

# **Digital Transformation: An Analysis of Opportunities for Retailers**

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By  
**Sören Aguirre Reid (Bärsch)**

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## List of Abbreviations

ALDI	Albrecht Discount
APA Style	American Psychological Association Style
AVE	Average Variance Extracted
BIS	International Conference on Business Information Systems
BIR	International Conference on Perspective In Business Informatics Research
BMF	Bundesfinanzministerium
B2B	Business-to-Business
B2C	Business-to-Consumer
CA	Cronbach Alpha
CMCIM	Computer-Mediated Communication Interactivity Model
COMM.	Communication
COVID-19	Coronavirus Disease 2019
CR	Composite Reliability
CRM	Customer Relationship Management
DOI	Diffusion of Innovation
EAN	European Article Number
ECIS	European Conference on Information Systems
ECT	Expectation Confirmation Theory
E-Commerce	Electronic Commerce
EDEKA	Einkaufsgenossenschaft der Kolonialwarenhändler im Halleschen Torbezirk zu Berlin
E-Marketplace	Electronic Marketplace
HTMT	Heterotrait-Monotrait Ratio of Correlations
ICT	Information and communication technology
ICIS	International Conference on Information Systems
IDV	Individualism-Collectivism
IS	Information System

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ISSM	Information System Success Model
IVR	Indulgence versus Restraint
LOC	Locus of Control
LOORO	Local Owner-Operated Retail Outlet
LSP	Local Shopping Platform
LSS	Live-Stream Shopping
LTO	Long Term Orientation versus Short Term Normative Orientation
MAS	Masculinity-Femininity
ME	Micro Enterprise
MP	Mobile Payment
NFC	Near Field Communication
No.	Number
PAD Scale	Pleasure, Arousal and Dominance Scale
PC	Personal Computer
PDI	Power Distance
PLS	Partial least Square
PLS-SEM	Partial least Square Structural Equation Model
PoS	Point of Sale
QR-Code	Quick Response Code
REWE	Revisionsverband der Westkauf-Genossenschaften
RQ	Research Question
S-Commerce	Social Commerce
SEM	Structural Equation Model
SME	Small and Medium-Sized Enterprises
SMS	Short Message Service
S-O-R	Stimulus-Organism-Response
SST	Self-Service Technology
STD	Standard Deviation
TAM	Technology Acceptance Model

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TCT	Transaction Cost Economies
TOE	Technology-Organisation-Environment
TPB	Theory of Planned Behavior
TRA	Theory of Reasoned Action
TRI	Technology Readiness Index
TTAT	Technology Threat Avoidance Theory
UAI	Uncertainty Avoidance
UK	United Kingdom
US/USA	United States of America
UTAUT	Unified Theory of Acceptance and Use of Technology Cronbach's alpha
VIF	Variance Inflation Factor
WI	International Conference on Wirtschaftsinformatik
WTP	Willingness to Pay
WWS	Warenwirtschaftssystem

## List of Symbols

$\alpha$	Cronbach's Alpha (Structured Equation Modelling)
$\alpha$	Krippendorff's Coefficient (Content Analysis)
$f^2$	Effect Size
$R^2$	Coefficient of Determination
$r_H$	Holsti's Coefficient of Reliability
$Q^2$	Stone-Geisser

# **Chapter 1**

## **Introduction**

# 1 Introduction

## 1.1 A Brief History of the German Retail Industry

It has often been said that the only constant in retailing is change (Brown 1987, p. 5; Markin and Duncan 1981, p. 58). The transformation or change of the retail industry was often triggered by various innovations such as new retail formats, business models, services or technologies. One of the most discussed transformations was the introduction of the department stores (e.g., the department store "Tietz" in Berlin, "Messow & Waldschmidt" in Dresden, and "Karstadt" in Wismar) as a new retail format which led to a variety of changes and opportunities in the retail sector. For example, department stores introduced the concept of fixed prices for products, and customers were allowed to visit the department store without any obligation to buy. In the past, retailers renegotiated product prices with customers for each purchase, or it was common for customers to be allowed to enter a store only if they made a purchase. In addition, department stores have established new services like a refund policy if the customer wants to return the product (Busch-Petersen 2019, pp. 16-21).

After the Second World War, another rapid and profound change took place in the retail sector in Germany. The concept of self-service began to conquer and revolutionise German retail. With the introduction of self-service, customers increasingly used shopping carts and picked up products themselves from shelves. This change in customer behaviour gradually led to the extinction of the traditional store counter (Jessen 2019, p. 85). As a result, the new service concept not only changed customer behaviour as well as the appearance of retail stores. Retailers redesigned their stores to accommodate the new customer behaviour, but also faced new challenges, such as preventing shoplifting, furnishing the salesroom, or the type of product presentation.

Despite these challenges, a study from 1952 revealed that the self-service concept led to positive effects like higher sales at lower costs compared to retailers, which were still stuck to the store counter (Mattauch 2019, pp. 88-91). Moreover, the proliferation of supermarkets (e.g., REWE) helped spread the self-service concept in the 1960s. The increasing number of supermarkets also accelerated the concentration process in the food trade and laid the foundation for the discounter concept (e.g., Aldi, Lidl) as a new business model (Banken 2007, p. 133; Langer 2013, p. 260). The continuously increasing competition due to new retailers, new retail formats and the increasing number of offered products in the market transformed the retail market from a seller's to a buyer's market in the early 1960s. To remain competitive, retailers had to focus more on the needs of their customers (Blanken 2007, p. 126; Jessen 2019, p. 86).

The transformation produced more than just winners in the retail industry in the 1960s. While supermarkets are the winner of this transformation, small retailers and department stores are the losers (Jessen 2019, p. 85).

Some small and medium-sized enterprises (SMEs), like local owner-operated retail outlets (LOOROs), were able to modernize their stores or join purchasing cooperatives like Edeka or REWE. Nevertheless, SMEs suffered the most considerable losses, especially in the food sector, because of their lack of capital to modernize their stores accordingly. Not surprisingly, in 1957, 544.409 SMEs had to go out of business (Blanken 2007, p. 122; Jessen 2019, p. 85). The economic situation in Germany can also explain the enormous losses and increased bankruptcies: the golden years of the post-war boom were over (e.g., Households' pent-up demand for durable and expensive customer goods, caused by the war, has come to an end) (Jessen 2019, p. 84).

In line with this economic development, the pressure to rationalise increased in the German retail industry. New technologies were introduced to address this changing competitive environment (Cyriax 2019, p. 116). The Point of Sale (PoS) can be considered as an example for this rationalise process. The first electronic cash register systems were introduced in the 1960s. The first version of cash register systems were large, heavy machines, and the cashier had to press a lever on the side to enter product information. The first register cash systems displayed only the price information by using light bars but was the central basis for managers to receive up-to-date reports to increase the efficiency of the retail store. However, the first versions of cash register systems could not analyse article-based sales or provide precise inventory management information (Lux 2012, p. 64; Becker and Winkelmann 2019, p. 111-112). The introduction of the barcode or European Article Numbers (EAN) as a new technology quickly revolutionised the retail industry and increased the usefulness of cash register systems in combination with the in-house WWS in the 1970s and 1980s ("Warenwirtschaftssystem", WWS) (Becker and Winkelmann 2019, p. 111-112; Becker et al. 2007; p. 11). Instead of labelling each item by hand and typing the price into the system, just one scan was enough. The scanning process of products also speeded up the buying process for customers. Furthermore, managers received instant article-based sales analyses and inventory management information (Becker et al. 2007; p. 11; Lux 2012, p. 63-66; Becker and Winkelmann 2019, p. 111-112).

The digital transformation in the retail industry started with the emergence of the internet (Doherty and Ellis-Chadwick 2010, p. 944; Hagberg et al. 2017, p. 264; Peterson et al. 1997, p. 330; Sherman and Topol 1996, p. 108). The first online transactions by the so-called pure player, which can be characterised as retailers who only sell online and do not have a physical store, were conducted in the 1990s. Although many pioneers (pure players) did not survive the first e-commerce phase, the impact on the retail industry was immense (Reinartz 2019, p. 164). Since the first online transactions, an increasing number of accompanying technologies (e.g., broadband internet, smartphones, speech recognition, online marketing, SEO, cloud computing) have risen that have strengthened the development of e-commerce.



While some of these technologies may not reach their anticipated levels of power, the widespread adoption of emerging digital technologies unmistakably underscores the imperative for businesses to undergo digital transformation. Furthermore, these innovative digital tools have the potential to impact a company's cost structure. For instance, by substituting more expensive human resources with robots or virtual agents during service delivery (Verhoef et al. 2021, p. 2). And the emergence of new technologies and services is not limited to the digital world. New technologies (e.g. mobile payment, self-service technology, in-store navigation) in the analog world are also having a direct impact on retail store space (e.g., new measures are needed to prevent theft through the use of self-service technology.) and cost structures.

As a result of these emerging digital technologies, the competitive landscape is undergoing a profound transformation. Within the retail sector, these technologies have triggered new business models that disrupted the traditional competitive dynamics, redirecting sales towards relatively youthful digital retailer. Thus increases the challenge for retailers to stay competitive due to the increasing online competition with e-marketplaces and pure online retailer (e.g., Amazon, Zalando) (Dholakia et al. 2010, p. 87; Verhoef et al. 2021, p. 2). Moreover, also known as pure players, like esp. Amazon has already entered the stationary retail sector (e.g., Amazon Books Stores, Amazon Go Stores, Amazon Now and Whole Foods). These examples of online-to-offline ventures experiment with ambitious retail concepts (e.g., using sensors and other technology to identify and automatically charge customers). Like in the 1960s, many LOOROs thus need to be considered as threatened in their very existence. The market share of LOOROs has already declined from 26% in 2003 to 17.9% in 2015 in Germany (HDE 2018). Further several independent studies predict a further decline in revenue for LOOROs in Germany of 30% within the next four years (IFH Köln 2016a; Heinemann 2018) and about 50% within the next ten years (Siemssen 2018). As bad as both prognoses already are for local retailers, the "The Retail Scenario 2030" study predicts due to the increasing intense business and market transformation, a large number of store closings in German cities - up to 64,000 local retailers are expected to be at risk before 2030, without considering the coronavirus's impact (IFH Köln 2020b).

Especially during the corona pandemic, the retail sector suffered so bad because of its high share of communication-intensive interactions between the sales personnel and the customers, which became impossible because of the social distancing regulations and lacking use of online channels (Koren and Petro 2020; Coyle and Nguyen 2020). In numbers: The outbreak of the coronavirus decreased revenues by 2.8% in March and 6.5% in April 2020 for the whole retail sector. Even though the revenue has recovered by an increase of 13.9% in May 2020, this recovery is mostly driven by e-commerce and the catalogue business (+28.7%) (Statistisches Bundesamt 2020a; Statistisches Bundesamt 2020b). For LOOROs, revenue decreased strongly by 10.1% in March 2020, followed by a recovery of +3.5% in May 2020.

However, this increase did not compensate for the losses during the lockdown (Statistisches Bundesamt 2020b). Despite the support measurements on the European and national levels, like the pan-European guarantee fund for small and medium-sized European companies, many LOOROs face a tense financial situation (Koren and Peto 2020; Bundesfinanzministerium 2020).

This is alarming as studies show that most LOOROs have a very short survival time of only about eight weeks without or with only very low revenues (Bosio and Djankov 2020). Furthermore, a high number of store closings negatively affects the attractiveness of the city centres as shopping locations, triggering or intensifying a downward spiral of fewer shops and fewer shoppers, leading to less attractive high streets and less tax income for the cities, resulting in less financial resources to support and develop the city centres (Berman 2019, p. 76).

City centers that are losing their attractiveness due to high vacancy rates are increasing the migration of customers to the online world. However, the main reason for the increasing online retailing is the numerous advantages and the changing customer behavior. For instance, customer behaviour has also changed dramatically due to the permanent availability of online retail. Many customers are less likely to shop in stationary stores unless they expect an advantage (e.g., direct product availability, personal advice) (Hudetz and Heinnick 2019, p. 169). These developments are also confirmed by online sales figures worldwide. In 1998, the amount of money spent by online shoppers was predicted with 12 billion dollars by 2000 (Riggins 1999, p. 297). Meanwhile, retail e-commerce sales amounted to approximately 4.9 trillion US dollars worldwide (eMarketer 2022). Even online sales in Germany, with its sceptical attitude regarding e-commerce, continuously increased from almost one billion euros in 2000 to 99 billion euros in 2021 (Bundesverband E-Commerce und Versandhandel Deutschland 2022; Fentem 2022). With a view to the history of the retail industry described above, it is apparent that the digital transformation is causing the greatest changes to the retail industry.

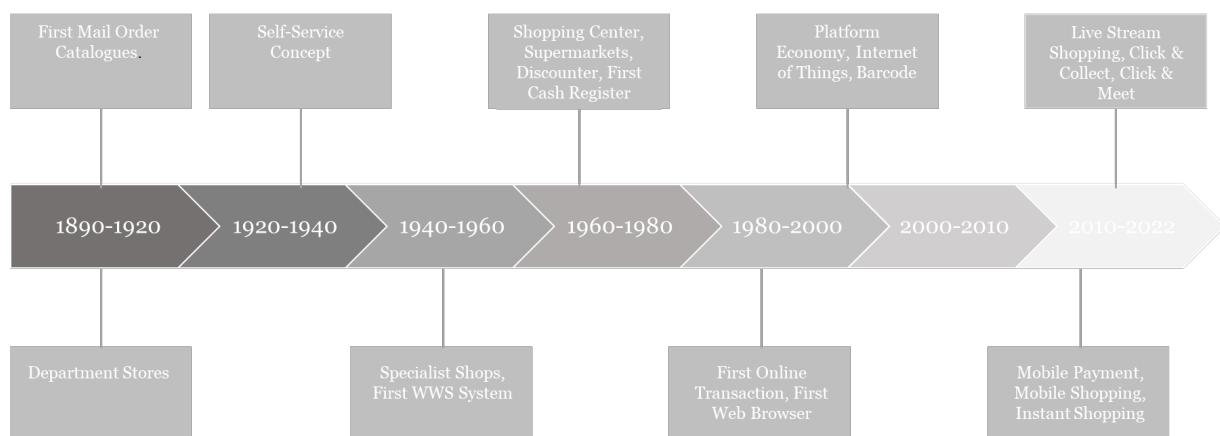


Figure 1: Overview of the Brief History of the German Retail Industry

## 1.2 The Digital Transformation

In general, the digitalisation transformation is the most ongoing transformation of society and business. For instance, it changes how people interact with each other and "turns upside down" existing business models, products, service concepts, structures, and processes (Nadkarni and Prügl 2021, p. 234). Previous research has identified three phases of digital transformation: digitisation, digitalisation, and digital transformation. Digitisation refers to the conversion of analogue information into a digital format, represented as binary code (zeros and ones), enabling computers to store, process, and transmit this data (e.g., from the vinyl record to the MP3) (Saarikko et al. 2020, p. 828). The digitalisation refers to applying IT or digital technologies to modify established business processes, business models or commercial offerings (Li et al. 2016, p. 516). Therefore, digitalisation provides insights into the rationale behind the technology's pertinence to a particular process or organisation, answering the 'why' question (Saarikko et al. 2020, p. 828). An example is the development of mobile communication channels that facilitate seamless interactions between customers and firms (Ramaswamy and Ozcan 2016, pp. 98-100). This transformation frequently necessitates the establishment of novel socio-technical frameworks incorporating digital artifacts that were previously unattainable without the presence of digital technologies (Dougherty and Dunne 2012, p 1). Most of the literature assumes that the digitisation and digitalisation are rather incremental phases, but both are necessary to reach the most pervasive phase of digital transformation.

Previous studies have defined digital transformation in various ways, and these definitions also had weaknesses. For instance, the study by Bekkhus (2016, p. 2) defines digital transformation as follows: "*Use of digital technologies to radically improve the company's performance*" or the study by Piccinini et al. (2015, p. 7): "*Digital transformation involves leveraging digital technologies to enable major business improvements, such as enhancing customer experience or creating new business models*" or by Karagiannaki et al. (2017, p. 2): "*The use of technology to radically improve performance or reach of enterprises*". All of those mentioned definition have a conflation between the concept and its impact. Other issues with the former definition can be related to the lack of clearness regarding used terms like digital technologies (e.g., Hess et al. 2016, p. 124; Liere-Netheler et al. 2018, p. 3928), digitalisation (e.g., Berhaus and Back 2016, p. 3; Haffke et al. 2016, p. 2) or the lack of parsimony (e.g., Hess et al. 2016, p. 124; Nwankpa and Roumani 2016, p. 2) in the definition. Therefore, we follow the definition by Vial et al. (2019) for digital transformation because they developed their definition on a systematic review of 28 studies: "*a process that aims to improve an entity by triggering significant changes to its properties through combinations of information, computing, communication, and connectivity technologies*" (Vial 2019, p.4).

From the business perspective, the digital transformation impacts the entire organisation and its ways of doing business (e.g., Amit and Zott 2001, p. 496; Kane et al. 2015, p. 9; Pagani and Pardo 2017, p. 1), extending beyond mere digitalisation, which involves changing simple organisational processes and tasks. It restructures processes to alter a firm's business logic (Li et al. 2018, p. 1130) or its value creation process (Gölzer and Fritzsche 2017, p. 1332). Moreover, digital transformation utilizes digital technologies to facilitate interactions with suppliers, customers, and competitors (Singh and Hess 2017, p. 5). Therefore, digitalisation also helps the retailers to save money and improve their processes (Pagani and Pardo 2017, p. 5; Verhoef et al. 2021, p. 3). Consequently, digital technologies can help companies leverage existing core competences or develop new ones to gain a competitive edge (Liu et al. 2011, p. 1730).

Thus, digital transformation as the most pervasive phase is closely tied to strategic alterations in the business model resulting from the adoption of digital technologies and services (e.g., Matt et al. 2015, pp. 1-5; Sebastian et al. 2017, p. 199; Verhoef et al. 2021, p. 3). From the perspective of retailers, it is advisable not to rush headlong into the digital transformation regarding their limited resources (see chapter two). Specifically, the phases of digitalisation and digital transformation should be strategically approached.

Against this context, this dissertation examines various opportunities for retailers' digital transformation in three empirical chapters. In the second, the dissertation investigates the retailer's attitude towards new technologies and services and its ability to exploit them (see chapter two). The second chapter's results help retailers understand which resources (e.g., tangible and intangible) support them in their digital transformation. Chapter two also helps municipal leaders and local governments to understand what tangible (e.g. available digital tool infrastructure) or intangible (e.g. staff expertise) resources are needed to improve retailers' attitudes and use of new technologies and services. In addition to tangible or intangible resources, the organisational structure (culture) plays also a role and is therefore discussed in conjunction with the findings from the empirical studies in chapter four together in chapter five.

Nevertheless, before retailers invest in new technologies and services or adapt their infrastructure accordingly, they must identify the technologies and services that best match their needs. Answering this question is a significant challenge, as retailers must also consider their customers' wishes. A certain degree of digital agility is therefore required from retailers at this point (e.g., Lee et al. 2015, p. 398). Therefore, the use of technology and services needs to be examined not only from the retailer's perspective. When retailers plan to offer such innovation to exploit these opportunities, they must understand what drives or inhibits the customers' acceptance of new technologies and services. Otherwise, introducing a new technology or service might fail because customers and retailers view new technologies and services differently (Van Hippel and Katz 2002, pp. 830-832; Patano and Viassone 2014, p.44).

Moreover, failure to adapt to these changes diminishes retailers' appeal to customers and increases the risk of being supplanted by more tech-savvy competitors. Hence, the third chapter of this dissertation investigates the customers' acceptance of new technologies and services (see chapter three).

Another strategic approach for retailers is developing a suitable digital growth strategy, which involves using digital platforms. Especially against the background that more and more companies enter into cooperations with partners or join platforms (Accenture 2018). Therefore, in the fourth chapter, this dissertation examines local shopping platforms as intermediaries between local retailers and customers and how they help local retailers with their digital transformation (see chapter four).

The fifth chapter uses the relevant findings from the previous chapters to derive strategic recommendations for action for retailers to exploit the opportunities offered by digital transformation to remain competitive. The fifth chapter also discusses future research aspects to help retailers further with their digital transformation.

The remainder of this dissertation is organised as follows: the following subsection 1.3 will introduce the research questions that will serve as our guiding framework throughout the core chapters: Chapter two, three, and four. Then, subsection 1.4 will provide definitions for the objects of this dissertation. Following this, subsection 1.5 outlines this dissertation structure and provides an overview of the associated publications. Subsection 1.6 will show the modifications and revisions made to the dissertations compared to their original published versions. Chapter two, three, and four constitute the core of this dissertation, each corresponding to a previously published paper(s). In these chapters, we will conclude each paper with a comprehensive summary and an examination of its relevance to the research questions posed in subsection 1.3. Chapter five serves as a synthesis of the essential findings and offers insights into potential future research endeavours. Furthermore, it presents strategic recommendations explicitly tailored for retailers, aimed at capitalising on the opportunities presented by the ongoing digital transformation process.

