects to the originality of this thesis are highlighted and summarised in Figure 10. It follows a discussion of avenues for future research.

7.1. Research Contribution

By developing an integrative model of retail destination attractiveness as perceived from a customer's point of view and as determined by digital and physical structural antecedents, the first theoretical contribution of this project is achieved within chapter 3. The literature review and the accompanying conceptualisation of retail destination attractiveness as *extent to which consumers are pulled towards a retail destination, shaped by consumers overall assessment of perceived digital and physical marketing mix attributes at every stage of the customer journey* serve as basis for the three subsequent projects. The projects contribute to meeting the overarching research objective of this dissertation, that is *to explain if and how retail agglomerations might benefit from digital service innovations in order to attract more customers and remain competitive*. Details on the role of each research project are highlighted in the following.

7.1.1. Project 1: Elevating Shopping Experiences through Digital Technologies

Increasingly exploiting the advantages digitalisation offers, traditional retail formats such as city centres, shopping centres and High Streets draw on digital applications to elevate customer experiences. However, retail marketing literature provides little recognition of the

assessment of digital touchpoints that customers consider as relevant in their journey. Also, prior research has not yet applied theoretical frameworks based on technology in retail agglomeration research. In addition, little is known about the acceptance procedure of digital service innovations from the consumer's point of view. Therefore, this research aids in *providing a guide to management of retail agglomerations to successfully digitise their customer's shopping experience.*

Study A has addressed the research question: *Which devices and platforms are expected to deliver digital services?* By evaluating devices and platforms delivering digital services, a framework of technologies in retail agglomerations has been developed. The findings demonstrate that digital services can be accessed through mobile devices like mobile phones or laptop- and tablet-based applications as well as through fixed devices like digital signage/wall, self-service machines for automated checkouts, mounted tablets and customer service terminals. In general, customers visiting retail agglomerations choose to use own mobile devices. When considering devices offered by retail agglomerations, management are advised to offer an assortment of devices varying in particular in display size due to different customer preferences. By using these mobile and fixed devices, the framework shows that digital services can be offered via a retail destinations' platforms website, app, social media account and/or email newsletter.

Study B has answered the research question *which digital services are considered beneficial by customers and at which stage(s) of the customer journey is their application preferred?* The findings highlight that retailers need to deliver digital touchpoints alongside the entire customer journey, although the favoured services are similar per stage. Thereby, availability checks of stores, brands, products and gastronomy are prevalent. In addition, product-related information about discounts, sales, promotions, offers and events are likely. To facilitate the journey to the retail destination, locations of facilities and stores in the area as well as connections to and traffic around the retail area can be provided. Besides information-based services, the usage of digital technologies can also enhance the entertainment factor with for instance augmented reality events for adults (intu 2019) or digital playgrounds for kids (ECE 2019b). The shopping centre operators intu and ECE have already seized the opportunity to launch innovative digital services to attract customers.

Study C explored the research question: *What drives consumer's acceptance of using digital technologies?* Hereby, predictors and antecedents of the intended and actual usage of fixed and mobile service technologies in retail agglomerations have been examined. To understand the acceptance and usage of information systems in retail agglomerations, the TAM is used as conceptual basis. In this context, customer's perceived usefulness and ease of use of digital

applications precede the usage intention and actual use such technologies. The findings show that only digital services that are perceived as timesaving, efficient and exclusive are considered useful. Further, tailored and personalised digital services by means of applying filters and queries when e.g., browsing products are considered as valuable assistance. However, the offer of digital services needs to extend functions that already exist in online retailing by delivering offline exclusivity through e.g., on-site promotions via geolocational functions. Regarding ease of use, consumers demand for devices that are user-friendly, easy to operate and understand the desired task straightaway. Further, availability of devices in multiple locations are crucial. To further take a step ahead online retailing, the option of providing all choices from digital application to a human service encounter is emphasised as the great benefit of a physical environment in contrast to pure players. In this context, marketing research highlights the crucial role front-line employees play as representatives of the firm or organisation they work for in shaping customers' perceptions of service quality (Ackfeldt and Malhotra 2013; Bell and Menguc 2002). Hence, as visitors of a retail destination value the combination of digital and human assistance, management needs to equip employees with the knowledge and capabilities to work with technologies.