### 1.3 Research Questions

Although a body of literature analysed the inhibitors and drivers of SME adoption, the revealed result of SMEs could not be used to develop appropriate digitalisation strategies (Bollweg et al. 2019, p. 3). Moreover, literature regarding the technology adoption of LOOROs or small retailers is still scarce (Bollweg et al. 2019, p. 4, Pantano and Viassone, 2014, p. 3; Pantano and Vannucci 2019, p. 298). The reasons are manifold: First, former studies mainly focused on the technology adoption of SMEs with a bigger size (e.g., between 50-100 employees) and neglected LOOROs or small retailers (e.g., Ifinedo 2011; Ghobakhloo et al. 2011; Grandon and Pearson 2004; Rahayu and Day 2015). Second, in line with the focus on bigger retailers (e.g., production industry or retail chains), the low number of studies regarding LOOROs is due to the high diversity in the retail sector, which makes it challenging to obtain a sufficient number of LOOROs participating in the study (Bollweg et al. 2019, p. 2019). Third, in line with the research object of former studies, they mainly considered the Technology-Organisation-Environment Framework (TOE) or the Diffusion of Innovation (DOI) to explain the characteristics of the technology or of the firms and decision makers (e.g., Ifinedo 2011; Rahayu and Day 2015; Ramdani and Kawalek 2007; Scupola 2003; Scupola 2009; Sparling et al. 2007). Only two studies considered the value chain and explained the current usage of tools and how they shape the adoption decision of the retail owner (Bollweg et al. 2018, p. 3813; Bollweg et al. 2019, p. 8).

From a practical perspective, new innovative technologies and services also provide opportunities for retailers. For instance, retailers expect that new technologies will improve the employees' job performance or enhance the supply chain, reduce the management cost or costs of employees, and attract more customers (Pantano and Viassone 2014, p. 45). Therefore, the second chapter of this thesis will extend the existing literature with new insights regarding LOOROs' technology adoption as follows: First, the research model also consider the value chain to investigate how the current use of digital tools and applications influences the adoption decision of LOOROs. Second, former studies solely investigated environmental organisation factors (e.g., internal or external) as a single construct, like perceived pressure or available resources without considering further facets of these constructs (Bollweg et al. 2018; Bollweg et al. 2019; Kabanda and Brown 2017; Kurnia et al. 2015). Therefore, the research model in the second chapter provides further facets of environmental organisation factors as antecedes of the shop owner's attitude. Third, the second chapter will also improve the understanding of how environmental factors (e.g., changing customer demands or competitive challenges) will shape retailer attitudes regarding digitalisation because the LOORO owner is more influenced by external factors (Lieberman-Yaconi et al. 2010, p. 80; Kabanda and Brown, 2017, pp. 123-124; Kurnia et al., 2015, p. 1907; Rahayu and Day, 2015, pp. 143-146; Vize et al., 2013, pp. 11-12;). In order to address these aspects adequately, the second chapter will focus on an owner-centric examination on the individual level (Marcati et al. 2008, p. 1583).

This approach is in contrast to the former investigation because they are mainly based on technology-oriented research models or a mixture of behavioural and technology-oriented research models (e.g., Ifinedo 2011; Rahayu and Day; Sparling et al. 2007). Hence, the following research question shall be answered:

*RQ1.1: How do environmental factors influence the adoption of digital tools and applications by owners of LOOROs?*

In addition to the first research question, chapter two will address a second research question because LOOROs cannot combat the death of retail stores alone - implementing digital structures and processes besides its core business is hardly possible without external aid. Therefore, the findings of the environmental factors provide a starting ground for municipal leaders and local governments to design support structures. These support structures can help LOOROs utilise the digital transformation opportunities to stay competitive (Bollweg et al. 2019, p. 3). Hence, the following research question shall be answered:

*RQ1.2: How can retailers' digital transformation be supported?*

Since the market changed from a seller's to a buyer's market in the early 1960s, customers' demands have, in some cases, increased dramatically due to innovative technologies and services. For instance, today's customers expect a better product range, customer-oriented opening times, and more experience during their shopping trips (Hudetz and Heinick 2019, p. 169; Nadkarni and Prügl 2021, p. 242). Therefore, chapter three deals with the technology use from the customer's perspective. This does not mean that customers are still willing to put up with inconveniences for a good deal, such as long queues or little comfort on a cheap flight. However, retailers must be careful not to lose touch with their customers if they delay their digital transformation too long. New digital technologies and services are structurally changing consumer behaviour (Hoffman and Novak, 2017; Verhoef et al., 2017). For example, customers are shifting their purchases to online stores, and digital touchpoints thus play an important role that affects both online and offline sales (Kannan and Li, 2017). Furthermore, the use of these new technologies may become the norm, and retailers need to meet this norm to stay on the market. However, it is also essential not only to use new technologies for technology's sake. It is important to understand customer expectations because, as mentioned earlier, retailers and customers evaluate them from different points of view. The findings help to identify suitable technologies and services and to derive strategic implications. For example, which technologies are suitable for my customers or which customers need support for first-time use? In addition, from the retailers' standpoint, addressing this evolving customer behaviour with suitable technologies and services will also yield advantages, such as decreased waiting times at the check-outs facilitated by self-service technology, ultimately leading to a reduction in customer purchase abandonment (Adyen Retail 2018).

In the light of these developments, IS research has developed various models to understand the factors that drive customers' adoption or the continuous intention to use innovative technologies and services (e.g., Karahanna et al. 1999; Venkatesh et al. 2003). In particular, investigating customer technology acceptance has become one of the most mature domains of IS research due to the increasing number of new innovative technologies and services (e.g., Mobile Payment) (Venkatesh et al. 2012, p. 158; Kupfer et al. 2016, p. 1). Although a body of literature in the IS field investigated various innovative technologies and services (e.g., banking apps, mobile payment or self-service technology). Yet, there some questions are still unanswered. Therefore, chapter three contributes to the IS literature by investigating mobile payment (MP), self-service technology (SST) and live-stream shopping (LSS) in the following ways:

1. The field of MP adoption seems to be overresearched. The majority of studies in the field of MP only investigated, for instance, what ease of use or usefulness means at a generic level. But customers face competing payment methods that may prevent them from using MP. Thus, an innovation must be good in absolute terms and in comparison to existing payment options (Dahlberg et al. 2015, p. 271). Therefore, both MP studies compared MP to cash and card payment as one of the first studies in the field of MP (e.g., Boden et al. 2020). Moreover, many studies have solely investigated the drivers of MP without considering the inhibiting factors (e.g., Dahlberg et al. 2008, p. 4; Dahlberg et al. 2015, p. 274; Gerpott and Kornmeier 2009, p. 15-16). Except those studies incorporating a general perceived threat construct without considering further dimensions of MP adoption barriers (e.g., Di Pietro et al. 2015, p. 471; Khalilzadeh et al. 2017, p. 463; Liébana-Cabanillas et al. 2019, p. 270). In contrast, both MP studies in chapter three incorporate various dimensions of barriers instead of an overarching construct like perceived threat. For instance, both studies incorporate inhibiting dimensions of MP like data threat, financial threat or perceived switching cost to provide further insight regarding the avoidance behaviour of customers (see subchapters 3.1 and 3.2). In addition, studies primarily analysed the initial adoption of MP without considering how experienced users evaluate the drivers and inhibitors of MP (Zhou 2013, p. 1085). For instance, risks or benefits may exert different impacts in different adoption stages (Karahanna et al. 1999, p. 185). The third chapter will also address this aspect in the MP study in subchapter 3.1.

2. Also, a significant number of papers have been published in the field of SST adoption in general. In the context of retailing, SST is still underresearched. Former studies have already investigated the customers' evaluation of SST characteristics. But, most studies consider only an SST self-check-out or a self-scan system (e.g., Collier et al. 2015, p. 705; Dabholkar et al. 2003, p. 69; Elliott et al. 2012, p. 316; Fernandes and Pedroso 2017, p. 83). In contrast, the study in chapter three analysed the customer evaluation of a holistic system, which incorporated the process of self-scan and self-checkout (see subchapter 3.3).



This approach is in line with the increasing number of global scan-and-go systems in the retail industry (Scandit 2020). Furthermore, trust is usually formed between people, but it is also decisive for adoption of new technology. But it remains unclear in the field of SST adoption how organisations that offer self-checkout or self-scan services can gain customers' trust (Leung and Matanda 2013, p. 557). Therefore, the study in subchapter 3.3 incorporated trust in their research model as the first study in the field of SST adoption in the retail context (e.g., Fernandes and Pedroso 2017, p. 88; Leung and Matanda 2013, p. 557; Robertson et al. 2016, p. 91). In addition, a retail company's success depends on continued use rather than first-time use (Bhattacharjee 2001, p. 352). Despite the economic importance of long-term customer usage of new technologies, there is still a lack of research concerning SST in retail (Djelassi et al. 2018, p. 1). The study in the third chapter will address this lack by investigating the technology adaption of experienced and inexperienced users.

3. The last publication in chapter three analyses the next frontier of e-commerce: live-stream shopping (LSS) (Hu and Ming 2020, p. 1). LSS is a new phenomenon and is being scarcely investigated in the IS-field. LSS can be considered as a service offered by the retailer for their customers and as a technology offered by the provider (e.g., Bambuser, Livebuy) for the retailer. The majority of studies focused on China (e.g., Hu and Chaudhry 2020, p. 1031; Kang et al. 2021, p. 7). None of the former studies investigated the LSS usage in Europe, respectively in Germany. Therefore, chapter three's study is the first one that investigated LSS in Europe. In contrast, the study also contributes to the LSS literature regarding the understanding of the customer stickiness intention of LSS because the majority only investigated the intention to purchase, customer loyalty or engagement (e.g., Hsu et al. 2020, p. 4; Ma 2021, p. 8; Sun et al. 2019, p. 8). Moreover, the study also incorporated the communication aspect of LSS in the research model (see subchapter 3.4). None of the former studies in the field of LSS considered communication dimensions like two-way communication or synchronicity, which are most effective in contributing to communication in the online context (Ou et al. 2014, p. 218).

All four studies contribute to the IS research field and help the retailer to better understand driving and inhibiting factors behind the customer acceptance of innovative technologies and services. In particular, the studies also increase the understanding of customers' avoidance behaviour and how retailers need to address customers' uncertainty regarding new technologies and services. Moreover, two studies also provide insights on how retailers deal with customers with different experience levels regarding innovative technology like MP and SST. Hence, chapter three will answer the following research question:

*RQ2: What drives and inhibits the customer's adoption of technologies and services?*

When retailers plan to address the tension between changing customers' needs and rising competition, they still face internal and external adoption barriers (Karbanda and Brown 2017, p. 12, Reinartz 2019, p. 166). These barriers pose a significant challenge for many small retailers because the investments and skills required for the implementation of such services are often beyond the capabilities of retailers. However, affected municipalities and retailers have started to realise that a joint strategy could help. Therefore, retailers are not without any opportunities in this situation. For instance, retailers can seek synergies along the value chain with suppliers to overcome employee shortages (Alonso et al. 2017, pp. 69-72), or cooperate with competitors or intermediaries like local shopping platforms (LSPs) to expand their digital services. The fourth chapter thus looks at the extent to which platforms help retailers in their digital transformation.

Especially, LSPs gaining momentum in recent years in Germany and were interpreted as a response by local retailers, municipal leaders, and local governments to the adverse outcomes (e.g., loss in total revenue) of the e-commerce trend (Schade et al. 2018, p. 150). Local Shopping Platforms (LSPs) act as intermediaries and inter-organisational service hubs between LOOROs and their customers. For instance, Atalanta enables small and medium-sized stationary retailers to sell their products online via local Atalanta marketplaces (e.g. "OnlineCity Wuppertal" or "Einkaufen in Attendorn"). LSPs have many ties to the long tradition of e-marketplaces and e-intermediaries with one clear distinction: On large e-marketplaces, like Amazon or eBay, with blurring boundaries between Business-to-Business (B2B) and Business-to-Consumer (B2C) or regional or national restrictions (Standing et al. 2010, p. 41; Pan et al. 2002, p. 56). With the advent of LSPs, we see a counter-development of platforms that implement location-dependent self-restrictions into their business models. It is either a limitation to the cooperation with retailers from a certain area, the limitation of just doing business with customers from a certain area or both. LSPs use these location-dependent self-restrictions as their unique selling proposition (Bärsch et al. 2019, p. 606).

Regarding digital transformation, LSPs are also considered by governmental institutions and retail associations as knowledgeable partners for the digital transformation of local retailers (Hardaker 2022, p. 13). LSP provides an easy and low entrance for LOOROs and helps them to overcome their external and internal barriers (Sandberg and Håkansson 2014, p. 6; Stockdale and Standing 2004, p. 305). By doing so, LSPs serve as digital service providers and relieve LOOROs from the burden of building up their own digital infrastructures and hiring specially educated staff (Valenduc and Vendramin 2017, p. 130). LSPs also enable cooperation and shared services among competitors, allowing for synergy effects for the digital transformation of all participating retailers in the city centres. For example, LSPs can spread the development cost of the platform's infrastructure (IT, logistics) across the connected shops, avoiding the need for individual high investments (Huber et al. 2004, p. 3).

But it is still questionable if the services offered by LSPs are enough to sustain LOOROs' threatened core business, namely, their physical store. Many former studies predicted the failure of LSPs, criticising that they do not help LOOROs attract more customers to their stores, that they do not utilise the locational advantages of LOOROs as a unique selling proposition, and that they do not help generate higher revenues (Bärsch et al. 2019, p. 603; Digital Pioneers 2018). Moreover, LSPs seem to be problematic for LOOROs, as these seem to step into a self-reinforcing spiral of ubiquitous online price competition with significantly declining (online) sales prices when joining the platforms (Pan et al. 2002, p. 57; see also discussion in subchapter 5.2). It also remains unclear whether customers will (in the long-term) accept electronic marketplaces that are limited to offers from only local vendors or whether they will prefer global marketplaces with nearly unlimited offers like eBay and Amazon (Brynjolfsson et al. 2013). Today, the business model of LSPs still lacks proof of concept and is, therefore, an uncertain bet as a sustainable backbone for the digital transformation of LOOROs. Hence, the following research question shall be answered:

*RQ3.1: To what extent do local shopping platforms help retailers with their digital transformation?*

Furthermore, the coronavirus seems to be a game changer, fostering the willingness of LOORO owners to follow e-commerce trends more than ever. Recent studies show that many local retailers started digital services like click & collect, same day delivery, or coupons during the lockdown (IFH Köln 2020c). To offer these digital services, LOOROs often utilised intermediaries like Local Shopping Platforms (LSPs) as service providers or inter-organisational service hubs (Bärsch et al. 2019, p. 603). Hence, the following research question shall be answered:

*RQ3.2: To what extent has the coronavirus outbreak affected the development of local shopping platforms?*

Like German LOOROs, Chinese LOOROs have also faced a strong sales decrease, with store closures increasing due to changing customer behaviour and rapidly-growing online retail sales since 2014 (Deloitte 2017, p. 3). Moreover, Chinese LOOROs also lack resources (e.g., lack of online presence), and their online stores have not been successful (Zhuang 2013, p. 319; Sternquist et al. 2010, p. 372). However, the situation has changed since 2017. Chinese city centres have recorded a noticeable shift among young customers from online back to traditional shopping in physical stores, shopping malls and mono-brand retail stores. Even the Covid-19 pandemic has not changed this trend (Fung Business Intelligence 2018, p. 25 & p.111; Fung Business Intelligence 2021, p. 43; McKinsey 2019, pp. 4-9; McKinsey 2021, p. 45 & p. 143). One of the main drivers behind the comeback of Chinese LOOROs are local shopping platforms (LSP). For instance, LOOROs accounted for 89% of all retailers on the Chinese LSP Meituan (Fung Business Intelligence 2021, p. 43).

But why are Chinese LSPs so successful? Chinese LSPs enable the integration of online and offline touchpoints that increase the customer in-store experience (Yang et al. 2016, p. 295; McKinsey 2019, p. 4). These integrated touchpoints enable digital services like in-store self-check-out, the possibility of checking offline stock and personalised delivery options (e.g., same-day delivery). The Chinese case highlights that the location of LOOROs "is not dead" and is an essential aspect of the rising service competition between pure online players and LOOROs (Kim et al. 2017, p. 186). In contrast to the development in China, German LSPs do not utilise the locational advantages of LOOROs as a unique selling proposition (e.g., Delgado-de Miguel et al. 2019, p. 9; Schade et al. 2018, p. 155) or even LOOROs have still been reluctant to join a platform during the Covid-19 pandemic, and leave then as soon as the easing of the situation comes in sight (Appel and Hardaker 2021, p. 14).

Therefore, the third study in chapter three chose two countries representing two extremes regarding their digitalisation level of the retail market: China is setting the present and future standards for retail. Chinese companies are pioneering in developing, using and providing new digital technologies and services (Deloitte 2021; Hardaker and Zhang 2021, p. 1). Second, developments in the Chinese retail market also affect the scientific literature. For instance, the development of live-stream shopping in China has led to a new research stream and has highly relevant practical insights into the slow diffusion of live-stream shopping in European retail markets (Abrahamsson et al. 2022). Third, developments in the Chinese retail market not only affect the literature but were also implemented in foreign retail markets like in the US or Germany. Nonetheless, it has been demonstrated that neglecting cultural differences can lead to the downfall of these new services or systems (Fang et al. 2013, p. 208; Reuver et al. 2018, p. 131). This is because culture significantly influences how local customers assess and engage with services (Hardaker and Zhang 2021, p. 12; Zeithaml et al. 2018, p. 41). However, none of the former studies investigated how the countries' culture affects the service provision of platforms in different geographical areas in general. For this, we utilised Hofstede's cultural dimension as a theoretical lens to consider cultural differences.

Therefore, findings from the third study should explain if the offered services can be culturally explained and what German LSPs can learn from their Chinese counterpart. Hence, the following research question shall be answered:

*RQ3.3: What can German LSPs learn from Chinese LSPs regarding their location-dependent service offerings?*

## 1.4 Definition of the Research Objects

The primary focus of this dissertation is on retailers operating in Germany. Chapter two placed particular emphasis on LOOROs intention to use digital tools and applications. Drawing on criteria established through market research (Destatis 2022; IFH Köln and HDE 2021, p. 6; HDE 2010, p. 5) and Bollweg's dissertation (2018, p. 4), we delineated the characteristics of LOOROs as follows:

1. LOOROs have an existing physical sales area.
2. LOOROs owners have high involvement in the day-to-day operations.
3. LOOROs employ a maximum of nine employees.
4. LOOROs have an annual turnover between less than 500,000 euros and less than one million euros.
5. LOOROs are not part of a retail chain or franchise and have no more than three subsidiaries.
6. LOOROs mostly sold fast-moving consumer goods to private households (excluding motor vehicle retail and retail in fuel at petrol stations and pharmacies).
7. LOOROs have extensive and flexible opening hours in order to be able to serve the customer frequently at peak times properly.
8. LOOROs typically have a close customer relationship.

Not all these properties must meet simultaneously to characterize a LOORO as a LOORO.

In the third chapter, an examination was undertaken from the customer's perspective to gain a better understanding of the drivers and obstacles related to new technologies and services. These findings shed light on the factors that must be taken into account when introducing such technologies and services. Within this dissertation, the term 'customer' pertains to end consumers within the retail sector and does not encompass business-to-business clients. The implications drawn from the results are not specific to any particular type of retailer, such as supermarkets, clothing stores, electronics shops, furniture stores, hardware stores, drugstores, pharmacies, florists, or bakeries. The technologies and services under study can theoretically be adopted by all retailers in Germany.

In the fourth chapter, a comprehensive exploration was conducted into the phenomenon of local shopping platforms (LSPs). This involved a specific focus on the various types of LSPs and the services they provide. The objective was to evaluate the extent to which LSPs support retailers in their digital transformation endeavors. These platforms function as intermediaries and inter-organisational service hubs connecting LOOROs with their customers. Furthermore, LSPs distinguish themselves by incorporating self-imposed restrictions as their unique selling proposition in their business model.

These restrictions may encompass limiting collaboration with retailers from specific regions, exclusively conducting business with customers from designated areas, or implementing both of these limitations (Bärsch et al. 2019, p. 606). Typically, LSPs collaborate with a variety of LOOROs, including different types such as fashion stores, pharmacies, opticians, and retail chains such as REWE and Hagebau Baumarkt.

## 1.5 Thesis Structure and Publication Details

In accordance with the discussed subject areas, this cumulative dissertation is structured into five chapters. The first chapter introduces the topic and the main research questions. Chapter two investigates the retailers' technology adoption. The customer technology and service adoption will be analysed in chapter three. LSPs are investigated in chapter four. Chapter five concludes the dissertation with a discussion, strategic imperatives for the digital transformation and future research. The defined research question in chapters two to four is answered by the thematically assigned publication(s) (see Table 1).