To the best of the authors' knowledge, this is the only study providing a holistic overview of digital technologies in retail agglomerations. The work supports decision makers in retail agglomerations regarding the use of digital services delivered through mobile and fixed devices along the customer journey. Further, the understanding of the customer acceptance process of service technologies leads to indications how to boost the usage of digital service innovations. The transfer of the TAM from a store to a broader context presents a new up-to-date approach supporting retail agglomeration research to evolve in the digital age.

7.1.2. Project 2: The Quality of Digital Services

Visitors of retail agglomerations are increasingly faced with digital services offered via mobile or fixed devices. Surprisingly, within marketing science, a coherent conceptualisation and measurement of the quality of digital services does not exist. Also, the examination of relationships to existing marketing constructs in order to provide a nomological network of related measures is limited. Recent studies present initial approaches of scale development processes, but lie their focus rather on the downstream process of data collection than on the development of a reliable and easy-to-administer scale (e.g., Dennis et al. 2002b; Teller and Reutterer 2008; Wong and Yu 2003). Overall, it can be concluded that a sound, widely accepted, generic measure of the performance of technologies had yet to emerge. Hence, the objective of this project was *to (1) conceptualise QDS, (2) develop a measure of QDS*

applicable in different retail agglomerations, and (3) examine its nomological network of related marketing constructs. Seven studies add in answering the research question: *How can the quality of digital services be conceptualised and measured in a retail agglomeration context?*

By drawing on prior conceptualisations of the role of technologies and on studies of service quality models in academic literature, the QDS is conceptualised as the extent to which a consumer believes that the digital service offered by a retail destination performs well. This evaluation process proposes that when customers perceive digital services within a retail destination, the performance of the technology is compared with individual preferences. In case of a match, digital services are evaluated positively and the quality is considered as high.

Next, a 2-dimensional, 7-item overall quality and a 7 dimensional, 22-item visit quality measure is developed by four qualitative studies and validated by three quantitative studies. Study 1 and 2 serve as item generation process along the customer journey. By taking into account digital services before, while and after the visit of a retail destination and thereby considering fixed and mobile digital touchpoints as proposed by project 1, a holistic measure development is ensured. With study 3 and 4, the assessment of experts is additionally obtained, confirming the measures' relevance from a management and supplier perspective. Within study 5 and 6, high convergent and discriminant validity of the scale across two samples with different participant characteristics is supported. In study 6, by means of investigating antecedents and outcomes of QDS, evidence of nomological validity within the proposed framework further support the measure's content validity. The examination of the nomological network of QDS shows that technology related antecedents such as positive attitude towards the technology, and (e-)shopping related antecedents as social expertise in the e-shopping task are predictors of QDS. Further, the analysis shows that QDS is a determinant of the overall attractiveness of the retail destination, digital services related consequences such as satisfaction with, perceived value of, and behavioural intentions regarding digital services as well as one (e-)shopping related outcome, namely user engagement in the shopping task or visit. These results are supported by study 7 that reveals that QDS can improve predictions of the discussed consequences.

In summary, this projects' main contribution to theory lies in developing and testing a QDS scale capturing consumer perceived performance of digital services. In this framework, the novel construct quality of digital services is introduced to the marketing literature. By drawing attention to the measurement of digital services offered by retail destinations, the study makes use of different streams of literature. Thereby, a discussion of suitable ideas across the disciplines of retail and service marketing as well as information systems and technology management is evaluated. This interdisciplinary exchange has not yet taken place in the

context of retail agglomerations and adds valuable insights to this research as well as opens opportunities for future fields of study. Conceptualising and developing QDS as a multidimensional construct has further benefits for managerial implications. The valid and reliable measure of QDS, its impact on the customer-perceived retail destination attractiveness and its predictive power of particular behavioural outcomes may help retail agglomerations to understand how to bridge their brick-and-mortar business with online sales and services. More specifically, the measurement tool of QDS has been developed, tested and validated for the application of all three investigated retail destination formats: shopping centre, High Street and town centre. Hence, agglomeration management can use the scale to understand how offered technologies perform in different agglomeration formats and thereby benchmark customer-perceived weaknesses and strengths of the managed retail destination. In doing so, the two scale parts V-QDS and O-QDS allow decision-makers to examine the performance of applied digital services from different content-related perspectives along or detached from the customer journey. Consequently, available resources can be used optimally to establish a contemporary technology-based marketing.

7.1.3. Project 3: Technological Diversification in Retail Agglomerations

The investigation of technological diversification has recently gained interest in academic science. However, in the retailing and marketing literature, studies to-date primary focus on examining the diffusion of technologies at the store (e.g., Evanschitzky et al. 2015; Grewal et al. 2019) or firm level (e.g., Ceipek et al. 2019). Studies of retail destinations are scarce and comprise only single and/or national cases of one retail type without assessing potentials and applications of the utilisation of digital services in different countries. By addressing High Streets, shopping centre and town/city centre, technologies benefiting a greater range of stakeholders like stores, store chains, retailers, manufactures, and management operating in different sectors can be explored. In this framework, the book chapter aimed at *identifying international best practices of digital service innovations provided by retail destinations.*

This research uses nine cases to evaluate the role of digital services in European retail destinations in order to answer the research question: *What are best practice examples of the implementation of services based on digital innovations?* Initially, the study derives a definition of the three examined retail destination formats, accounting for the first contribution. The management is outlined as explicit differentiation factor: Shopping centres as created agglomerations are managed by a centre management. High Streets and town centres as borderless formats are usually self-organising and/or operated by the city management. This distinction of the respective administration is a central issue as the research shows that retail

destinations with a central management might be in a more beneficial position regarding the implementation and funding of digital technologies. Thus, not exclusively but mostly, diffusions of digital innovations are so far recognised at shopping centres.

The chapter builds on the findings of project 1 and 2 by highlighting that the six groups of marketing instruments can be applied to one or more of the three journey phases, delivered through mobile devices and/or fixed devices (Dizdarevic, Evanschitzky, and Backhaus 2018). Based on previous research (Blut, Teller, and Floh 2018), the study conceptualises the digital marketing mix and identifies best practices of digital services offered by retail destinations alongside the model. Thereby, digital service innovations can be used for delivering information in terms of the offered 1) tenant mix, 2) products within the agglomeration, and 3) pricing and incentives. Instruments having an effect on the atmosphere are highlighted within the categories of 1) orientation, 2) communication, and 3) entertainment.

The discussion of entertainment-related digital services in the form of applying technologies such as AR and VR represents an additional and thereby fruitful contribution to this thesis. Findings of immersive technologies have not been explicitly discussed in project 1 and 2 as an impact was not revealed in the previous studies. Although throughout the scale development process in project 2 the findings of the consumer panel in study 2 indicated a potential role of playing AR/VR video games, the respective items could not prevail in later studies and have been finally delated on the recommendation of expert judges. Even though such technologies seem to just evolve their actual potential, project 3 discloses their role in generating exclusive and outstanding customer experiences.

Overall, the comparison of digital technologies across Europe provides academics as well as managers and policy-makers with a guideline of the current status quo of digital service innovations, their use in retail agglomerations as well as challenges and potentials. From a practical perspective, the identification of best practices of digital services enables authorities to assess the state and level of the adoption of digital innovations of like-minded retail destinations and competitors leading to better-informed agglomeration management decisions. In this framework, management can apply the developed digital marketing mix model to exploit current potentials of technology adoption in retail destinations. By gaining an overview of relevant digital marketing fields, digitalisation and omnichannel tactics can be converted into agglomeration specific digital services. From a theoretical view, the assessment of best-practice applications in European destinations such as UK, Ireland, Germany, Finland provides a comprehensive analysis advancing marketing literature thus far focussing on mainly national cases. The analysis shows that retail destinations around the world are seizing the chances digitalisation offers to gain consumers' attraction by implementing innovative digital

services. By demonstrating explorative digital touchpoints based on digital marketing mix instruments, the theoretical relevance to add a digital perspective to retail agglomeration research is underlined. Although the marketing mix is a well-studied model in the existing literature, a combination of instruments reflecting digital technologies in retail destinations remains unexplored. Consequently, the derivation of the digital marketing mix illustrates an original cutting-edge approach to carry traditional retail marketing to the digital age.