Chapter two addresses *RQ1.1* and *RQ1.2* and are based on the publication by Bollweg, Bärtsch, Lackes, Siepermann and Weber (2021). The paper was published in the proceedings of the 24th international conference on business information systems 2021. This paper and the presented survey among 243 LOORO owners from 26 cities in Germany aimed to understand why the LOOROs are so hesitant regarding their digital transformation. For the analysis, the study applied a structural equation modelling approach and used the Stimulus-Organism-Response (S-O-R) model as a theoretical framework.

Chapter three addresses *RQ2* and are based on three published papers and an under-review paper in the research field of customer IS adoption.

The first study in chapter three by Bärtsch, Lackes, Siepermann and Wulfhorst was published in the proceedings of the 41<sup>st</sup> International Conference on Information Systems (ICIS) 2020. The paper explored the drivers and inhibitors of Mobile Payment (MP) adoption, respectively, the continuance intention, for inexperienced prospective adopters and experienced users. Moreover the paper also analysed MP compared to existing alternatives with cash and card payment. The Technology Threat Avoidance Theory (TTAT) and the DOI were used as the theoretical basis for the research model. For the analysis, 291 responses were collected with a survey and analysed with a structural equation modelling approach. The study also conducted a t-test to assess differences between the regression coefficients of the four models for inexperienced and experienced users. In the last step of the first paper in chapter three, a nonparametric permutation test was conducted with a bootstrapping with 5000 sub-samples to assess group-specific differences and observed heterogeneity in the sample. Additionally, we ran a power analysis with G\*Power for linear multiple regression models to calculate the achieved power of the model. In the study, we also controlled for a common method bias.

The second paper in chapter three by Aguirre Reid, Lackes, Siepermann and Wulfhorst was published at 21<sup>st</sup> international conference on perspective in business informatics research 2022. The study explored the drivers and inhibitors of MP adoption in Germany. By this, MP is compared to existing payment alternatives. The DOI, Theory of Reasoned Action (TRA) and Planned Behaviour (TPB) and the multidimensional nature of switching costs were used as the theoretical basis for the research model.

For the analysis, 227 responses were collected with a survey and analysed with a structural equation modelling approach. Moreover, the study also conducted a t-test to assess differences between the regression coefficients of the two models. Additionally, we controlled for a common method bias.

The third paper in chapter three by Aguirre Reid, Lackes, Siepermann and Vetter is under review in the the international review of retail, distribution and consumer research journal. It explored how trust, fun, and usefulness can attract inexperienced prospective adopters and experienced customers to use self-service technology (SST). For this, the study investigated the usage of an SST as a holistic system and considered trust in the SST technology for the first time. The Technology Acceptance Model (TAM), trust and fun were used as a theoretical framework for the research model. For the analysis, 273 responses were collected with a survey and analysed with a structural equation modelling approach. Moreover, the study also conducted a t-test to assess differences between the regression coefficients for inexperienced and experienced users. Additionally, we controlled for a common method bias.

The fourth paper in chapter three by Bärsch, Lackes and Siepermann was published in the proceedings of the 17<sup>th</sup> International Conference on Wirtschaftsinformatik (WI) 2022. As a first study, the study sheds light on live-stream shopping (LSS) in Europe, particularly Germany. It analysed the perceived value and the communication process between the retailer and the customer. The Perceived Value and Computer-Mediated Communication Interactivity Model (CMCIM) were used as a theoretical framework for the research model. For the analysis, 348 responses were collected with a survey and analysed with a structural equation modelling approach. Moreover, the study also conducted a nonparametric permutation test with a bootstrapping with 5000 sub-samples to assess group-specific differences and observed heterogeneity in the sample. Additionally, we controlled for a common method bias.

In detail, the *RQ3.1*, *RQ3.2* and *RQ3.3* will be answered by the sub-research questions in the three-assigned publication in chapter four.

Chapter four's first paper by Bärsch, Bollweg, Lackes, Siepermann, Weber and Wulfhorst 2019 was published in the proceedings of the 14<sup>th</sup> International Conference on Wirtschaftsinformatik (WI) 2019. In general, the first study focused on the existing types and offered services of LSPs. By doing so, the study analysed LSPs as local descendants of e-marketplaces and derived a functionality-based typology with the help of a structured content analysis. The content analysis investigated 27 LSPs in Germany, Switzerland, and the U.S. Furthermore, the study scrutinises how LSPs harness LOOROs' locational advantages.

The second paper by Bärsch, Bollweg, Weber, Wittemund and Wulfhorst was published in the proceedings of the 16<sup>th</sup> International Conference on Wirtschaftsinformatik (WI) 2021. In general, the second study analysed the development of existing types and offered services in the German LSP market.



By doing so, the second study assessed the current state of German LSPs with the help of a structured content analysis in 2020. The findings of 2020 will be compared with the previous study result. Moreover, the study extended the previous study of Bärsh (et al. 2019) and analysed if the platforms changed from a "Strictly Local Approach" to a "Scaling Local Approach". In addition, the second study also stressed the role of LSPs during the lockdown in Germany and investigated the impact of the coronavirus with a semi-structured telephone interview with 26 LPS providers.

The third paper in chapter four by Aguirre Reid, Lackes, Siepermann and Wulfhorst was published at the 21<sup>st</sup> international conference on perspective in business informatics research 2022. In general, the third study considered LSPs in China. By doing so, the third study assessed the current state of Chinese LSPs with the help of a structured content analysis in 2020. Moreover, the third study compared the results of platform types and offered services with the study results of Bärsh et al. (2021). In addition, the study used Hofstede's cultural dimension as a theoretical lens to explain the difference between the offered location-dependent service by Chinese and German LSPs.

Table 1 provides an overview of the underlying papers regarding the chapter and the four research questions.

Chapter and Addressed RQ	Authors	Paper Title	Publication Status
Chapter 2 <i>RQ1.1 &amp; RQ1.2</i>	Bollweg, Bärsch, Lackes, Siepermann and Weber 2021	The Digitalisation of Local Owner-Operated Retail Outlets: How environmental and organisational factors drive the use of digital tools and applications	24 <sup>th</sup> International Conference on Business Information Systems <b>[VHB-Jourqual 3: C]</b>
Chapter 3 <i>RQ2</i>	Bärsch, Lackes, Siepermann and Wulfhorst 2020	Nothing but Cash? Mobile Payment Acceptance in Germany	41 <sup>st</sup> International Conference on Information Systems <b>[VHB-Jourqual 3: A]</b>
	Aguirre Reid, Lackes, Siepermann and Wulfhorst 2022	Will Mobile Payment change Germans' love of Cash? A Comparative Analysis of Mobile Payment, Cash and Card Payment in Germany	21 <sup>st</sup> International Conference on Perspectives in Business Informatics Research <b>[VHB-Jourqual 3: C]</b>
	Aguirre Reid, Lackes, Siepermann and Vetter 2023	Is it all about Fun? Self-Service Technology Acceptance in Germany	Under Review for The International Review of Retail, Distribution and Consumer Research Journal <b>[VHB-Jourqual 3: C]</b>
	Bärsch, Lackes and Siepermann 2022	Live-Stream Shopping is Landing in Germany: An Analysis of the Stickiness Intention of German Customers	17 <sup>th</sup> International Conference on Wirtschaftsinformatik <b>[VHB-Jourqual 3: C]</b>
Chapter 4 <i>RQ3.1</i>	Bärsch, Bollweg, Lackes, Siepermann, Weber and Wulfhorst 2019	Local Shopping Platforms – Harnessing Locational Advantages for the Digital Transformation of Local Retail Outlets: A Content Analysis	14 <sup>th</sup> International Conference on Wirtschaftsinformatik <b>[VHB-Jourqual 3: C]</b>
Chapter 4 <i>RQ3.1 &amp; RQ3.2</i>	Bärsch, Bollweg, Weber, Wittemund and Wulfhorst 2021	Local Retail Under Fire: Local Shopping Platforms Revisited Pre and During the Corona Crisis	16 <sup>th</sup> International Conference on Wirtschaftsinformatik <b>[VHB-Jourqual 3: C]</b>
Chapter 4 <i>RQ3.3</i>	Aguirre Reid, Lackes, Siepermann and Wulfhorst 2022	Are we speaking the same language? An Analysis of German and Chinese Local Shopping Platforms	21 <sup>st</sup> International Conference on Perspectives in Business Informatics Research <b>[VHB-Jourqual 3: C]</b>

Table 1: Overview Published articles by Mr Aguirre Reid (Bärsch)

## 1.6 Adjustments and Modifications

In order to improve the readability of this dissertation, the following adjustments and modifications of the publications have been elaborated:

1. A continuous numbering of the sections, tables and figures were implemented.
2. The inline references to the sections, tables and figures were updated.
3. The overall reference style has been harmonised with the new MIS Quarterly style (<http://www.misq.org/manuscript-guidelines> under MISQ References Format).
4. The overall language has been harmonised to British English.
5. The wording has been harmonised (e.g., only customer).
6. The page numbers were added to the references, and the reference is arranged alphabetically.
7. The author adjusts some minor issues (e.g., grammar etc.) in all publications.
8. The introduction of the publication Bollweg et al. 2021 was used as an introduction for chapter two.
9. In the discussion session 2.2.1, the author answered the added research questions (*RQ1.2: How can retailers' digital transformation be supported?*), which were initially not in the paper of Bollweg et al. 2021. However, the *RQ1.2* can be answered with the analysed data.
10. The author discussed the managerial implications, limitations and future research of the paper Bollweg et al. 2021 in a separate subchapter (2.2.2, 2.2.3 and 2.2.4).
11. The author discussed each limitation and future research in chapter three of each assigned publication. However, the author added a more general discussion, limitations and future research of the studies in a subchapter (3.5.1, 3.5.2 and 3.5.3).
12. In chapter four, the author merged the introduction of the three LSPs studies into a single introduction because the studies have some similarities. However, we left each investigation's aim and importance in subchapters 4.2.1, 4.2.2 and 4.2.3.
13. In chapter four, the author also merged the functionalities and categories of LSPs, the theoretical background of LSPs and location-dependent services (4.1 and 4.2).
14. In chapter four, the author also provides a general discussion (4.4.1) and merges the studies' managerial implications, limitations and future research because of the similarities (4.4.2 and 4.4.3).
15. The author added all questionnaires in Germany and outer loadings/weights (in the case of formative constructs) of the studies in the appendix. Moreover, the author also translated the original questionnaire into English.

The objective of the changes is to make this dissertation easier to read and understand. The contents of all publications remained the same and have been supplemented by a framework dedicated to the research questions (*RQ1.1*, *RQ1.2*, *RQ2*, *RQ3.1*, *RQ3.2* and *RQ3.3*) of this dissertation.

**Chapter 2:**  
**Retailers Technology Adoption**

## 2 Retailers Technology Adoption<sup>1</sup>

The digital transformation of the retail industry creates enormous challenges for LOOROs, characterised by a small-sized store area, a restricted number of employees and a high degree of owner-involvement in the business operations (Bollweg et al. 2015, p.3). This enables a personal relationship between the shop owners and their customers and provides along with that a lot of advantages to sustain this relationship compared to online shops. However, despite these possible advantages, LOOROs seem not to be able to make use of it. LOOROs are pressured by the digital development of all their value chain partners (customers and suppliers) and by the competitive environment (Big-Box retail outlets, multichannel chain stores and pure online trade).

Furthermore, LOOROs have to realise that their most important value chain partner – the customer, is no longer satisfied with the current digital approach in traditional small shops (Pantano and Viassone 2014, pp. 43-44). Customers have already changed their shopping habits and do use more and more digital sales channels and services. For shopping, the customers expect the high level of convenience they are used to online also in local shops like those from LOOROs. Therefore, several independent studies recommend that LOOROs reposition their business models, focusing more on convenience and shopping experience as well as digital service offers for their customers (IFH Köln 2020c; Grewal et al. 2017, p. 2; Wiener et al. 2018, p. 24). Despite the recommendations to reposition the business models, the reluctance to transform their businesses stays high among LOOROs because of internal and external adoption barriers (e.g., financial constraints or lack of standards) (e.g., Vize et al. 2013, p. 916; Rahayu and Day 2015, p. 147; Kurnia et al. 2015, p. 8; Pantano and Vannucci 2019, p. 300). For the internal barriers, studies revealed that LOOROs face a shortage of available infrastructure (e.g., sufficient capacities for the topic of digitisation or the IT infrastructure does meet the requirements of digitisation), human resources (e.g., IT knowledge, lack of time, lack of training options, lack of support), or financial resources (e.g., uncertainty regarding the investment and the investment returns) (Bollweg et al. 2021, p. 4; Iacovou et al. 1995, p. 480; Kabanda and Brown 2017, p. 126; Mehrtens et al. 2001, p. 172; Rahayu and Day, p. 148). Being typical micro-enterprises (MEs) (Erosa 2009, pp. 2628-2629), their internal structure does not give them much room for manoeuvre. But also external barriers (e.g., lack of standards, industry, government, customer or suppliers pressing) are important and shape the retailers' decision to adopt or avoid new technologies (Kurnia et al. 2015, p. 7; Rahayu and Day 2015, p. 145.).

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<sup>1</sup> This chapter and the following subchapter 2.1 and 2.2 are based on Bollweg et al. (2021, pp.329–341).

Therefore, implementing digital structures and processes (digital administration, marketing, digital services and online shops) in the daily business operations is hardly possible without external aid. However, as mentioned, LOOROs are not without opportunities in this situation. Digital tools and applications like, for example, digital inventory management systems, additional online shopping channels, customer relationship management systems (CRM), or also marketing automation tools exist and could help LOOROs to overcome their inherent restrictions (Statista 2020a) and to regain competitive power.

Chapter two is structured as follows. First, the chapter presents the influencing factor of retailers' attitudes regarding digitalisation and the intention and current use of technologies. Then the applied methodology and the evaluation procedure are explained. Subsequently, the research model is analysed with a structural equation model (SEM). The research questions *RQ1.1* and *RQ1.2* will be answered in an interim conclusion (see subchapter 2.2).

## **2.1 The Digitalisation of Local Owner-Operated Retail Outlets: How environmental and organisational factors drive the use of digital tools and applications**

Despite the importance of LOOROs for the local economy or the attractiveness of the city centres, research with a clear focus on the technology adoption of LOOROs and small retails is still scarce. A reason could be the high diversity of the retail sector that hinders the study of a sufficient number of retailers to obtain significant results (Kurnia et al. 2015, p. 12). Against this background, the study aims at a better understanding of the reasons why retailer hesitate to digitalise their infrastructure and their business processes in the face of changing customer demands and competitive challenges. In particular, the acceptance and usage of digital tools and applications by LOOROs owner will be answered by the first research questions:

*RQ1: How do environmental factors influence the adoption of digital tools and applications by owners of LOOROs?*

The results of the first research question lay the foundation to enable municipal leaders and local governments to identify opportunities for action on how to help local retail to grow digitally and transform into multi-channel local commerce. Accordingly, the second research question shall be answered:

*RQ2: How can retailers' digital transformation be supported?*

### **SME Retail in Research**

To discuss the theoretical background a structured literature review was conducted. The reviewed papers and studies in the literature review were mainly identified through a keyword search with focus on the term "SME retail" as research on "ME" retailers is scarce. Most of the identified studies have classified "SME retailers" along the number of employees as a size indicator, like, e.g. a range from three to 80 employees (Mehrtens et al. 2001, p. 167; Rahayu and Day 2015, p. 147; Kabanda and Brown 20017, p. 124), as part of SME retail chains (Kurnia et al. 2015, p. 166) and others had a focus on single-location outlets (Amin and Hussin 2014, p. 5; Kabanda and Brown 2017, p. 123).

The reviewed studies had one feature in common: the unique role of owners / managers of the SME retailers. SMEs like LOOROs are mainly owned and operated in personal union. Subsequently, in SMEs a strategic decision is highly dependent on the owners. A positive attitude of the owners towards change creates an organisational environment that is open to innovation (Amin and Hussin 2014, p. 4). The structural lack of internal and external resources is another hallmark of SME retailers like LOOROs (Rahayu and Day 2015, p. 147). Reluctant implementation of new retail technologies also relies on scarce financial capital and the lack of technical know-how (Erosa 2009, pp. 2628-2629).



Moreover, many non-adopter SMEs do not have the requisite infrastructure and procedures to implement new technologies (Kabanda and Brown 2017, p. 129; Kurnia et al. 2015, p. 11).

### Internal and external influence factors

Innovation and technology acceptance processes' driving factors are mainly divided into two types: 1) internal and 2) external factors. The decision of a company to implement emerging innovations is greatly affected by internal and external variables based on innovation attributes: perceived benefits, organisational readiness and external pressure (Mehrtens et al. 2001, p. 166).

Previous studies examined further internal effects like the risk perception, advantages of IT use, the owner's perspective, the attitude and internal demand of the retailer but also external effects like competition, government or the society as factor for the adoption of new technologies (Erosa 2009, p. 2629; Kurnia et al. 2015, p. 11; Pantano and Viassone 2014, p. 46).

### Research Framework and Conceptual Model

Unlike big corporations, the owner is the primary decision-maker in ME like LOOROs, who decides on strategic issues alone. Hence, organisational factors can be seen – to a certain extent – as external factors. As a result, this paper focuses on an owner-centric examination on the individual level (Marcati et al. 2008, p. 1583). Therefore, this study research design will be based on the Stimulus-Organism-Response Model (S-O-R Model) (Kabanda and Brown 2017, p. 123; Kurnia et al. 2015, p. 4). Mehrabian and Russell's (1974) Stimulus-Organism-Response Model comes from the field of environmental psychology (Woodworth 1921, p. 244). The S-O-R model shows how environmental processes and changes, called stimuli (S), are perceived by an organism (O) and instigate (emotional) reactions of the organism called behavioural response (R) (see Figure 2).

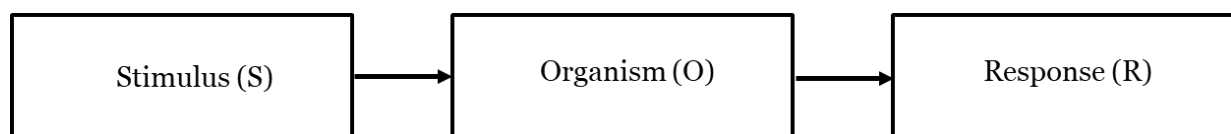


Figure 2: S-O-R Model

Based on the environmental psychology, three central aspects of emotional responses to the perception of the encountered environments are used: pleasure, arousal and dominance (the PAD-Scale). Thereby, pleasure is described purely in terms of positive or negative feelings, arousal as a feeling state that concerns mental activity, and dominance as a feeling of control and behaviour restrictions caused by physical or social barriers (Mehrabian and Russell's 1974, pp. 216-217).

However, the S-O-R framework is often criticized for its bipolar measurement when using the PAD-Scale (Kim et al. 2016, pp. 1-2), as it allows the joint occurrence of pleasant and unpleasant states (Westbrook 1987, p. 259). Thus, the current study uses a unipolar view linking the three dimensions to one joint model that is more suitable (Westbrook 1987, p. 259; Bakker et al. 2014, pp. 2-6). Pleasure, arousal, and dominance can be seen as affective (feeling), cognitive (thinking), and conative (acting) responses. Then, these responses can be unified as one joint measure for the organism (Bakker et al. 2014, pp. 2-6).

### **Conceptual Model**

In the Literature there seem to be two streams that can be distinguished: technology-centered theories focus on the characteristics of the technology itself and the diffusion of technology through different channels (Rogers 2010, p. 204). These theories are mainly used for understanding the technology adoption on an organisational level. In contrast, decision maker centered theories concentrate on the individual level to analyse human behaviour as well as its impact on the decision-making process regarding technology adoption and use (Ajzen 1991, p. 181; Davis et al. 1989, p. 984).

Looking deeper into the decision maker centered theories, the Theory of Reasoned Action (TRA) (Ajzen and Fishbein 1975) and its successor, the Theory of Planned Behavior (TPB) (Ajzen 1991) state that attitudes, control beliefs, and subjective norms influence behavioural intention, which in turn influences actual behaviour. Davis et al. (1989) applied TRA/TPB to the individual level of technology adoption behaviour in the well-known Technology Adoption Model (TAM).

The organism, namely the owner as the decision maker in LOOROs, is thus captured as the attitude towards a technology by the TRA/TBP concept and influences the intention to use it (Bakker et al. 2014, pp. 2-6). This thought process is triggered by internal and external stimuli. We assume that the perception of organisational resource availability and the perception of external pressures can both be seen as such environmental stimuli leading to the organism's emotional reactions (Vize et al. 2013, pp. 11-12). Finally, the usage of the technology is the stimulated organism's emotional response. For a better understanding, we interpret digitalisation as the use of digital tools and applications in one of the two following areas:

- (1) Front-end sales channels: all digitalisation efforts with direct customer touch points (Fließ and Kleinaltenkamp 2004, p. 396).
- (2) Administrative back-end: all digitalisation efforts are invisible to the customer (Enders and Jelassi 2000, pp. 544-446; Fließ and Kleinaltenkamp 2004, p. 396).

Figure 2 show how the digital tools and applications integrate into customer service delivery. Digital services and digital sales are front-office activities and exceed to the line of interaction, while digital marketing exceeds to the line of visibility. Digital administration comprises back office activities and exceeds to the line of internal interaction.

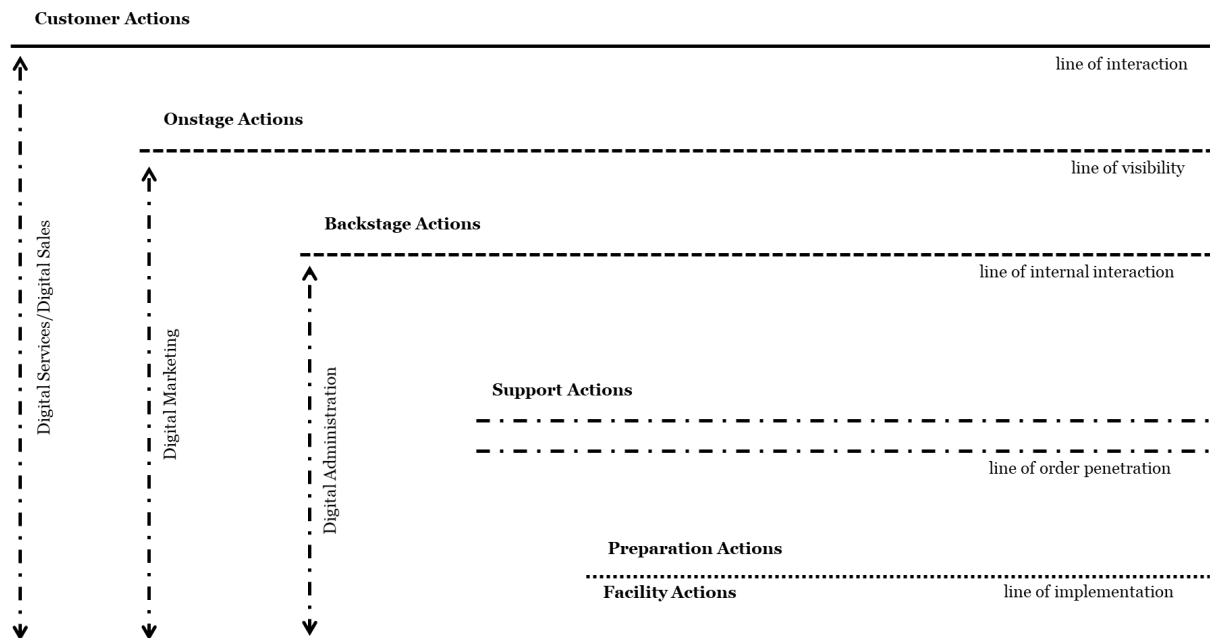


Figure 3: Service Blueprint including Digital Tools and Applications

## Hypotheses Development

Stimulus (S) to Organism (O): companies with restricted access to capital and inadequate infrastructure are hesitant to invest in digital tools and applications that could have a competitive edge. Resources can be categorized into tangible and intangible resources (Barney 1991, pp. 109-111). The availability of tangible organisational infrastructure is embodied in the availability of general resources, required capability and the IT infrastructure. Without the first two resources, emerging innovations are becoming increasingly difficult for companies like LOOROs to implement (Wang et al. 2011, pp. 52-55). This is particularly relevant for the IT infrastructure when digital tools and applications are adopted. We hypothesize the effect of the available infrastructure on the emotional reactions of an organism (O) (attitudes towards digitalisation) as follow:

*H1a: The availability of infrastructure has a positive influence on the attitude towards the digitalisation.*

The availability of intangible organisational human capital is reflected by employee expertise and motivation, which have been found to be the most influential success factors (Wang et al. 2011, pp. 47-48). Also, the innovative strength of employees plays an important role (Amin and Hussin 2014, p. 2).

Hence, we hypothesize:

*H1b: The availability of human resources has a positive influence on the attitude towards the digitalisation.*

Previous studies have shown that external environmental pressures have an impact on the adaption of technology among companies (Kurnia et al. 2015, p. 4; Amin and Hussin 2014, p. 4). Correspondingly, external pressures comprise influences from the near and far environment. The near (specific) environment is formed by influences of competitors and customers that exert a direct impact on the examined organisation. The perceived pressure of the competitors is demonstrated by the perception of own development relative to the development of the competitors, the perception of the need for own development to remain competitive and the perception of external pressure to remain competitive in digitalisation (Stapleton 2000, p. 28). Hence, we hypothesize:

*H2a: Perceived pressure from competitors towards digitalisation has a positive influence on the attitude towards digitalisation.*

The perceived pressure of the customers for LOOROs is represented by the perception of customer actions, the perception of customer pressure, the perception of customer expectations (Stapleton 2000, p. 28). We hypothesize:

*H2b: Perceived pressure from customers towards digitalisation has a positive influence on the attitude towards digitalisation.*

Government and socio-political situations characterize a far environment (Melville et al. 2004, p. 286). The perceived pressure of society is thus reflected by the perception of the general relevance of digitalisation, political pressure, and social expectations (Stapleton 2000, p. 28). We hypothesize:

*H2c: Perceived pressure from politics and society towards digitalisation has a positive influence on the attitude towards digitalisation.*

Organism (O) to Response (R): Attitudes as well as control beliefs and subjective norms do not directly influence actual behaviour, but rather influence behavioural intention (intention to use), which in turn influences actual behaviour (current use) (Ajzen 1991, pp. 181-182; Davis et al. 1989, p. 984).

We then use "Digitalisation Attitude" and "Intention to use Digitalisation." In accordance with the TRA/TPB/TAM theory, the Digitalisation Assessment, the ease of learning and the expected effectiveness of digitalisation (Ajzen 1991, p. 188) are considered for the measurement of the construct.

*H3: A positive attitude towards digitalisation has a positive influence on the intention to use digitalisation.*

Behavioural intentions are said to influence actual behaviour and therefore to have direct impact on the current use of digital tools and applications (Ajzen 1991, pp. 181-182; Davis et al. 1989, p. 984). Hence, we hypothesize:

*H4: A high intention to use digitalisation has a positive influence on its current use.*

We distinguish the back-end from the front-end operations to frame the umbrella term digitalisation into an operational interpretation (Enders and Jelassi 2000, pp. 544-546). All activities without customers contact points reflect the back-end operations of retailers. For the customers, these activities are unseen. We focus on front-end operations for customer contact points since the retail industry's digitalisation is very customer-oriented.

These activities are noticeable to customers and differ only in terms of their level of customer interaction (Fließ and Kleinaltenkamp 2004, pp. 396-397; Enders and Jelassi 2000, pp. 544-446). In detail, the following four areas are investigated (Enders and Jelassi 2000, pp. 544-446):

1. Digital administration includes all back-end operations, such as inbound and out-bound distribution or human resource management, without customer contact points and engagement.
2. Digital marketing covers all front-end marketing activities with customer touchpoints but without direct customer interaction.
3. Digital sales channels cover all front-end sales activities with customer touchpoints and low customer interaction.
4. Digital services cover all digital front-end services with customer touch points and high customer interaction.

We then divide the (behavioural) intentions ("Intention to Use") and the actual behaviour ("Current Use") towards digitalisation into the four dimensions administration, marketing, sales, and services. Thus, we extend the above stated hypotheses 3 and 4 as follows:

*H3a: A positive attitude towards digitalisation has a positive influence on the intention to use digital administration.*

*H3b: A positive attitude towards digitalisation has a positive influence on the intention to use digital marketing.*

*H3c: A positive attitude towards digitalisation has a positive influence on the intention to use digital sales channels and provide them to customers*

*H3d: A positive attitude towards digitalisation has a positive influence on the intention to use digital services*

*H4a: A high intention to use digital administration has a positive influence on the current use of digital administration tools and applications.*

*H4b: A high intention to use digital marketing has a positive influence on the current use of digital marketing.*

*H4c: A high intention to use digital sales channels has a positive influence on the current use of digital sales channels and their provision to customers.*

*H4d: A high intention to use digital services has a positive influence on the current use of digital services.*

The concentration on attitude, behavioural intention, and use alone is inadequate because it does not fully capture the mechanism of adoption in organisations. Prior knowledge and inexperience are major influences affecting the use of technology (Vize et al. 2013, p. 914; Oliveira and Martins 2010, p. 1347). This is consistent with several IS studies on technology adoption which show that perceived benefits of already used technologies are a main factor for the implementation of new technologies (Erosa 2009, p. 2629; Ramdani and Kawalek 2007, pp. 419-420).

We therefore postulate that prior experience with digital administration in the back-end will have a positive impact on use of digital marketing and on the front-end areas of digital sales channels and digital services. Subsequently, we state the following hypotheses:

*H5a: A high prior use of digital administration has a positive influence on current use of digital marketing.*

*H5b: A high prior use of digital marketing has a positive influence on current use of digital sales channels.*

*H5c: A high prior use of digital sales channels has a positive influence on current use of digital services.*

*H6a: A high prior use of digital administration has a positive influence on current use of digital services.*

*H6b: A high prior use of digital administration has a positive influence on current use of digital sales channels.*

*H6c: A high prior use of digital marketing has a positive influence on current use of digital services.*

The resulting research model is depicted in Figure 4.

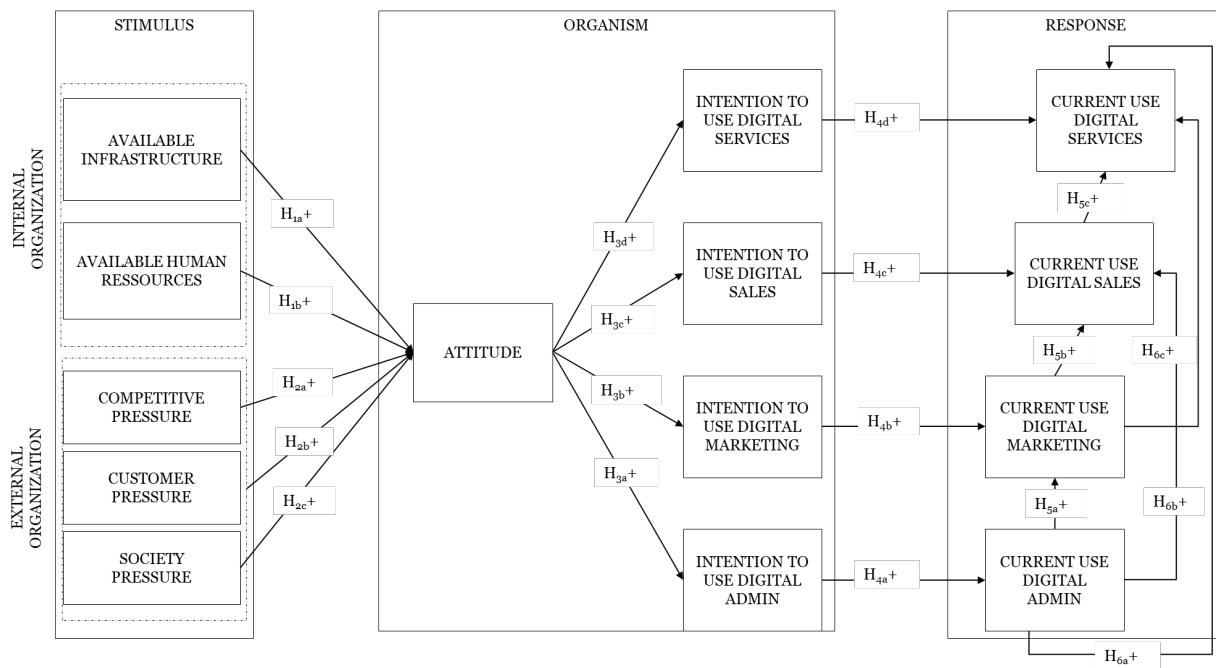


Figure 4: Research Model BIS 2021

## Analysis

### Data Collection

We surveyed shop owners of LOOROs in 26 cities in the area of South Westphalia in Germany between May and July 2016. Two opening questions and 34 individual questions were included in the questionnaire. Via an online form, 124 participants replied and 119 participants replied on paper. In total, the questionnaires of 243 LOOROs were received, including 223 questionnaires with full data sets (see Table 2 for the questions, mean and standard deviation and the Appendix A.1 for the German questions).

The descriptive analysis shows that 25% of the respondents sell clothing, fashion and shoes. Other important groups of retailers in this study are jewellers, stationery and office suppliers, each with a share of 9%. Drugstores, electronic shops, toys and art shops, curtains and photographic supply shops with each around 5%. Finally, the remaining 16% of the examined retailers that do not belong to any of the above-mentioned categories can be summarized as "other". For the analysis of the collected data and the evaluation of the research model, we used SmartPLS. Bootstrapping was done with 5,000 samples and 223 cases, determining the significance of weights, loadings and path coefficients.

Available Infrastructure: (Scale: Strongly Agree 1 - Strongly Disagree 5)		Mean	Standard Deviation
AI1	I have sufficient resources for the topic of digitization.	2.82	0.96
AI2	I have sufficient capacity for the topic of digitization.	2.94	0.98
AI3	My IT infrastructure does not meet the requirements of digitization.	3.00	1.12
Available Human Resources: (Scale: Strongly Agree 1 - Strongly Disagree 5)			
HR1	My employees are highly innovative when it comes to digitalization.	3.85	1.10
HR2	I have digital skills.	2.57	0.97
HR3	I am motivated in terms of digitalization.	2.43	1.04
Competitive Pressure: (Scale: Strongly Agree 1 - Strongly Disagree 5)			
PC1	Many of my online competitors are ahead of me in digitization.	2.68	1.14
PC2	I need to catch up with my online competitors in digitization.	2.84	1.12
PC3	There will be no getting around digitalization in the future.	1.66	0.71
Customer Pressure: (Scale: Strongly Agree 1 - Strongly Disagree 5)			
CP1	My customers explicitly ask me about digital offers.	4.05	1.09
CP2	I feel pressured to digitize.	3.24	1.21
CP3	Today, there is no way around digital offerings.	2.26	1.03
Society Pressure: (Scale: Strongly Agree 1 - Strongly Disagree 5)			
SP1	Digitalization will have a major impact on our lives in the future.	1.78	0.76
SP2	Bureaucracy and public administration are pushing me towards digitalization.	2.87	1.18
SP3	Those who do not digitize will be left behind.	2.38	1.08
Attitude: (Scale: Strongly Agree 1 - Strongly Disagree 5)			
A1	I think Digitalisation is good.	2.28	0.88
A2	I find digital applications easy to learn.	2.31	0.92
A3	I think that Digitalisation will be of great importance in the future.	2.43	0.99
A4	I think that Digitalisation increases my effectiveness.	2.47	1.03
Intention to Use Digital Services: (Scale: Very Strong 1 - None At All 5)			
ID1	Offerings of digital services/planning for future use.	3.43	1.32
ID2	Offer digital payment options/plan future use.	3.01	1.47
ID3	I intend to offer digital enabled delivery services in the future.	3.10	1.43
Intention to Use Digital Sales: (Scale: Very Strong 1 - None At All 5)			
IS1	Use of own online shop/ planning of future use.	3.20	1.54
IS2	Use of third-party platforms/planning for future use.	3.85	1.40
IS3	Use of in-store applications/planning for future use.	4.28	1.19
Intention to Use Digital Marketing: (Scale: Very Strong 1 - None At All 5)			
IM1	Use of digital communication channels/planning for future use.	2.81	1.42



IM2	Use of online advertising/planning for future use.	2.83	1.32
IM3	Software for marketing support/planning future use.	3.63	1.36
Intention to Use Digital Admin: (Scale: Very Strong 1 - None At All 5)			
IA1	Use of the Internet for processing .../ planning future use.	2.50	1.26
IA2	Use of application software .../ planning of future use.	2.23	1.23
IA3	Use of a digital inventory management system/planning for future use.	2.24	1.46
Current Use Digitale Services: (Scale: Very Often 1 - None At All 5)			
CD1	Offerings of digital services/ Current use.	3.85	1.28
CD2	Offers digital payment options/ Current use.	3.23	1.59
CD3	Offers from delivery services/ Current use.	3.34	1.49
Current Use Digital Sales: (Scale: Very Often 1 - None At All 5)			
CS1	Use of own online shop/ current use.	4.14	1.37
CS2	Use of third-party platforms/ Current use.	4.27	1.22
CS3	Use of in-store applications/ Current use.	4.71	0.82
Current Use Digital Marketing: (Scale: Very Often 1 - None At All 5)			
CM1	Use of digital communication channels/ Current use.	3.11	1.37
CM2	Use of online advertising/ Current use.	3.49	1.33
CM3	Software for marketing support/ Current use.	4.24	1.16
Current Use Digital Admin: (Scale: Very Often 1 - None At All 5)			
CA1	Use of the Internet for processing .../ Current use.	2.57	1.34
CA2	Use of application software .../ Current use.	2.26	1.32
CA3	Use of a digital merchandise management system/ Current use.	2.50	1.65

Table 2: BIS 2021 Survey: Questions, Mean and Standard Deviation

### Measurement Model

The research model has one reflective construct ("Attitude towards Digitalisation"). The other thirteen constructs are formative, so that different analyses are needed (Fornell and Bookstein 1982, p. 442). The significance of the constructs' indicators is assessed by their loadings (reflective constructs) or weights (formative constructs) and their t-values. Concerning the reflective construct, all indicators are significant (Jarvis et al. 2003, pp. 200-205). For the convergence criterion, the model fits to the convergence criteria AVE (Average Variance Extracted) is 0.576 (minimum > 0.5), the composite reliability is 0.844 (min. 0.7) and Cronbach's alpha is 0.751 (min. 0.7) (Chin 1998, p. 321; Cronbach 1951, p. 300; Fornell and Larcker 1981, p. 46; Hair et al. 2016, pp. 136-140) (see Appendix A2 for the Item loadings/Weights and Appendix A.3 for the Correlations of the Model BIS 2021).

The prediction validity  $Q^2$  is with 0.381 higher than the minimum of 0 (Hair et al. 2016, p. 212). For the formative constructs, the discriminant validity must be verified. The highest correlation between the latent variables with a value of 0.85 still matches the maximum of 0.9, so that the criterion is met (Hair et al. 2016, p. 170). In addition, multicollinearity between indicators of formative constructs is not permitted (Diamantopoulos et al. 2008, pp. 1210-1212).

The variance inflation factor (VIF) for all indicators  $i$ , with  $VIF_i = 1/(1 - R_i^2)$  is lower than five so that there is no sign for multicollinearity (Hair et al. 2016, pp. 164-167) (see Appendix A.2 Item Loading BIS 2021).

### Structural Model

The variance inflation factor of constructs with two or more influencing factors (here: Attitude,  $VIF=1.00$ ) is lower than the required level, which shows that there is no multicollinearity (Diamantopoulos et al. 2008, pp. 1210-1212). The value of  $R^2$  indicates a substantial (moderate, weak) influence if the value exceeds 0.67 (0.33; 0.19). Since endogenous and exogenous variables are collected together using one questionnaire (Tornikoski et al. 2017, p. 207), the survey is prone to common method bias. However, our VIF values indicate that the model is free from common method bias (Hair et al. 2016, pp. 164-167).

In sum, only two hypotheses are not significant. We could confirm 17 of 19 hypotheses of our research model, two of which could be confirmed at the 10%, one at the 5%, and 14 at the 1% level (see Figure 5). The explanatory power of the model ( $R^2$ ) is on a medium (Current Use of Digital Administration and Digital Marketing) to high level (Current Use of Digital Sales and Digital Services).

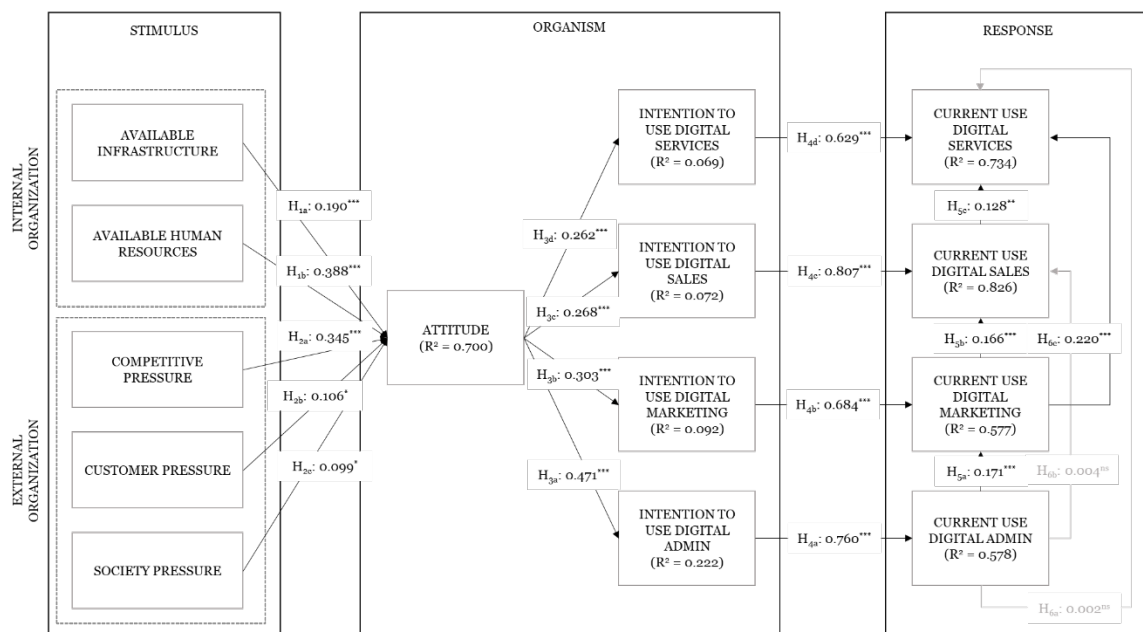


Figure 5: Model Results BIS 2021

## 2.2 Conclusion Chapter 2

### 2.2.1 Discussion

The second chapter aimed to shed light on the *RQ1.1: How do environmental factors influence the adoption of digital tools and applications by owners of LOOROs?* and the *RQ1.2: How can retailers' digital transformation be supported?* The "Available Organisational Infrastructures" and the "Available Human Resources" impact attitudes towards digitalisation with respect to internal organisational impact factors. Both hypotheses (H1a, H1b) were verified and proved to be extremely relevant. Specifically, this refers to the availability of human resources among all factors that have by far the most significant effect.