To conclude, all three projects contribute to marketing theory and practice by means of quantitative and qualitative research. The studies analyse and deliver strategies how traditional retail formats can establish competitive advantages by leveraging the potentials provided by the digital revolution. New ways are identified displaying how innovative technologies can be combined with more traditional services to help boost local economies and guide investment decisions. With the newfound knowledge, this research contributes to preserving and enhancing the character of urban life, which is largely shaped by retailing.

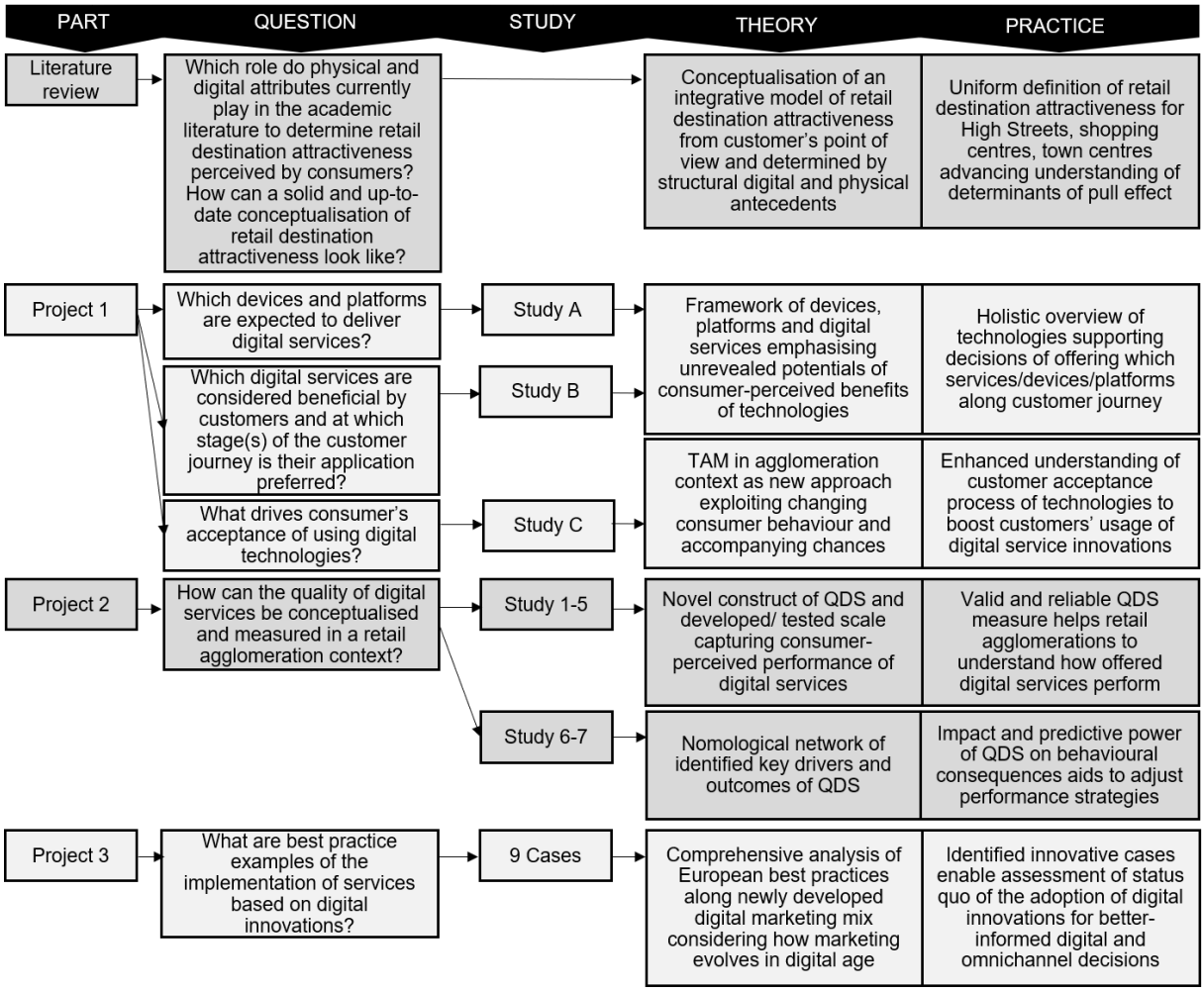

Figure 10: Outline of research contribution

7.2. Recommendations for Future Research

This research lies its focus on examining the impact of digital services in traditional retail agglomeration formats. Traditional formats are all-purpose shopping centres that may be closed or open-built and classified according to size. Besides these formats, specialized agglomeration formats exist (see Table 16 for examples). These formats have a particular purpose, e.g., in the field of theme-oriented centres an eco-orientation as well as typically an open architecture (International Council of Shopping Centers 2006). Thus, retail parks have several large-scale specialist retailers with a mostly free car park; classic shopping centres are characterised in contrast by a larger proportion of textile stores, generally more shops and often fee-based parking spaces. In outlet centres predominantly branded products in the clothing, shoes, leather and household goods sectors, exhibited by the manufacturers themselves or multi-brand retailers, can be found (Lambert 2006).

Table 16: European shopping centre formats

Format	Type of Scheme	m²	Examples
Traditional	Shopping centre – very large	80.000+	Bullring (Birmingham)