That means that employees drive innovation processes of LOOROs and influence the shop owners if they have enough competencies. Digital competencies (Available Human Resources) are a prerequisite for the adoption of technological innovations.

However, the descriptive results show only a medium availability. While only 11% of the respondents attribute innovativeness to their employees, at least 44% found their available human resources to have enough "competencies" and to be "motivated" to handle digitalisation (58%). The level of "infrastructural readiness" is even lower. Only about 30% of the respondents agreed or strongly agreed to have sufficient "infrastructural resources" to face the digitalisation challenge, to have sufficient "capacities", or to have a sufficient "IT-Infrastructure" for the challenges of the digitalisation. Obviously, LOOROs suffer from lack of internal resources.

External pressure is commonly found to be an adoption driver (Kurnia et al. 2015, p. 10; Mehrrens et al. 2001, p. 170) which is confirmed by our study. All examined factors show an impact on the attitudes towards digitalisation, particularly competitive pressure. Around 40% of respondents recognize their own digitalisation and feel a desire to keep up with competitors. In addition, the influence of customer pressure is small and of society pressure nearly negligible. The reason lies in the perception of customer demand. About 70% of all LOORO owners cannot report that their customers ask for digital offers and services. Many LOOROs seem to live in an "offline bubble". They only have customers who prefer the offline offer of LOOROs and the owners do not get in contact with other customers who prefer online offers. Obviously, LOOROs seem to be decoupled from their near and far environment (Bollweg et al. 2020, p. 12; Pantano 2014, p. 6; Parasuraman et al. 1998, p. 4). Interestingly, if LOOROs perceive direct pressure from customers or society, this positively influence their attitude towards digitalisation. The result is surprising, because former results revealed a negative relationship because pressure from policy usually comes from regulations that are often regarded as impositions (Bollweg et al. 2019).

However, the general attitude towards digitalisation, which concerns the organism of the model, is positive. Nearly 60% perceive digitalisation as being good and "easy to learn". While a positive attitude fosters all intentions to use digital tools and services, the highest effect is exerted on the intention to use digital administration tools. Because the intention to digitalise an activity significantly influences the use of digital tools (H4a-H4d), this in turn activates a domino effect from back office to front office activities to the line of customer interaction.

The use of digital administration tools encourages LOOROs to use digital marketing tools (H5a) which consecutively fosters the use of digital sales (H5b) and the provision of digital services (H5c, H6c). That means that in case the prerequisites for the operation of digital tools are given, this not only facilitates but fosters the usage of these tools. In more detail, the use of digital administration tools is prerequisite for the use of digital marketing tools and so on (Molla and Licker 2005, p. 888; Oliveira and Martins 2010, p. 1347).

However, the digitalisation of the administrative backend only influences its direct successors (H6a and H6b are not significant). That means that the digitalisation process of LOOROs seems to evolve from backend to frontend step by step and is not customer driven. If we have a deeper look at the intentions of LOOROs to digitalise, we can observe a medium level for the administrative stage (52% to 62%). Digital marketing activities are intended to use by 23% to 45%, digital sales by 8% to 28%, and digital services by 21% to 39%. Digital administration in the backend is used by more than half (54%) of the participants, while digital sales (8%), digital marketing and digital services (both mean: 25%) are rarely used.

Our findings indicate that LOOROs are facing a lack of available human resources and infrastructure and that they are facing a situation of insecurity. LOOROs seem to be holding and waiting for their digitalisation decision, not understanding whether or not their own usable technology is appropriate and in which technologies they should invest (Purvis et al. 1995, pp. 548-549). Surprisingly, they do not experience pressure from changing customer demands and thus do not see a need to respond to competitors' digitalisation efforts.

Regarding *RQ1.2: How can retailers' digital transformation be supported?* The results provide possible starting points for municipal leaders and local governments to support LOOROs digitalisation. First, municipal leaders and local governments should actively communicate and motivate LOOROs to transform their business model. But is essential to guide LOOROs because former studies revealed that LOOROs lack a digitalisation strategy and need an orientation (Bollweg et al. 2018, p. 3819). Especially, pressure from policy usually comes from regulations that are often regarded as impositions, which negatively impact the retailer's attitude regarding digitalisation (Bollweg et al. 2019, p. 20).

Second, it is vital to offer local support measures that help LOOROs overcome their internal and external barriers (Bollweg et al. 2018, p. 3819). In general, such local or federal support measures must have low entry barriers (e.g., low requirements, accessible language, and support infrastructure). Otherwise, LOOROs will refuse to invest time in a complex application process. Local cities should provide information about appropriate funding programs when they do not have the money to offer support measures. Moreover, the design of such local or federal support measures can address different aspects. For instance, the study's results revealed that the available infrastructure and human resources are important for retailer attitude and, therefore, the adoption of digital tools and applications. In line with the finding, support measures should enable LOOROs to invest in their infrastructure (e.g., financial support for their digital infrastructure) and their employees' IT education (or the owner himself) and motivation with courses (IT training) (Iacovou et al. 1995, p. 479; Ifinedo 2011, p. 18; Pantano and Viassone 2014, p. 47; Ramdani and Kawalek 2007, p. 423; Scupola 2003, p. 69). Especially a higher relevant IT experience can help LOOROs to decide which system to adopt from the wide range of offerings (Ifinedo 2011, p. 18; Ramdani and Kawalek 2007, p. 423). The findings also revealed that the administration is the starting point for LOOROs' Digitalisation and fosters further implementation. Therefore, local or federal support measures should help them identify compatible systems with their existing administration and internal processes and to implement them. Furthermore, municipal leaders and local governments can also hire a so-called "Kümmerer" or cities digital chief officer to coordinate the digitalisation project of LOOROs or third-party providers (e.g., local shopping platforms) to create synergies among various actors (Aguirre Reid et al. 2022, p. 12; Sparling et al. 2007, p. 1054).

Third, municipal leaders and local governments should foster cooperation or set up incentives such as financial rebates or reduced rates to motivate local retailers to participate on local platforms (Sparling et al. 2007, p. 1054; Osei et al. 2016, p. 410). Such platforms provide low entry barriers and help LOOROs to overcome their existing barriers and expand their digital service offering (Standing et al. 2010, p. 40). Moreover, LOOROs do not have to deal with questions about legal requirements because the platform is run by a third party (competitor cooperation) or the city itself with IT experts (Bollweg et al. 2018, p. 3819). It is also advisable for LOOROs to seek synergies with suppliers to overcome their employee shortage (Alonso and Bressan 2017, p. 70).

Fourth, many studies in the IS- adoption stream (e.g., MP, SST or LSS) have shown the necessity to communicate the potential advantages of adopting new technologies. This also holds for retailers adoption (Bollweg et al. 2017, p. 17; Ghobakhloo et al. 2011, p. 1254). However, pushing LOOROs into the digitisation of the administration, marketing, sales or services without telling them the risk of digitalisation will not break the reluctance. Therefore, it is also decisive to provide educational courses to sensitise owners of LOOROs about the risk and how to deal with it.

Fifth, the findings for competitive, customer and social pressure follow former studies that revealed that the external organisation positively affects the retailers' adoption decision (Bollweg et al. 2019, p. 19; Ghobakhloo et al. 2011, p. 1255; Ifinedo 2011, p. 18). Therefore, municipal leaders and local governments need to make owners of LOOROs aware of the needs and expectations of the customers. In particular, LOOROs need to understand the changing customer behaviour to successfully reconnect with their local customers. Moreover, it is also crucial that LOOROs gain a realistic perception of their online competitors to act accordingly. A starting ground would be educational programs about the development of the retail industry, what customers expect or which new services competitors introduce (Bollweg et al. 2019, p. 22).

### **2.2.2 Managerial Implications for LOOROs**

First of all, LOOROs need to be reconnected to their potential customers with regard to changing habits and the growing competition from the Internet and chain stores. Hence, for LOOROs to recover competitive strength, there is a need for an external (public or governmental) push to help the requisite internal turnaround. The owners/managers need to focus mainly on their understanding of the present and future customer demands and preferences to reconnect LOOROs with environmental developments (Grewal et al. 2017, pp. 4-5). Talking with and involving their employees might help with this as their competencies and motivation are one of the main drivers.

Second, the lack of employee expertise is one of the biggest resource problems. For example, LOOROs and their employees are inexperienced in using digital tools and applications. This lack of experience or knowledge hinders them from taking advantage of the opportunities offered by digital sales channels. Chambers of commerce and government can offer training tailored to the needs of LOOROs or their employees to overcome this digitalisation barrier. Through appropriate training, retailers can be effectively supported in learning how to use digital tools. With this knowledge, retailers can tap into new customers or markets to become more competitive. However, it is important that the entry barriers remain low at all times and do not overburden the retailers. Since many retailers usually run the business on their own. This type of support seems more promising than direct pressure on businesses. The direct digitization pressure already exerted by policymakers, e.g. through electronic point-of-sale systems, reduces the positive attitude toward digitization and thus also the LOOROs' intention to digitize.

Thirdly, even if it reduces LOOROs positive perception of digitalisation, forcing them to digitalise their back office is nonetheless a suitable approach. The administrative backend is the area with the highest use intentions and with the highest current use. Moreover, for subsequent digitalisation areas, it is the starting point.

Since legal regulations will control the administrative backend to some degree, policy can use the openness of LOOROs as a door opener for the digital support of their administrative backend. This could trigger a promising impulse and launch a chain reaction in all subsequent areas towards the use of digitalisation tools and applications.

### **2.2.3 Theoretical Implication**

Lastly, we also contribute to the technology adoption research by means of an examination of the internal and external influence factors of the technology adoption process of ME (like LOOROs with an adapted and improved S-O-R Model). The new model includes an improved organism (O) section (by integration of the TRA/TPB core constructs) as well as an extended response (R) section and a usage-related examination. It offers a toolbox for future research on ME of all kinds.

The subdivision of the analysis model into four digital business areas (Digital Administration, Digital Marketing, Digital Sales Channels and Digital Services) offers a systemized approach to frame the ambiguity of the umbrella term digitalisation into an operational understanding. Previous research usually neglected that companies or retailers already have adopted different digital tools which are used to support parts of their business processes. Yet, the degree to which digital tools are already used determines the readiness of a retailer to adopt other technologies (Rahayu and Day 2015, p. 148; Oliveira and Martins 2010, p. 1347).

### **2.2.4 Limitation and Future Research**

First of all, the limited sample size restricts the explanatory power of our results. Second, this analysis is focused on the German retail industry context. The findings should, however, not simply be generalized to other countries with their unique retail cultures. Thirdly, only owners of LOOROs, but not their customers, have been studied. Although several recent surveys have had a look at the customers' view in the cities we investigated, the connection between retailers and customers is only indirect. This could be improved in further studies by distributing questionnaires to owners and their customers at the same time. Lastly, the technologies (tools and applications for services, sales, marketing and administration) considered when measuring the "intention to use" and the "current use" are just one possible selection. The inclusion of other technologies could lead to different results. Future research would be valuable on at least the following aspects: (1) Technology: Systematic research is needed to identify promising technologies and digital tools and applications that can help LOOROs improve their businesses and win back competitive power. (2) Technology adoption under uncertainty: Further studies should investigate what other factors may impact the technology adoption process. Additionally, more research on how to overcome the high uncertainty of local shop owners is needed, as this uncertainty currently clearly hinders the technology adoption of LOOROs. (3) Public and governmental support: Research is needed on how the public can trigger the digital development of LOOROs.

# **Chapter 3:**

## **Customer Technology Adoption**



### 3 Customer Technology and Service Adoption

After chapter two was dedicated to the reasons why retailers hesitate to digitalise their infrastructure and their business processes. But it is not only important for retailers to digitalise their infrastructure and business processes – the focus on the customers is also critical in the face of changing customer demands and competitive challenges. In most scenarios, retailers are only adopters, and customers' needs are the primary driver of new technologies and services in the retail industry (Van Hippel and Katz 2002, pp. 830-832; Bonner 2010, p. 492). Accordingly, it is necessary to investigate customers' needs regarding adopting new technology or service because customers and retailers view new technologies and services differently (Patano and Viassone 2014, p. 44). Hence, chapter three will examine the drivers and inhibitors of customers' adoption of new technologies and services. The following paragraphs briefly introduce the investigated technologies and services for chapter three.

The mobile payment (MP) technologies have been investigated in two subchapters (see 3.1 and 3.2). In general, MP can be classified into remote payment systems and proximity payment systems (Gerpott and Meinert 2017, p. 2). For the underlying research, only the proximity payment systems (e.g., Bluetooth, NFC, QR-Code) are important because German customers pay via proximity payment in the retail sector. For instance, the majority of German customers pay with Near Field Communication (NFC) payment apps such as Apple Pay or Google Pay and with the QR payment app Payback pay (Deutsche Bundesbank 2022, p. 14). Former studies revealed the usefulness as a significant driver of MP usage for customers in other countries. But general benefits do not seem to have fostered the diffusion of MP in the past in Germany. Hence both studies in this dissertation investigated MP to existing alternatives with cash and card payment. Moreover, MP bears several risks that customers are well aware of (PWC 2019). However, many studies only focused on the benefits as drivers for the diffusion process of MP and scarcely investigated the disadvantages in the past (see subchapters 3.1 and 3.2).

The third chapter also investigated the so-called self-service technology (SST). SST is a mix which consists of the concept of self-checkout and self-scanning. "Self-checkout is an automated process that enables shoppers to scan, bag, and pay for their purchases without the need for a cashier" (Inman and Nikolova 2017, p. 4). Instead of a cashier, customers interact with a computer's user interface in the case of self-scanning checkout. Self-scan services, also called self-scanner, introduce devices with optical readers into the customer's shopping process. With these devices, customers can scan the product bar codes to display the product's price, type, or quantity and add the product to the basket (Djelassi et al. 2018, pp. 1-2; Marzocchi and Zammit 2006, pp. 655-656). Big retailers in Europe believe that a holistic system (e.g., scan-and-go technology) would make shopping in the retail store more attractive for customers (e.g., faster, easier, fun) and also has an economic value for retailers (e.g., less abandoned purchases)

(Adyen Retail 2018). Only a few retailers have begun to test or introduce technology incorporating both concepts (holistic system), mostly known as scan and go (e.g., Amazon Go or Walmart). In Germany, only a few retailers used this concept (e.g., Globus, Penny). Due to the newness of the scan-and-go concept or holistic system, most former studies focused on self-checkout or self-scanning technology. They identified drivers and barriers to customer acceptance (e.g., usefulness, fun). Interestingly, none of them considered trust as a decisive factor. In contrast to other European countries, the usage is still very low, and the advantages alone do not draw German customers towards SSTs (see subchapter 3.4). Therefore, chapter three investigated the driver and barriers of SST in Germany.

The coronavirus outbreak accelerated a new service in the German retail industry: Live stream shopping (LSS). "LSS is used to demonstrate how products are created and used, to show different perspectives of products, to answer customer questions in real time, and to organise live activities that entertain and encourage customers to buy on the spot" (Wongkitrungruenga and Assarut 2020, p. 543). Customers can watch the product demonstration on various social media channels (e.g., YouTube, Facebook, Instagram), Websites (e.g., Douglas, Media Markt) or platforms (e.g., Livebuy). LSS is booming in China or the US, and customers satisfy their informational, entertainment and social needs (Hu et al. 2020, p. 1). In Germany, LSS is still in its infancy. Therefore, the study in the third chapter also analysed the drivers and inhibitors of the new services concept to understand what customers need to stick to an LSS session.

Chapter three is structured as follows: In each subchapter, the investigated technology and service will be motivated. Then, the author explains the study's contribution in light of the existing literature. The basic research model with the investigated influencing factors and underlying theories will be introduced. A separate evaluation take place for each model. Subsequently, the applied methodology and the evaluation procedure are explained. The study-related research questions will be answered in the discussion session of each study. Finally, the practical implication, limitations and future research will be discussed for each study. Chapter three concludes with an interim conclusion to answer the research question *RQ2: What drives and inhibits the customer's adoption of technologies and services?* The interim conclusion also provides general managerial implications, limitations, and advice for future research (see subchapter 3.5).

### 3.1 Nothing but Cash? Mobile Payment Acceptance in Germany<sup>2</sup>

Although the idea of paying with mobile phones is more than 20 years old (e.g. via SMS) (Dahlberg et al. 2008, p. 1; Gerpott and Meinert 2017, p. 2), the current realization of MP using NFC is a rather new technical innovation. It is defined as a proximity payment system "where a mobile device is used to initiate, authorize and confirm an exchange of financial value in return for goods and services" (Kim et al. 2010, p. 310) that is either based on NFC or QR-code scanning. In the past few years, MP has enjoyed growing popularity in many countries. In stark contrast to the high adoption country China with an expected grow by 10% up to 577.4 million users (Cheung 2019), the adoption of MP in Germany is still in its infancy. By the end of 2019, less than 7 million German adults have used their mobile devices for mobile payment (Bretnall 2019). Reasons for the German reluctance are manifold. First and foremost, even after decades of card payment options, German customers still prefer paying daily shopping trips in cash: The majority of all transactions below 50 Euros are paid in cash, whereas only for transactions above 50 Euros, German customers tend to switch to card payments (Deutsche Bundesbank 2017, p. 28). Other reasons are that 60% of the German population believe that MP is not secure, 74% are worried that using MP discloses too much information about the user, and 41% perceive MP as being complicated for buying and paying (PWC 2019). In addition, the support of MP among retailers and bank institutes started only recently and therefore, five years later than, for example, in the US with Apple Pay (Apple 2014).

With several large retail chains (e.g., Aldi, Edeka, Netto) introducing MP apps, financial institutions providing MP apps (e.g., "Mobiles Bezahlen Sparkasse", "Deutsche Bank Mobile" or "Postbank Finanzassistenten"), and the introduction of Google Pay and Apple Pay in Germany in 2019 (Deutsche Bundesbank 2019) the diffusion of MP gained momentum. A slight predominance of cashless (48.6%) versus cash payments (48.3%) can now be observed (EHI Retail Institute 2019a) with an increased adoption of MP in Germany. The most used MP solution among German users is the QR code based app Payback Pay in the first place and the NFC-based app "Mobiles Bezahlen" in the second place. Although Google Pay and Apple Pay are the most well known MP solutions, their share among users is quite low with 5% and 6%, respectively, in comparison to Payback Pay with 12% (Deutsche Bundesbank 2019).

While 44.8% of the big retail chains plan to invest in MP infrastructure, small retailers in Germany are still hesitating (EHI Retail Institute 2019a). But obviously, the interaction between customers and retailers in terms of demand for MP among customers and the provision of terminals by retailers is a crucial factor. If the retailers hesitate to invest in the MP infrastructure, the customers will not adopt MP and vice versa (Guo and Bouwman 2016, p. 148).

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<sup>2</sup> This subchapter is based on Bärsch et al. (2020, pp. 1-17).

Therefore, many studies have investigated the acceptance of MP by users (see next section). In particular these studies focused on the benefits of MP and analysed their role as drivers for the diffusion process.

Although perceived usefulness has been reported as an important factor for the usage intentions (Dahlberg et al. 2015, p. 274), other factors must exert impact on the usage intention as the general benefits do not seem to have fostered the diffusion of MP very much in the past. In fact, customers are facing different competing and often established payment methods that may prevent people from using MP. Although previous research has mentioned the importance of comparative analyses of MP to existing alternatives (Dahlberg et al. 2015, p. 271), only a few studies took this into account. However, these studies either investigated MP in comparison to other payment methods at a generic level (Dahlberg and Öörni 2007, p. 1; Pham and Ho 2015, p. 169), the research design did not allow to assess statistical differences (Gerpott and Kornmeier 2009, pp. 15-16; Pham and Ho 2015, p. 169; Yang et al. 2012, p. 134), or focused on different MP alternatives and neglected real-world payment options (Liébana-Cabanillas et al. 2017, p. 892). Hence, this paper does not regard MP isolatedly but in relation to other existing payment methods that MP aims at replacing a share of. Particularly cash, as a tribute to German users, and card payment, as this is mainly targeted by MP, are used for comparison.

In addition to the competing payment methods, MP bears several risks that customers are well aware of (PWC 2019). But despite the important role of risk factors, many studies only focused on the benefits as drivers for the diffusion process of MP and scarcely investigated the disadvantages in the past (Dahlberg et al. 2008, p. 4; Dahlberg et al. 2015, p. 274; Gerpott and Kornmeier 2009, p. 15-16; Yang et al. 2015, p. 256). The reason for this lies in the preponderance of acceptance theories in the IS literature with very limited reliance on avoidance theories. However, this unilateral approach omits an important facet of acceptance and limits the explanatory power of such studies (Liang and Xue 2009, p. 74). In particular in the realm of financial applications, (perceived) risks and how people feel able to cope with those risks play an important role for the adoption. Therefore, this paper takes an explicit look at the threats of MP and their perception by users. For this, the Technology Threat Avoidance Theory (TTAT) is employed as the overall theory to reflect the negative side of technology.

However, risks as well as benefits may exert different impacts in different adoption stages. The usability of an innovation for example becomes less important once users have made enough experience with the innovation (Karahanna et al. 1999, p. 185). Hence, the factors leading to the adoption decision differ from those resulting in continuously using a technological innovation. As a company's success depends on the continued use rather than first-time use (Bhattacharjee 2001, p. 351; Chen and Li 2016, p. 1), it is not only important to know what drives people to adopt a technology but crucial to investigate what keeps them using the technology continuously. But the factors do not only differ, they become significant over time or lose their importance, in the worst case the same factor may have the opposite effect in the

post adoption stage compared to the pre adoption stage. For example, contactless card payment without PIN may be a benefit in the pre-adoption stage as it reduces complexity and increases usability.

But for the continuance usage it might be a barrier as in case of theft the snatcher can easily pay without knowing the PIN until the card is disabled. Therefore, it is necessary to investigate the factors for adoption and continuous usage. Neglecting post-adoption usage behaviour limits the empirical result to the first-time use and cannot capture the changing behaviour over time (Fazio and Zanna 1981, p. 175). However, previous research mostly focused on first-time and seldom on post adoption usage (Zhou 2013, p. 1085). In particular, except for Yang et al. (2012, p. 130) no previous MP study addressed both adoption stages simultaneously. They either focus on prospective adopters to analyse future usage intentions or on experienced users to investigate the continuous usage intentions. In contrast, this paper addresses both groups and compares the different roles of risks, neglected by Yang et al. (2012, p. 131), as well as benefits in comparison to established payment methods.

In sum, the following research questions shall be answered:

*RQ1: How do perceived advantages and risks of MP affect the acceptance among experienced users and inexperienced prospective adopters?*

*RQ2: How do perception and influence of advantages differ when compared to cash or card payment?*

*RQ3: How do perception and influence of advantages and risks differ among experienced users and inexperienced prospective adopters?*

In particular young people in the age of 18 to 34 are in the focus of our investigation. The reason is not only that this generation is the one who has to cope with MP most of its life time and that it has the highest penetration rate of smart phones (Statista 2019b) and uses MP most in comparison to other age groups (Bailey et al. 2017, p. 631; Di Pietro et al. 2015, p. 472; Liebana-Cabanillas et al. 2014, p. 465; Talwar et al. 2020, p. 7), but also that their adoption motives and the according influencing factors may differ due to different experience of life. While elder people already have experienced different shifts in technology and payment methods like card payment, younger people are used to the Internet and the associated risks. On the one hand, they are used to technology and should be aware of the different specific risks. On the other hand, they do not seem to care too much about the risks and for example regularly exhibit private information on social networks (Vodanovich et al. 2010, p. 712). Additionally, younger people are often said to be less thorough when it comes to financial actions than elder people (Dohmen et al. 2017, p. 114). Hence, risks may play a less important role for the younger generation.

## Literature Review

At first sight, the field of MP adoption seems to be overresearched. 31 papers investigated the influencing factors of MP usage behaviour. But after a closer inspection, the picture changes (see Table 3). Six of the papers are based on the TAM by Davis (1989) or one of its successive models (Unified Theory of Acceptance and Use of Technology UTAUT, UTAUT 2). Fourteen papers are based on a combination of TAM and DOI. Two papers are based on DOI alone (Johnson et al. 2018, p. 114; Mallat 2007, pp. 416-417), and two other papers complement the DOI with the Trust Model (Shao et al. 2019, p. 4) and the valence framework (Lu et al. 2011, p. 399), respectively. Seven papers use other theories or develop their own model. One of the UTAUT-based papers extends the basic theory with risk and trust aspects (Khalilzadeh et al. 2017, p. 463). See Table 1 for a summary of the related literature. That means that based on the underlying theoretical concept 19 papers only assume a positive goal to be attained for customers and focus solely on the positive characteristics of MP. Doing so, they do not intend to explain avoidance behaviour and therefore neglect inhibiting factors like disadvantages and risks associated with MP.

Eight of the eleven remaining papers included risk aspects into their research models (Chen and Li 2016, p. 2; Di Pietro et al. 2015, p. 471; Khalilzadeh et al. 2017, p. 463; Liébana-Cabanillas et al. 2019, p. 270; Lu et al. 2011, p. 396; Lu et al. 2016, p. 6; Shao et al. 2019, p. 4; Yang et al. 2015, p. 256;). Yang et al. (2015, p. 258) explicitly considered different risks (financial, privacy, performance, psychological, and time risks) but neglected the view on benefits. Lu et al. (2016, pp. 15-16) and Johnson et al. (2018, p. 120) focused on the privacy protection risk. Khalilzadeh et al. (2017, p. 472) incorporated performance and privacy risks into their model. Di Pietro et al. (2015, p. 471) and Liébana-Cabanillas et al. (2019, p. 272) employ only a general perception of risk aspects. Shao et al. (2019, p. 9) use financial losses and data security as items, similar to Chen and Li (2016, p. 12) who also use financial losses and fraud as items and Lu et al. (2011, p. 402) who uses an item looking at the perceived data security. But all three papers incorporate the risk items into reflective constructs so that the influence of each single risk cannot be numeralized.

<b>Paper</b>	<b>Objective</b>	<b>Basic Theory</b>	<b>Sample/ Country</b>	<b>Findings</b>
Bailey et al. 2017	Intention to use MP	TAM	240/ USA	Self-efficacy impacts perceived ease of use and perceived usefulness. Attitude affects intention to use
Dahlberg and Öörni 2007	Intention to change the use of MP and electronic invoicing	TAM / DOI	948/ Finland	Social norms, skills, trustworthiness, compatibility, and ease of use are important.
Di Pietro et al. 2015	Intention to use MP, focus on public transport	UTAUT / TAM / DOI	-/Italy	Intention to use is affected by the usefulness, ease of use, and security.
Gerpott and Kornmeier 2009	Intention to use MP	TAM	347/ Germany	Attitudinal constructs are significant antecedents of customers' behavioural intentions.
Goeke and Pousttchi 2010	Intention to use MP, focus on payment scenarios	TAM / DOI	1775/ Germany	Payment scenario and expressiveness are the most important determinants of usefulness and intention.
Johnson et al. 2018	Intention to use MP	DOI	270/USA	Intention to use is affected by relative advantages, visibility and ease of use.
Khalilzadeh et al. 2017	Intention to use, focus on the restaurant industry	Extended UTAUT	412/ USA	Strong evidence of the effects of risk, security, and trust on customers' intentions to use.
Kim et al. 2010	Intention to use MP	TAM / DOI	269/ Korea	Users with highly innovative characteristics and knowledge found m-payment easy to use.
Li et al. 2014	Intention to use NFC MP, focus on knowledge	TAM / DOI	337/ China	Compatibility, perceived ease of use, and knowledge affect intention to use.
Liébana-Cabanillas et al. 2014	Intention to use MP, focus on age	TAM / DOI	2012/ Spain	Differences between age groups, e.g. perceived usefulness is higher among young users.
Liébana-Cabanillas et al. 2015	Intention to use QR MP	TAM / DOI	168/ Spain	Attitude, subject norm, and personal innovativeness are important.
Liébana-Cabanillas et al. 2017	Comparative analysis of SMS and NFC MP intention	TAM / DOI	871/ Spain	Attitude, Social norm, perceived usefulness, and security are the most important variables for the usage intention.
Liébana-Cabanillas et al. 2018	Intention to use MP	TAM / DOI	191/ Spain	Usefulness and security variables have been found significant for the intention to use.
Lu et al. 2011	Intention to use of third-party MP	Valence Theory / DOI	961/ China	Customer's established trust in Internet payment services is likely to influence his or her initial trust.
Mallat 2007	Intention to use MP	DOI	46/ Finland	The relative advantages become more important in certain use situations.

Oliveira et al. 2016	Intention to use MP, focus on intention to recommend	UTAUT2 / DOI	301/ Portugal	Compatibility, performance exp., social influence have effects on intention and intention to recommend.
Pal et al. 2015	Intention to use NFC MP	TAM	270/-	People with high personal innovation and prior knowledge find the NFC payment system easy to use.
Pham and Ho 2015	Intention to use NFC MP	TAM / DOI	402/ Taiwan	Triability, compatibility, additional values, and Innovativeness contribute to the intention to adopt.
Ramos-de-Luna et al. 2015	Intention to use NFC MP	TAM / DOI	242/-	Compatibility, usefulness, and subject norms have the greatest impact on the intention to use.
Schierz et al. 2010	Intention to use MP	TAM / DOI	1447/ Germany	Perceived compatibility has the greatest impact on the intention to use MP services.
Slade et al. 2015	Intention to use proximity MP	UTAUT2	244/ UK	In both models, performance expectancy had the most significant influence on behavioural intention.
Teo et al. 2015	Intention to use, focus on convenience and transaction speed	UTAUT	194/ Malaysia	Effort expectancy and facilitating conditions were discovered to significantly influence Intention.
Yang et al. 2012	Intention to use MP from the pre- to post-adoption stage	TAM / DOI	639/ China	Behavioural beliefs, perceived risk and relative advantages are stronger for current users.
Yang et al. 2015	Intention to use MP, focus on risk dimensions	Value & Prospect Theory	310/ China	Performance-, financial-, and privacy risk were found to have strong negative effects on perc. value and intention.
Chen and Li 2016	Continuance intention of MP	IT continuance theory	243/ China	User satisfaction has a positive impact on continuance intention.
Liébana-Cabanillas et al. 2019	Continuance intention of NFC MP, focus on public transport	Adapted UTAUT	180/ Spain	Service quality, effort expectancy, and perceived risk are factors of the continuance intention
Lu et al. 2016	Continuance intention of MP, focus on culture	ECT / UTAUT	724/ China	Post-usage privacy protection and social influence beliefs drive user continuous intentions.
Shao et al. 2019	Continuance intention to use, focus on Trust and Gender	Trust Model / DOI	740/ China	Identifies gender as a significant contingency factor and its moderating effect in the trust formation process.
Talwar et al. 2020	Continuance intention of MP	ISSM / TCT / ECT	954/ India	Perceived Usefulness has a significant impact on the Continuance Intention of MP.
Zhou 2013	Continuance intention of MP	ISSM	200/ China	Trust, flow, and satisfaction predict intention.



Zhou 2014	Continuance intention of MP	ISSM / UTAUT	226/ China	Users build their trust in MP by transferring their trust from online payment to mobile payment.
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Table 3: Related Literature Mobile Payment

Chen and Li (2016, pp. 2-3), Liébana-Cabanillas et al. (2019, p. 271), Lu et al. (2016, p. 17), Shao et al. (2019, p. 7), Talwar et al. (2020, p. 4), Zhou (2013, p. 1089), and Zhou (2014, p. 940) look at the continuous intention to use MP but none of them compares the factors of continuance intention to the influencing factors of usage intentions of prospective users. In addition, only Liébana-Cabanillas et al. (2019, p. 270) investigate the most modern NFC-based version of MP. All other not TAM-based papers only use a vague general definition of MP without telling which underlying technology is considered. Among the TAM-based papers, eight papers focus on NFC (Khalilzadeh et al. 2017, p. 472; Li et al. 2014, p. 7; Liébana-Cabanillas et al. 2017, p. 898; Liébana-Cabanillas et al. 2018, p. 122; Pal et al. 2015, p. 15; Pham and Ho 2015, p. 169; Ramos-de-Luna et al. 2016, p. 301) and one paper on QR-code (Liébana-Cabanillas et al. 2015, p. 12).

Only one paper (Yang et al. 2012, pp. 135-136) looked at adoption intentions and continuance intentions in parallel. However, this paper did not consider inhibiting factors and only used a general definition of MP instead of NFC-based MP. Although previous research has shown the importance of comparative analyses of MP to existing alternatives (Dahlberg et al. 2015, p. 274), only two studies compared MP to other payment options (Dahlberg and Öörni 2007, p. 3; Liébana-Cabanillas et al. 2017, p. 898). Among these two, Dahlberg and Öörni (2007, p. 3) used only a general definition instead of NFC-based MP while Liébana-Cabanillas et al. (2017, p. 898) focused on the now outdated SMS-based MP.

In contrast to previous research, this paper therefore investigates drivers as well as inhibitors of the adoption and continuous usage intentions of the most modern NFC-based variant of MP. To the best of our knowledge, none of the previous studies used a similar comprehensive approach.

## Theoretical Framework and Hypotheses Development

### Adoption and Continuance Intention

In general, the literature concerning IS acceptance can be divided into two streams: Papers investigating the factors that lead to adoption in the so-called pre-adoption stage, and those focusing on the continuous usage in the post-adoption stage. For investigating the pre-adoption stage, two different families of theories are predominant: Papers based on Davis' (1989) TAM and its successors on the one side and those based on Rogers' (2010) DOI on the other side.

The TAM was initially developed to explain people's adoption behaviour of information technology in institutions. For this, its core focuses on the users, how they perceive an innovation as useful and easy to use and in which regard these perceptions influence the users' attitudes towards the innovation and finally the usage behaviour. TAM2 extended TAM by including subjective norm, voluntariness, gender and experience. Moreover, Venkatesh et al. (2003, p. 447/ 2012, p. 160) included the TAM in his comprehensive examination of eight prominent models and developed the UTAUT, respectively UTAUT2 model. Despite the increasing usage of the UTAUT model, researchers still use the TAM model to explain adoption due to its simplicity and very high explanatory power (Mathieson 1991, pp. 8-10, Venkatesh and Davis 2000, p. 186, Gentry and Calantone 2002, pp. 948-949).

But this simplicity is also the reason for much criticism (Lee et al. 2003, p. 766) as it neither structures the characteristics of a system in detail nor captures the whole picture of an innovation in terms of adoption inhibiting factors. Previous TAM and UTAUT based studies identified perceived usefulness (Liebana-Cabanillas et al. 2014 p. 471; Liebana-Cabanillas et al. 2017, p. 903; Liebana-Cabanillas et al. 2018, p. 128), perceived ease of use (Dahlberg and Öörni 2007, p. 8; Di Pietro et al. 2015, p. 475; Li et al. 2014, p. 10) and subjective norm (Schierz et al. 2010, p. 212; Ramos de Luna et al. 2019, p. 937), performance expectancy (Slade et al. 2015, pp. 220-221; Oliveira et al. 2016, p. 410), effort expectancy (Di Pietro et al. 2015, p. 475; Teo et al. 2015, p. 324), facilitating conditions (Teo et al. 2015, p. 324), and social influence (Slade et al. 2015, p. 221; Khalilzadeh et al. 2017, p. 468; Oliveira et al. 2016, p. 410) as significant factors for the adoption of MP.

In contrast to the user-centric view of the TAM, the DOI focuses on the adoption process of an innovation in a social group. Earlier studies adapted the characteristics of innovations and the situation of the market and refined a set of constructs that could be used to study individual technology acceptance (Moore and Benbasat 1991, pp. 194-195), namely compatibility, complexity, relative advantages, observability, and trialability (Rogers 2010, p. 233). Many studies support the predictive validity of these constructs. Particularly, in the field of MP, the significant impact of relative advantages (Mallat 2007, pp. 421-422) and complexity (Li et al. 2014, p. 10) as important determinants for MP adoption could be confirmed. These two constructs resemble the TAM constructs perceived advantages and perceived ease of use and therefore confirm their importance. Further studies show the importance of compatibility (Pham and Ho 2015, p. 167; Schierz et al. 2010, p. 214) for the adoption process while complexity (Mallat 2007, p. 423), trialability, and observability (Johnson et al. 2018, p. 117; Pham and Ho 2015, p. 167) are less investigated.

However, the initial decision for the innovation may not be durable (Bhattacharjee 2001, p. 352; Davis 1989, p. 334; Karahanna et al. 1999, p. 185) because other factors can play a more important role for the continuous usage of the innovation while the reasons for the first-time usage lose their significance (Karahanna et al. 1999, p. 185). Therefore, it is crucial to analyse people's post-adoption intentions.

For the analysis of the post-adoption stage, previous research only partly relies on TAM/UTAUT and DOI based theories. These theories are either used to extend other theories (Liebana-Cabanillas et al. 2019, p. 271; Lu et al. 2016, p. 4; Shao et al. 2019, p. 3; Zhou 2014, p. 940) or completely different theories are used. Theories used for the analysis of the post adoption stage are for example the IT continuance theory (Chen and Li 2016, p. 2), the expectation-confirmation theory (ECT) (Lu et al. 2016, p. 4; Talwar et al. 2020, p. 3), the information systems success model (ISSM) (Talwar et al. 2020, p. 1; Zhou 2013, p. 1086; Zhou 2014, p. 940), or transaction cost theory (TCT) (Talwar et al. 2020, p. 1). The ISSM argues that system and information quality affect the usage of the system and user satisfaction. The ECT postulates that user satisfaction is built when the user experience with the system conforms with the expectations that the user has from the system. The IT continuance model is based on the TAM and incorporates the ECT based constructs (dis)confirmation and satisfaction into it.

Not surprisingly, satisfaction with the system is a strong predictor for future usage (Chen and Li 2016, p. 7; Zhou 2013, p. 1089). Also perceived usefulness (relative advantages) is again a salient factor for post-adoption usage behaviour (Chen and Li 2016, p. 7; Lu et al. 2016, pp. 15-16; Talwar et al. 2020, p. 10). Moreover, flow is a significant factor for post-adoption usage (Zhou 2014, p. 943). However, some findings are still ambiguous among different studies like social influence (Karahanna et al. 1999, pp. 196-197; Lu et al. 2016, pp. 15-16; Schierz et al. 2010, p. 214; Thompson et al. 1994, p. 180; Yang et al. 2012, pp. 135-136;) or perceived risk (Chen and Li 2016, 7; Shao et al. 2019, p. 7; Yang et al. 2012 pp. 135-136).

Summing up, the perceived benefits of a system play an important role for the adoption as well as for the continuance intention to use the system. Therefore, this study also incorporates perceived advantages into the research model. Important key attributes of MP are the independence of location and time (Lu et al. 2011, p. 402; Pal et al. 2015, p. 19) or the perceived degrees of ease associated with MP as there is no need for a wallet for example (Slade et al. 2015, p. 214; Talwar et al. 2020, p. 9). However, such objective advantages are only one side of the "usefulness coin". People compare an innovation with existing alternatives so that an innovation does not only need to be good in absolute terms but also in relation to the competing options. The relative advantages defined as "the degree to which an innovation is perceived as better than the idea it supersedes" (Rogers 2010, p. 15) try to capture this thinking. Therefore, MP has to be compared with other payment options like card or cash payment with regard to effectiveness (Gerpott and Kornmeier 2009, p. 17; Moore and Benbasat 1991, p. 198), improved performance (Davis et al. 1989, p. 985), and more specifically to the payment context of the

improved overview of account movements (Deutsche Bundesbank 2017, p. 32; PWC 2019). Hence, we hypothesize:

*H<sub>1a</sub>: Relative and absolute advantages of MP with regard to cash and card payment positively influence the intention to use MP of prospective users.*

*H<sub>1b</sub>: Relative and absolute advantages of MP with regard to cash and card payment positively influence the continuance intention to use MP of experienced users.*

### **Technology Threat Avoidance Theory (TTAT)**

Several disadvantages and threats of MP are reported like phishing attacks (Yang et al. 2012, p. 141), data misuse (Bailey et al. 2017, p. 632; Lu et al. 2011, p. 402), malfunctions (Yang et al. 2015, p. 268), the dependency on the Internet (Gerpott and Kornmeier 2009, p. 18), or financial risks (Chen and Li 2016, p. 12; Shao et al. 2019, p. 9; Slade et al. 2015, pp. 214-215; Pham and Ho 2015 p. 169). Apart from malfunctions and the dependency on the Internet, these are serious risks harming the financial well-being of users so that they can easily refrain from using MP. Hence, for the analysis of adoption behaviour, such risks have to be considered. To do so, we employ the established TTAT which focuses on people's tendency to avoid risks (Liang and Xue 2009, p. 82). A long history of intellectual thought and major psychology theories posits that humans' motivational foundation is to seek pleasure and avoid pain (Freud 1915, p. 168; Pavlov 1927, p. 33; Skinner 1953, p. 171). However, being generally risk averse, people usually attach greater weights to negative factors like pain or losses than to positive ones like gains or joy (Kahneman and Tversky 1979, pp. 277-279). Therefore, the avoidance behaviour of people regarding risks of innovations should not be treated the same as the positive effects and benefits of their adoption. Instead, it is necessary to consider the differences between the positive (Carver and Scheier 1982, pp. 111-115) and negative (Carver 2006, pp. 105-106) feedback loops regarding the desired or undesired end state, respectively. Otherwise, inconsistent or even false findings would result (Liang and Xue 2009, p. 76).