	Shopping centre – large	79.999 - 40.000	The Bentall Centre (Kingston upon Thames)
	Shopping centre – medium	39.999 - 20.000	Cascades Shopping Centre (Portsmouth)
	Shopping centre – small	19.999 - 5.000	Cathedral Lanes (Coventry)
Specialized	Retail park	20.000 - 5.000	The Brewery (Romford)
	Outlet centre	5.000+	Bicester Village (Bicester)
	Theme-oriented centre	5.000+	O2 Centre (London)

Although not as high as the growth rate of online retail shops in the UK, the locations of outlet centres and retail parks are nevertheless predicted to raise in the next years (Statista Research Department 2021). However, at the same time, a glance to the reported vacancy rates in Figure 11 reveals that, as stated in the introduction of this thesis, traditional retail formats are suffering

from store closures in recent years. Although lower rates in comparison to shopping centres and High Streets, vacancy rates of retail parks should not be underestimated by registering 8.8 percent in the first half of 2020 (Statista Research Department 2021).

At the same time, also specialized retail formats draw on technologies to leverage chances opening up. For example, in response to current shop closures due to the pandemic, the Bicester Village Shopping Collection has introduced a Virtual Shopping service to its eleven outlet centres across Europe and China. Since 2021, consumers can review and shop participating brands from home and have purchases delivered (Bicester Village 2021).

The endorsement of these developments in specialized retail formats would be a fruitful area for further studies. Research could build on this thesis work by identifying reasons for weaknesses and thereby investigating the potentials of the application, acceptance and performance of technologies in e.g., outlet centres and retail parks.