The TTAT, initially developed to explain user behaviour concerning cybersecurity, intends to address this issue. It can be distinguished into the process and variance theory part. While the process theory part explains how people cope with threats, the variance theory part structures the key influencing factors for the different process steps. Concerning the process part, people go through two cognitive processes to determine their responses to a threat. After the emergence of a threat, an individual evaluates the potential negative consequences of the threat during the threat appraisal stage. Then, the coping appraisal is performed as a problem-focused and/or an emotion-focused coping approach. The former addresses the source of the threat by taking safeguarding measures like updating a password regularly. The latter creates a false perception of the environment without actually changing it like fatalism or helplessness.

Coming to the influencing factors in the variance theory part, the outcome of the threat appraisal is the perceived threat. It can be defined as the extent to which an individual perceives a situation as dangerous and can be measured by the difference between an individual's current state and an undesired end state. It is shaped by the perceived susceptibility, that means how likely an individual feels her/himself to be affected by the threat, and perceived severity, which depicts how grave the threat is regarded to be. Perceived avoidability is the result of the coping appraisal. It describes the individual's assessment of how well s/he is able to circumvent or handle the threat. This assessment depends on three factors. The perceived effectiveness of possible countermeasures, the perceived costs of the countermeasures, and the user's self-efficacy that means her/his confidence to execute the measure correctly. Both, perceived threat and perceived avoidability are weighted against each other and shape the coping process, i.e. the emotional reaction to the assessed threat situation (emotion-focused coping approach) and the individual's motivation to decide on countermeasures and their execution (problem-focused coping approach) as the final threat avoidance behaviour. Because different people rarely have the same degree of responsiveness to a given threat, also risk tolerance and social influence are considered as influencing factors (Liang and Xue 2009, pp. 76-84).

As mentioned above, MP bears several risks for users which shape the threat appraisal. In general, three categories have been proven to be the most substantial facets of perceived risks and the most salient causes leading to reduced adoption (Featherman and Pavlou 2003, p. 453): data threat, performance threat, and financial threat. Data threat affects the privacy of the MP user and the protection of her/his private data. It is defined as the "potential loss of control over personal information, such as when information about you is used without your knowledge or permission" (Featherman and Pavlou 2003, p. 455). Data threat accrues from hacker attacks; the general management of private data, and the security of the paying process become manifest in the loss of control of data (Bailey et al. 2017; p. 632; Lu et al. 2011, p. 402; PWC 2019; Slade et al. 2015, pp. 214-215). In particular in the financial context of MP, loss of private data can subsequently result in a financial threat, i.e. the potential monetary loss that results from unauthorized transactions. Lastly, performance problems can reduce people's intention to use MP. In general, performance threat is "the possibility that the product/service will not function as expected or not provide the desired benefits" (Grewal et al. 199, p. 145). Concerning MP, the performance threat comprises concerns that MP apps do not run properly, that the payment process is incorrect, or that the MP is not available due to unavailable Internet connection etc. (Gerpott and Kornmeier 2009, p. 18). All three threats are antecedents for the general construct perceived threat that reflects the uncertainty or adverse consequences of engaging in MP. The perception of threats usually reduces people's willingness to use an innovation. This holds for prospective users (Liébana-Cabanillas et al. 2019, p. 274) as well as experienced users (Yang et al. 2012, pp. 135-136).

However, experienced users may regard the various risks differently than prospective, inexperienced users. Inexperienced users can only rely on reports about MP so that all specific risks will impact their general risk perception. Experienced users in contrast, have already used MP so that they can better judge the relevance of each risk. As the financial risk strikes unfrequently, there will hardly be a difference between prospective and experienced users. Concerning the data threat, experienced users have already submitted their data to the MP system. Hence, using MP more frequently will not increase the data risk so that the data threat will most probably become less significant to them. Lastly, only experienced users can objectively judge the performance threat of MP. On the one hand, this mainly depends on the individual experience which can be positive or negative. On the other hand, experienced users are better aware of problems with Internet connections or power supply. Therefore, we expect that for experienced users, performance threat plays a more important role than for inexperienced users. As a result, we hypothesize:

*H<sub>2a</sub>: Data threat positively influences the general threat perception of prospective users.*

*H<sub>2b</sub>: Data threat has no impact on the general threat perception of experienced users.*

*H<sub>3a</sub>: Performance threat positively influences the general threat perception of prospective users.*

*H<sub>3b</sub>: Performance threat positively influences the general threat perception of experienced users to a greater extent than of prospective users.*

*H<sub>4a</sub>: Financial threat positively influences the general threat perception of prospective users.*

*H<sub>4b</sub>: Financial threat positively influences the general threat perception of experienced users.*

*H<sub>5a</sub>: Perceived threat negatively influences the intention to use MP of prospective users.*

*H<sub>5b</sub>: Perceived threat negatively influences the continuance intention to use MP of experienced users.*

As mentioned above, the coping appraisal is composed of the perceived effectiveness of possible countermeasures, the perceived costs of the countermeasures, and the user's self-efficacy. While in the original TTAT coping appraisal refers to the assessment of being able to cope with the specific threat of malicious software, in the context of MP this specific view seems not appropriate. MP bears, as described above, several risks. An orientation to the original TTAT would therefore require appraising the coping mechanisms for all the different threats but each assessment could be different. Because of that, we transfer the idea of coping appraisal to the usage of MP itself, that means if individuals feel competent enough to cope with the usage of MP (Bhattacharjee et al. 2008, p. 19).

In particular, self-efficacy has been proven to be a significant predictor for intention to use (Agarwal and Karahanna 2000; p. 676; Bailey et al. 2017, p. 634; Bandura 1977, p. 192). This also holds for MP but only as an antecedent (Bailey et al. 2017, p. 634; Khalilzadeh et al. 2017, p. 468). In general, if people feel confident in using MP without difficulties in the paying process, they will be more inclined to use MP than if they fear to make mistakes and to be not able to pay with MP. However, experienced users have already used MP and therefore know how to use it and that they are able to do so. Due to successful MP usage, their self-efficacy is confirmed and therefore irrelevant for the future usage. Hence, we hypothesize:

*H<sub>6a</sub>: Self-Efficacy positively influences the intention to use MP of prospective users.*

*H<sub>6b</sub>: Self-Efficacy has no effect on the continuance intention to use MP of experienced users.*

With this different interpretation of coping appraisal, the perceived effectiveness of possible countermeasures and their perceived related costs are obsolete because using MP neither requires countermeasures nor it does evoke additional costs.

Like many other models, also TTAT employs the concept of social influence as an influencing factor for coping with threats. It is defined as "the extent to which users perceive that important others (e.g. family and friends) believe they should use a particular technology" (Venkatesh et al. 2012, p. 159). The rationale behind this concept is that individuals are embedded in a social group and orientate to the behaviour and expectations of other group members. Predominant opinions of group members could support or hinder the decision to use an innovation. Therefore, social influence plays an important role for the adoption of MP (Lu et al. 2016, p. 15; Liébana-Cabanillas et al. 2015, p. 12; Liébana-Cabanillas et al. 2017, p. 903; Liébana-Cabanillas et al. 2018, p. 125; Oliveira et al. 2016, p. 410; Slade et al. 2015, p. 220). However, once people have experienced an innovation, they can judge the innovation from personal direct experience if it is useful and suits their habits. While for fashion goods the influence of peers remains high, it decreases the more the utility factor of the innovation prevalent (Delre et al. 2007, p. 199). For MP, this means that prospective users may orientate to the opinion of their peers, but experienced users base their decision to use MP on their personal assessment instead. As a result, we hypothesize:

*H<sub>7a</sub>: Social influence positively influences the intention to use MP of prospective users.*

*H<sub>7b</sub>: Social influence has no effect on the continuance intention to use MP of experienced users.*

The resulting research model is depicted in Figure 6.

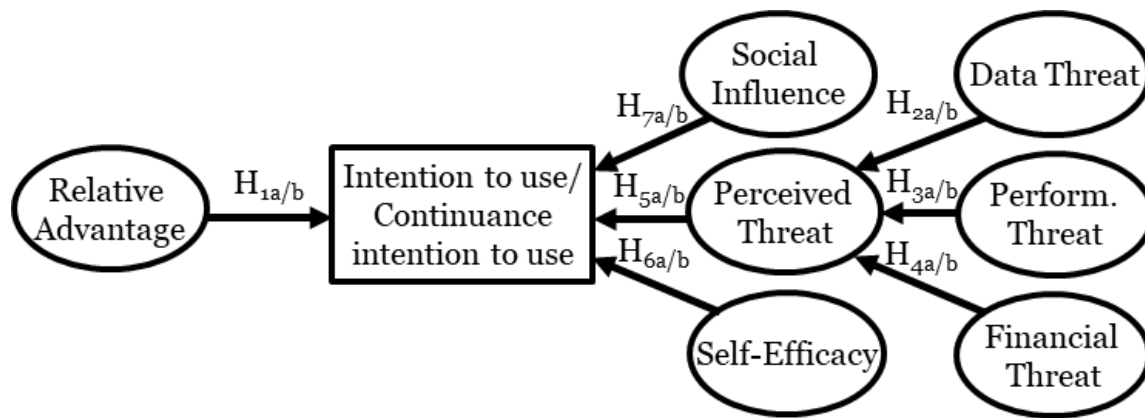


Figure 6: Research Model ICIS 2020

## Method

### Data Collection

Our target population comprised inexperienced and experienced users in Germany. The standardised survey started with an introduction of the objective of the study (see Appendix B.1 Survey ICIS 2020). In line with the actual MP usage in Germany (Deutsche Bundesbank 2019, p. 44), we considered MP as a proximity payment method (NFC and QR code) but did not limit the survey to a special MP variant. The first part of the survey collected data on the exogenous variables and MP adoption, respectively, continuance intention. The second part was focused on demographic variables about users' experience, gender, age, and the current mobile system software. Additionally, we conducted a pretest of the survey instrument to rectify any problems and added an attention-check question. The data was gathered in August 2019 for one month in Germany with the two online survey tools "*LimeSurvey*" and "*SurveyCircle*". Using the snowball principle for the distribution of the survey, we collected 291 responses in total. 68 % of the respondents completed the survey to the end so that 199 responses could be used (see Table 4 for the questions, mean and standard deviation and Appendix B.1 for the german questions). The demographics of the sample show that 58.3% are female, and 41.7% are male; 46.2% are between 18-24 years old, 45.8% are between 25-34 years old, and 8% are older than 34 years; 64.3 % can be categorized as inexperienced users, and 35.7% as experienced users. Most respondents are Android users, with 53.3% compared to 45.7%, iOS users. 1.0% did not provide any information regarding the mobile system.



Relative Advantage: (Scale: Strongly Agree 1 - Strongly Disagree 5)		Inexperienced User		Experienced User	
		Mean	Standard Deviation	Mean	Standard Deviation
RA1	MP is more efficient compared to cash as the payment process can be completed faster.	2.05	1.08	1.56	0.89
RA2	Paying with MP is more convenient because you are not bound to the location or currency.	1.91	1.17	1.65	0.97
RA3	MP is more effective than cash because the payment process is less prone to errors (e.g., miscounting of change).	2.45	1.50	2.06	1.12
RA4	MP is more convenient as opposed to debit/credit cards since I always have my smartphone with me.	2.59	1.45	2.07	1.21
RA5	MP is more effective than debit/credit cards as it is more difficult to obtain card information in case of theft.	3.09	1.16	2.56	1.28
RA6	MP gives me a better overview of my account transactions than when I pay with cash.	2.65	1.61	2.31	1.39
RA7	MP will reduce my "equipment" (e.g. EC/credit card customer card etc.)	2.27	1.14	1.94	1.21
<b>Data Threats:</b> (Scale: Strongly Agree 1 - Strongly Disagree 5)					
DT1	The use of MP leads to a loss of privacy for me as I do not have precise control over what data is collected and processed.	2.27	1.08	2.87	1.23
DT2	Using MP exposes me to the risk of hacking (identity theft, etc.).	2.05	1.04	2.59	1.25
DT3	Using MP exposes me to the risk of phishing attacks (fraud through fake messages).	2.26	1.32	2.85	1.29
DT4	By using MP my data could be passed on to third parties without my consent and these could be misused for personalized advertising or creation of customer profile	2.20	1.04	2.61	1.26
<b>Performance Threats:</b> (Scale: Strongly Agree 1 - Strongly Disagree 5)					
PFT1	MP may not work properly and process payments incorrectly.	3.16	1.20	3.62	1.15
PFT2	There is a high probability that MP will not run properly due to an unstable Internet connection.	2.49	1.25	3.23	1.26
PFT3	The existing protections in MP are insufficient to protect my data and account.	2.62	1.20	3.30	1.18
PFT4	I may not be able to make a payment due to insufficient battery power.	2.31	1.45	2.76	1.19
<b>Financial Threats:</b> (Scale: Strongly Agree 1 - Strongly Disagree 5)					
FT1	The chances of me losing money by using MP are high.	3.46	1.16	3.75	1.14
FT2	When I use MP, I expose my account to the risk of possible fraud.	2.59	1.29	3.20	1.21
FT3	Using MP exposes my account to financial risk.	2.88	1.33	3.46	1.27
<b>Perceived Threats:</b> (Scale: Strongly Agree 1 - Strongly Disagree 5)					
PCT1	There is, in summary, a generally high risk of using MP.	2.87	1.20	3.51	1.13

PCT2	I think that I will suffer a loss by using MP.	3.58	0.99	3.83	1.20
PCT3	I think using MP creates unnecessary problems for me.	3.04	1.55	3.80	1.20
Social Influence: (Scale: Strongly Agree 1 - Strongly Disagree 5)					
SI1	People who influence my behaviour think that I should use MP.	3.91	1.29	3.30	1.29
SI2	People who are important to me think that I should use MP.	3.77	1.55	2.99	1.29
SI3	People who are important to me find the use of MP beneficial.	3.49	1.42	2.69	1.20
SI4	People who are important to me think MP is a good idea.	3.41	1.60	2.65	1.25
Self-Efficacy: (Scale: Strongly Agree 1 - Strongly Disagree 5)					
SE1	I would feel comfortable applying MP on my own.	2.72	1.45	2.07	1.29
SE2	If I wanted to, I could apply MP on my own without difficulty.	1.98	1.28	1.73	1.09
SE3	I would be able to use MP even if there was no person to help me use it.	1.87	1.18	1.69	1.08
Mobile Payment Adoption: (Scale: Strongly Agree 1 - Strongly Disagree 5)					
MP1	I plan to use MP.	2.91	1.30	-	-
MP2	I intend to use MP in the coming months.	3.65	1.04	-	-
MP3	I plan to use MP frequently.	3.48	1.25	-	-
Continuance Intention: (Scale: Strongly Agree 1 - Strongly Disagree 5)					
CI1	I intend to continue using MP rather than stop using it.	-	-	1.80	0.94
CI2	I intend to continue using MP instead of relying on alternative payment methods, such as cash or debit/credit card.	-	-	2.21	1.15
CI3	I would like to discontinue my use of MP.	-	-	1.97	1.13

Table 4: ICIS 2020 Survey: Questions, Mean and Standard Deviation

## Measurement Model

For the analysis, we applied a structural equation modelling approach that consists of an outer and an inner model (Hair et al. 2011, p. 141). The outer measurement model defines the relations between constructs and items. The inner structural model represents the relations among the constructs (Fornell and Larcker 1981, pp. 45-50). All items were adapted from extant literature to improve content validity (Straub et al. 2004, p. 424), except for the construct relative advantages. The items were measured using a five-point Likert scale ("strongly agree" to "strongly disagree"). We ran the statistical data analysis with SmartPLS 3. Moreover, we applied a non-parametric bootstrapping method with 5000 sub-samples for each model. Our model complies with the second rule of minimum sample size (Hair 2014, p. 109): We have 71 experienced, and 128 inexperienced users compared to the minimum sample size of 50 required cases. Additionally, we ran a power analysis with G\*Power for linear multiple regression models to calculate the achieved power of the model (Faul et al. 2009, p. 1149). We tested the model for a small ( $f^2 \geq 0.02$ ), medium ( $f^2 \geq 0.15$ ), and large effect size ( $f^2 \geq 0.35$ ) (Cohen 1988, p.

79) with an error probability of  $\alpha=0.05$ , total sample sizes of 71 and 128, and with seven predictors for both models. Both models exceed the critical value of 0.80 (O’Keefe 2010, pp. 296-297) for medium and large effect sizes with adequate power to detect effects.

Construct	Cash/Card Inexperienced			Cash/Card Experienced		
	Alpha	Reliability	AVE	Alpha	Reliability	AVE
Relative Advantages	0.794/0.680	0.867/0.803	0.623/0.507	0.757/0.746	0.848/0.839	0.585/0.567
Data Threat	0.866	0.908	0.713	0.871	0.911	0.720
Performance Threat	0.769	0.862	0.677	0.753	0.888	0.799
Financial Threat	0.818	0.892	0.734	0.849	0.908	0.768
Self-Efficacy	0.785	0.860	0.673	0.854	0.911	0.774
Perceived Threat	0.820	0.893	0.736	0.899	0.937	0.832
Social Influence	0.867	0.919	0.790	0.867	0.904	0.706
Usage Intention	0.919	0.948	0.860	0.729	0.850	0.660

Table 5: Reliability and Validity of Constructs

To assess the indicator reliability, we checked the outer loadings of the items as well as the significance. Because of insufficient outer loadings  $<0.4$ , in the construct performance threat, item PFT3 had to be eliminated for both models and PFT4 for experienced user model concerning cash payment. In the construct relative advantages, item RA6 was deleted for both models concerning cash payment (see Table 4 for the items). All other items had sufficient outer loadings and were significant at the 1 % level. Table 5 shows the measurement results for the two models (inexperienced and experienced users), including information about the Cronbach’s alpha, composite reliability, convergent, and discriminant validity. There are two values for relative advantages: MP compared to cash and card payment (see Appendix B.2 Item Loading Inexperienced Users ICIS 2020, Appendix B.3 Item Loading Experienced Users ICIS 2020 and Appendices B.4 – B.7 Correlations for all four Modells ICIS 2020).

For the assessment of construct reliability, we checked the Cronbach’s alpha and the composite reliability but with a caveat because both refer to sum scores and not to the construct scores. Moreover, Cronbach’s alpha typically underestimates, and the composite reliability overestimates, upward-biased the true reliability (Dijkstra 1983, p. 67 -70.). Additionally, our variance-based structural modelling approach neither tests nor ensures tau-equivalence. Unlikely, this leads to not consistently estimation construct scores (Dijkstra and Henseler 2015, p. 4). The

calculated Cronbach's alpha coefficient exceeds the recommended threshold of 0.7 (Nunnally 1978, pp. 97-100) for all constructs of both models, except for relative advantages (0.680) in the inexperienced card model.

We contextualized our measurement of Cronbach's alpha and compared these findings for relative advantages to the cash model for inexperienced as well as to the card model for experienced users and decided to keep the construct instead of relying on "rules of thumb" (Guide and Ketokivi 2014, p. 6). The composite reliability of all constructs for both models is higher than 0.7. The convergent validity, AVE, is also higher than 0.5 (Bagozzi and Yi 1988, p. 82) for all constructs. The AVE of each latent construct is higher than the construct's highest squared correlation. Moreover, all models construct correlations are significant, except for social influence on data threat and self-efficacy, and in case of cash payment on relative advantages for experienced users. For inexperienced users, construct correlations are not significant in case of cash payment for relative advantages on financial threat, data threat, and performance threat as well as on social influence. Additionally, there are strong correlations between the risk construct, which is in line with the findings from Cunningham (1967, p. 90).

We used the heterotrait-monotrait ratio of correlations (HTMT) to identify discriminant validity. The HTMT quantified the relationship between two measurements of the same construct and then quantified the relations between two measurements of different constructs (Campbell and Fiske 1959, p. 82). We selected the  $HTMT_{90}$  to assess discriminant value and can confirm discriminant validity with an  $HTMT_{90}$  of all constructs for both models (Henseler et al. 2015, p. 128-131).