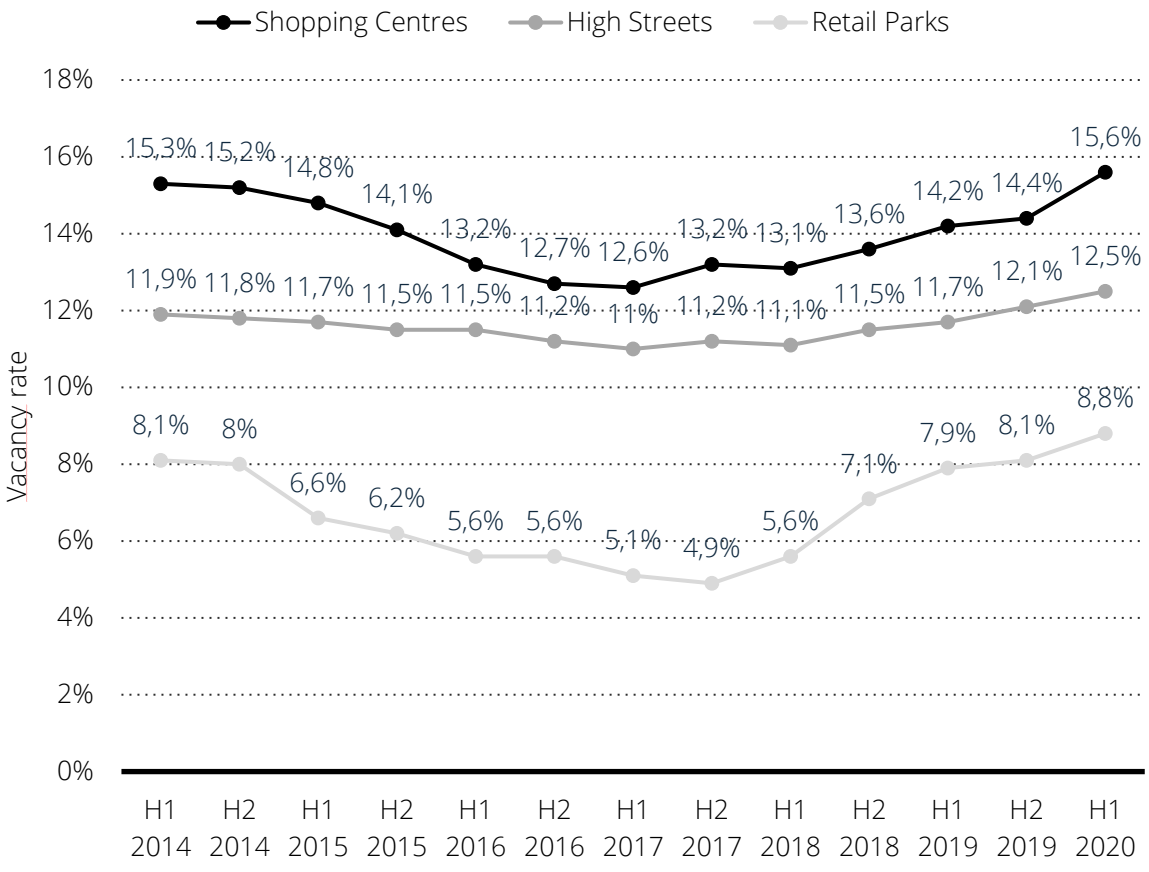

Figure 11: Vacancy rates of traditional retail destinations in the UK

Moreover, this thesis has discussed the absence of a holistic construct and measure capturing retail destination attractiveness. While several studies have explored attributes and components explaining the attractiveness, or closely related constructs, of retail destinations, no consensus has emerged about how to measure attractiveness applicable across different types of retail destinations.

In addition to the measurement suggestions for shopping centres (e.g., Gomes and Paula 2017), town centres (Stocchi, Hart, and Haji 2016), only the study by Teller and Reutterer (2008) has attempted to measure drivers of destination attractiveness in two of the three contexts. Thereby, the practical application of nearly all of the existing measurements is limited due to cumbersome administration. Hence, future research could advance retail and marketing science by drawing on the in chapter 3 proposed conceptualisation to develop a retail destination attractiveness measure that 1) is validate and reliable, 2) can be uniformly employed across different retail destination types, and 3) include an omnichannel perspective, assessing both, physical, atmospherically, and also digital touchpoints that are relevant to consumers in their attractiveness assessment. By doing so, business' understanding and implementation of strategies able to evaluate and manipulate the respective retail destination attractiveness could be imparted.

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List of Publications

A. Journal Paper

Dizdarevic, Amela, Heiner Evanschitzky, and Christof Backhaus (2018), “Elevating Shopping Experiences Through Digital Technologies: The Case of Retail Agglomerations”, *Marketing Review St. Gallen*, 6/2018, 34–41.

B. Book Chapter

Dizdarevic, Amela, Heiner Evanschitzky, and Christof Backhaus (2020), ”Technological Diversification in Retail Agglomerations: Case Studies Alongside the Digital Marketing Mix”, in Pantano, E. (Ed.). *Retail Futures*, Emerald Publishing Limited, p. 37-50.

C. Conference Paper

Dizdarevic, Amela, Heiner Evanschitzky, and Christof Backhaus (2020), “Shifting Brick-And-Mortar Retailing to the Next Level: Exploring the Quality of Digital Services”, *48th Academy of Marketing Science Annual Conference*, USA. **Best Retailing Paper Award.**

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D. Conference Poster

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E. Blog Post

Dizdarevic, Amela and Mahrokh Roknifard (2020), “'The Power of Unifying Private-Label Brands under One Umbrella Brand”, *Journal of Marketing Research Scholarly Insights*. [available at https://www.ama.org/2020/09/10/the-power-of-unifying-private-label-brands-under-one-umbrella-brand/].