### **Structural Model**

To validate the model, we tested for the VIFs of each item and construct to identify potential multicollinearity. We deleted the item SI3 (Social Influence) with a value of  $6.0 > 5$  for inexperienced users. The VIF values of constructs ranged from 1.132 to 2.201, suggesting that multicollinearity is not a concern (Hair et al. 2011, p. 145). Additionally, we ran Harman's single-factor test with an exploratory factor analysis to address the issue of common method variance (Podsakoff et al. 2003, p. 879). The common method bias is not an issue for this study. In the next step, we assessed the primary evaluation criteria for the structural model: the adjusted  $R^2$  level, and the significance of the path coefficients. The structural model for inexperienced users shows a moderate adjusted  $R^2$  level (Hair et al. 2011, p. 145) for MP adoption (52% for the comparison to cash and 54% to card payment) and for perceived risk (59% for cash and 57.7% for card payment). Also for experienced users, the adjusted  $R^2$  level can be considered as moderate for continuance intention (54.6% for cash and 55% for card) and for perceived risk (61.6% for card and cash). Furthermore, we quantified how substantial the significant effects are by assessing their effect size  $f^2$  (see Table 3). The values of their effect size  $f^2$  can be described as strong (0.35), moderate (0.15) and weak (0.02) (Cohen 1988, p. 79).

Hypothesis	Path coefficient				Effect size $f^2$			
	Inexperienced		Experienced		Inexperienced		Experienced	
	Cash	Card	Cash	Card	Cash	Card	Cash	Card
H <sub>1a/b</sub>	0.183**	0.252**	0.370**	0.392**	0.059	0.107	0.244	0.237
H <sub>2a/b</sub>	0.272**	0.272**	-0.018	-0.018	0.103	0.103	0.001	0.001
H <sub>3a/b</sub>	0.186*	0.186*	0.497**	0.497**	0.052	0.052	0.319	0.319
H <sub>4a/b</sub>	0.438**	0.438**	0.376*	0.376*	0.268	0.268	0.175	0.175
H <sub>5a/b</sub>	-0.373**	-0.324**	-0.446**	-0.381**	0.240	0.176	0.350	0.226
H <sub>6a/b</sub>	0.251**	0.234**	0.131	0.152	0.103	0.094	0.032	0.044
H <sub>7a/b</sub>	0.230**	0.233**	0.043	0.020	0.099	0.108	0.004	0.001
** 1%; * 5%								

Table 6: Estimation Results

The bootstrapping analysis of 5000 sub-samples allows for statistical testing of the hypotheses (see Table 6 for the results). The relation between relative advantages and the intention to use MP is significant at the 1% level for both user types and both payment comparisons (card & cash) which supports hypotheses H<sub>1a/b</sub>. Data threat has a significant impact at the 1% level on the perceived general threat for inexperienced users, so that H<sub>2a</sub> can be confirmed. For experienced users, this relation is not significant, supporting hypothesis H<sub>2b</sub>. Performance threat exerts a significant impact on perceived threat at the 5% level for inexperienced users and at the 1% level for experienced users so that H<sub>3a</sub> and H<sub>3b</sub> can be confirmed. Concerning the financial threat, it significantly influences perceived threat at the 1% level for inexperienced users and at the 5% level for experienced users, supporting hypotheses H<sub>4a</sub> and H<sub>4b</sub>. Perceived threat has a negative impact on usage intentions for both user types so that H<sub>5a</sub> and H<sub>5a/b</sub> can be confirmed at the 1% significance level. Self efficacy and social influence both have a significant influence on the usage intentions of inexperienced users at the 1% level supporting hypotheses H<sub>6a</sub> and H<sub>7a</sub>. Concerning experienced users, the relations between both constructs and the continuance intention are insignificant so that H<sub>6b</sub> and H<sub>7b</sub> are also not supported.

Moreover, we used a t-test to assess differences between the regression coefficients of the two models for inexperienced and experienced users (Liébana-Cabanillas et al. 2014, p. 472) and concerning the comparison of MP to cash and card payment. For inexperienced and experienced users, we found significant differences for all hypotheses at the 1% level. Concerning cash and card payment, the path coefficient of H<sub>1a</sub> is significantly higher for card payment at the 1% level, while for H<sub>1b</sub> the difference is not significant.

For  $H_{5a}$  and  $H_{5b}$ , the negative impact of perceived threats on the usage intentions is significantly stronger for cash payment at the 1% level. Similarly, in the case of cash payment, self efficacy exerts a higher impact on usage intention ( $H_{6a}$ ) but only at the 5% significance level.

Because gender (Khalilzadeh et al. 2017, p. 469; Shao et al. 2019, p. 7) and age (Dahlberg and Öörni 2007, p. 9; Liebana-Cabanillas et al. 2014, p. 472) have been shown to influence usage intention and continuance intention to use MP, these are considered as control variables together with the operating system. Gender was coded using a 0 (male) or 1 (female) dummy variable. Age was divided into three separate categories: Age1 (18-24), Age2 (25-34) and Age3 (>35). Also, the operating system was coded as a dummy variable with 0 for Android and 1 for iOS. Only the operating system has a significant effect on usage intentions of inexperienced users with regard to the cash payment comparison. Additionally, the significance level of the relation between relative advantages and intention to use ( $H_{1a}$ ) changed from 1% to 5%.

In the last step, we ran a nonparametric permutation test with a bootstrapping with 5000 subsamples to assess group-specific differences, observed heterogeneity, in our sample (Hair et al. 2017, pp. 253-255). In the first step, we checked for equal or comparable subgroups and a sufficient sample size. The subgroups (female 39, male 32; Age1 29, Age2 37; iOS 38, Android 32) of the experienced users and the subgroups (female 77, male 51; Age1 63, Age2 54; iOS 52, Android 74) of the inexperienced users can be considered as comparable. The required sample size for a moderate  $R^2$  value in each subgroup should be 34 for a 10% level, 42 for a 5% level and 58 for a 1% level to achieve a statistical power of 80% (Cohen 1992, p. 98). Groups with fewer observations, in our case the subgroups for experienced users, should not be used due to the lack of statistical power. We can test all subgroups for inexperienced users at the 5% level. In the second step, we test for invariance. The test for invariance has two components: The configural invariance is fulfilled. The test for compositional invariance compares the composite scores of both groups (e.g. female and male) to determine if the correlation, mean, and variance are significantly different for the empirical distribution. The constructs of the model need to pass two confidence (mean and variance) tests for invariance or one for partial invariance (Matthews 2017, p. 234). In the inexperienced users model, we can confirm invariance for the subgroup age and partial invariance for the subgroup operating systems regarding the constructs intention to use and perceived threat. For the subgroup gender the confidence tests fail regarding the construct intention to use. We find a stronger significant path coefficient for Age1 (-0.521) compared to Age2 (-0.189) for hypothesis  $H_{5a}$  at the 5% level in the inexperienced user model concerning cash payment. For the operating system, we find a stronger significant path coefficient for iOS users (-0.649 for cash and -0.650 for card) compared to Android users (-0.218 for cash and -0.200 for card) for hypothesis  $H_{5a}$  at the 1% level in both models.

## Discussion

### Results

To the best of our knowledge, this is the first attempt to empirically explain individual IT users' threat avoidance behaviour with the TTAT theory. We used this theoretical lense to shed light on the questions how perceived benefits on the one side and risk facets on the other side affect MP acceptance among prospective but inexperienced adopters compared to experienced users (RQ1), how the competition with two established payment methods changes the users' perceptions (RQ2), and in which regard the experience with MP alters the importance of influencing factors (RQ3).

With regard to RQ1, our study confirms the important roles of relative advantages (e.g., Bailey et al. 2017, p. 634; Di Pietro et al. 2015, p. 475; Liébana-Cabanillas et al. 2018, p. 124) as well as of the different threats that are associated with MP (Gerpott and Kronmeier 2009, p. 23; Liébana-Cabanillas et al. 2014, p. 471; Liébana-Cabanillas et al. 2019, p. 274; Lu et al. 2011, p. 400; Pharm and Ho 2015, p. 167; Slade et al. 2015, p. 221; Shao et al. 2019, p. 7 ; Yang et al. 2012, p. 135) for the adoption and continuous usage of MP. However, there are several differences between inexperienced prospective adopters and experienced users (RQ3) and with regard to the compared established payment methods (RQ2). In general, the perceived threats have a higher impact on the adoption decision than the perceived benefits. This holds in particular for inexperienced users where the effect of benefits is only weak but the effect of threats is moderate. For experienced users, there is only a difference when MP is compared to cash payment. In this case, the threats are much more influential than the advantages. The reason for this is that experienced users regard the advantages as much more important for their decision than inexperienced users do which is in line with the findings of Yang et al. (2012).

Although they are also stronger influenced by the general threat situation than inexperienced users, the influence of the perceived threat situation cannot outweigh the one of the benefits anymore. Another reason may lie in the different perception of risks. For inexperienced users, all kinds of threats play a significant role, but for experienced users, the data threat becomes insignificant which is in line with Bailey et al. (2017, p. 634). Instead, the performance threat becomes the most influencing factor for the general perceived threat situation and subsequently for their continuous usage intentions while the financial threat loses somewhat of its scariness. Hence, experienced users have different evaluation standards than inexperienced users. This can also be seen with regard to self efficacy and social influence. While inexperienced users rely on their peers who exerts pressure on them to use MP or not, experienced users are more mature in using MP so that the social environment loses its influence on them (see also e.g. Khalilzadeh et al. 2017, p. 469; Liébana-Cabanillas et al. 2017, p. 903; Oliveira et al. 2016, p. 410; Slade et al. 2015, p. 221). Interestingly and in contrast to previous research, our study identifies self-efficacy as a significant driver of MP adoption for inexperienced users.

Obviously, people need to feel confident to adopt MP (Bailey et al. 2017, p. 635). However, this personal assessment of one's abilities become irrelevant for experienced users. That means once people have given MP a try, only the benefits and drawbacks of MP play a role for their usage decision.

Comparing MP to cash and card payment, further nuances become visible (RQ2). Self efficacy plays a more important role when MP is compared to cash than to card payment. This is not surprising, even if this only holds for inexperienced users, as people are used to cash payment which is the most common and easiest payment method. The same effect can be observed concerning the threat situation for both user groups. MP threats have a much higher influence when compared to cash than to card payment. Concerning the relative advantages of MP, their influence is stronger when compared to card than to cash payment. All this indicates that people regard MP more similar to card than to cash payment and that they are still stuck to cash payment so that they regard MP much more critical. This is underlined by the age group comparison. Although still quite young, people in the age of 25-34 report a much higher influence of the threats when MP is compared to cash payment than younger people do. A similar effect can be found for inexperienced iOS users who regard the threats as much more important than Android users do.

### **Managerial Implications**

Several lessons can be learned from this study. First of all and not surprisingly, practitioners need to distinguish between inexperienced and experienced users when promoting MP. For inexperienced users it is important to let them experience MP by trying it out. This turns them into a stage between prospective adopters and experienced users and lets them consider the advantages of MP. Otherwise, inexperienced users use second-hand information and could underestimate the relative advantages of MP compared to alternative payments. Marketers have to tailor their marketing measures accordingly. Customers who prefer cash payment are less susceptible for objective advantages but more to the reported threats. Thus, inexperienced users with card preference are more prone to advantages. But for inexperienced users with cash preference other toeholds need to be found. In contrast, experienced users evaluate the relative advantages of MP in a more realistic way, therefore, it is most important that MP is working properly. Obviously, this is one of the main concerns and most significant factors. Hence, it is necessary to take the reliability concerns of experienced users serious and improve the performance of MP.

Secondly, as social influence is found to be significant, this could be a starting point for convincing inexperienced users of MP. If MP is seen as a natural payment method that is used by many people, this may turn them into MP users. For this it is important to depict MP as a safe payment method and, again, to address the reliability so that experienced users are kept in the system and can report their good experiences to other prospective users.



Thirdly, it is important to address the confidence of prospective users. Particularly inexperienced users need support to feel confident in using MP without difficulties.

Fourthly, as MP is a new payment method, practitioners need to highlight the security of MP. Among inexperienced users, there are big concerns regarding all kinds of threats. Although data threats become insignificant once people use MP, the privacy concerns already inhibit them to start with MP. A transparent communication about the collected data and its usage can limit the concerns of users. This holds in a similar way for financial threats. The fear of incurring a financial loss is a significant inhibiting factor for inexperienced as well as to a lesser extent for experienced users. Thus, practitioners need to signal and explain the security measurements to protect the bank account of users. But users should not only be educated about the likelihood of being attacked. Particularly experienced users should also learn about the negative outcome if they become victims. According to the TTAT, this helps sensitise users and raise their security awareness. However, as already mentioned above, performance threats are the most influencing factor for experienced users. That means that it is mandatory to make MP as reliable as possible. For instance, there need to be solutions for situations when the internet connection is lost and the user has no other payment methods at hand. Otherwise, a negative performance experience creates a negative stimulus that motivates users to discontinue MP due to the malfunction of the system.

Fifthly, iOS and Android users should be addressed differently. For iOS users, the security issue is much more important than for Android users. Therefore, practitioners should address the concerns of inexperienced iOS users with more information about the installed safeguarding measures.

### **Limitation and Future Research**

As always, also, this study is not without limitations. First of all, the data sample is quite small and suffers from many incomplete responses. The reason is that answering the questions of the survey was not mandatory for each question so that it was possible for participants to omit several answers. Due to the small number of questions, already a small number of unanswered questions lead to an exclusion of the participant. However, the sample size is still big enough so that inexperienced as well as experienced users can be investigated simultaneously for the first time. Secondly, the sample comprises only German speaking people of younger age. Concerning the age bias, young people have been proven to be adequate surrogates for decision-makers (Remus 1986, p. 23) so that this sampling hardly distorts the results. Moreover, the sample composition with a predominance of young adults is consistent with the characteristics of the ordinary users of MP (Bailey et al. 2017, p. 631; Di Pietro et al. 2015, p. 472; Liebana-Cabanillas et al. 2014, p. 469; Talwar et al. 2020, p. 7). In addition, young customers are the main target group of MP as they will use it the longest time.

As German people are said to prefer cash payment more than other nationalities, future research should therefore try to collect a more representative and greater sample and should carry out the survey in other countries to test, if there are cultural differences. Thirdly, although this study incorporated different threats into its research model, still not all threats are considered. A more comprehensive approach considering all threats could provide more detailed information about what risks people are afraid of and hence inhibit the adoption and continuance intention. Fourthly, the control variable operating system exhibited an impact on the usage intention of MP and changed the significance level for one hypothesis. Although this does not distort the results, further investigations are necessary which role the operating system and characteristics of the user play for the adoption of MP. Lastly, a longitudinal focus would allow testing the changing behaviour and also the changing perception of advantages or disadvantages of MP compared to alternative payment methods.

### **3.2 Will Mobile Payment change Germans' love of Cash? A Comparative Analysis of Mobile Payment, Cash and Card Payment in Germany<sup>3</sup>**

In the early 1990, the first payment systems used cellular mobile communication network elements and devices (Dahlberg and Oorni 2007, p.1). The early mobile payment system variants required a radio connection between the users' devices and their mobile network operator to pay by call or SMS. However, such technology as radio links for remote payment systems requires continuous network coverage, which is impossible. Therefore, new technologies, like NFC or QR-codes, came into consideration. Both so-called proximity-based MPS enabled users to use their devices to pay without a radio connection to a mobile communication network (Gerpott and Meinert 2017, p. 2). Since the development of proximity-based MPS solutions, MP has enjoyed growing popularity in many countries like China or the US (Cheung 2019). Especially the coronavirus accelerated the diffusion of MP. For instance, MP use in the US hit a milestone with a 29% year-over-year growth in 2020 and surpassed 100 million users in 2021 (eMarketer 2022). In stark contrast to the high adoption countries, the adoption of MP in Germany is still in its infancy. By the end of 2019, less than 7 million German adults have used their mobile devices for mobile payment (Brentnall 2019). Even the coronavirus did not change German customers' preference for cash payment. Only 6 % of German customers started using MP during the pandemic. During the pandemic, most German customers switched from cash to contactless card payment (IFH Köln 2021d; IFH Köln 2022e).

The reason for the lacking adoption of MP is manifold. For instance, German customers are aware of the advantages of MP (e.g., speed of payment) (Barley and Berg 2019; PWC 2019); they still prefer paying for daily shopping trips in cash, even after decades of card payment options. 15.6 Billion transactions, or 77.9 % of all transactions, are paid with cash in the retail sector in Germany (Cabinakova 2019, p. 24; Deutsche Bundesbank 2019, p. 15; Pietrowiak et al. 2021, p. 18). Moreover, 64% of German customers believe paying with MP is too risky (EHI Retail Institute 2018b. 77% think that MP is not secure (PWC 2019). 47% perceive that MP is not secure and are worried that using MP discloses too much information about the user (Pietrowiak et al. 2021, p. 27). Additionally, 38% of German customers think that MP creates so much switching cost (e.g., too much effort to set up or learn) (Pietrowiak et al. 2021, p. 27; PWC 2019).

Therefore, many studies have investigated the acceptance of MP by customers. However, most former studies only investigated, for instance, what ease of use means at a generic level. But we do not know what ease of use or usefulness means in relation to existing alternatives from

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<sup>3</sup> This subchapter is based on Aguirre Reid et al. (2022, pp. 141-155).

the customer perspective (Dahlberg et al. 2015, p. 275). Because customers face different competing payment methods that may prevent customers from using MP like card payments in Germany (Bärsch et al. 2020, p. 2).

Only four studies addressed this research gap (see next chapter) but limited their comparative analyses to theoretical constructs like the relative advantage of MP (Bärsch et al. 2020, p. 2), the convenience of payment (Boden et al. 2020, p. 3), and alternative attractiveness or monetary value (Loh et al. 2021, p.2). But innovation also needs to be good in relation to the competing options regarding the risk facets and not only regarding their advantages. For instance, physical cash works without registers for users and their transactions in the retail store (Mai 2019). This is in stark contrast to the card or MP payment process. Therefore, research should also extend the comparative analysis to the risk facets of MP. Only one study explored the risk of MP compared to cash payment (Loh et al. 2021, p. 6). Hence, our study will contribute to the field of MP and will provide more insight into the comparative analysis of MP compared to cash and card payments regarding the advantages and disadvantages. Summing up, the following research question shall be answered:

*RQ1: How does the perception of drivers of MP differ compared to cash and card payment?*

*RQ2: How does the perception of inhibitors of MP differ compared to cash and card payment?*

In addition, former studies show that the switching cost aspect is also an inhibitor of the diffusion of MP adoption. However, former research conceptualizes the switching cost as a unidimensional construct (Hongxia et al. 2011, p. 2; Loh et al. 2021, p. 8; Lu et al. 2011, p. 402; Pham and Ho 2015, p. 169; Yang et al. 2012, p. 141), despite that multiple steps exist like evaluation of alternatives or setup-cost (Jones et al. 2002, p. 445; Pietrowiak 2021, p. 26; PWC 2019). To overcome the purely cost-driven aspect of switching costs (e.g., buying a new smartphone), we conceptualize switching costs as multiple-dimensional constructs to provide new insights.

## **Literature Review**

The current study contributes to the field of MP adoption in the following ways. First, with regard to the research call for a comparative analysis of MP to existing alternatives (Dahlberg et al. 2015, p. 275), only five studies (Bärsch et al. 2020, p. 9; Boden et al. 2020, p. 3; Dahlberg and Oorni 2007, p.3; Loh et al. 2021, p. 6; Liébana-Cabanillas 2017, p. 899) followed this call. However, Liébana-Cabanillas et al. (2017, p. 899) compared MP with SMS as a remote payment system while Dahlberg and Öörni (2007, p. 3) compared MP with electronic invoices. Liébana-Cabanillas et al. (2017, p. 903) showed that security, usefulness and subject norms strongly influence MP over SMS payment. Dahlberg and Öörni (2007, p. 8) revealed that compatibility is more important for MP than for electronic invoices. Only Boden et al. (2020, p. 4), Bärsch et al. (2020, p. 9) as well as Loh et al. (2021, p. 6) had a comparative look at more

traditional payment methods. Boden et al. (2020, p. 7) analysed the convenience of the payment and the willingness to pay (WTP) concerning card and MP. They show that MP can increase customers' WTP compared to card payment through greater convenience of payment.

In contrast, we investigated further drivers (relative advantages) and inhibitors of MP (data threat, perceived threat). The study of Bärtsch et al. (2020, p. 12) compared MP stepwise with cash and card payment concerning the relative advantages. The study showed that self-efficacy and MP threats have a much higher influence when compared to cash than card payment. Our analysis also compared MP stepwise with cash and card payment regarding the relative advantage. In addition, we also compared MP stepwise concerning the data and perceived threats. A recent study by Loh et al. (2021, p. 16) explains the switching intention from cash payment to MP. The study indicated that alternative attractiveness of MP and security and privacy positively affected the switching intention. In contrast, our study extends the comparison of MP with card payment and considers data threat and perceived threat.

Second, we identified six studies that incorporate perceived costs or switching costs in their research model (Abrahão et al. 2016, p. 225; Hongxia et al. 2011, p. 2; Loh et al. 2021, p. 6; Lu et al. 2011, p. 397; Pham and Ho 2015, p. 163; Yang et al. 2012, p. 131). But the majority considers only the financial aspects like costs of use (Yang et al. 2012, p. 141), and financial barriers (e.g., headset) (Hongxia et al. 2011, p. 2). Only two studies added non-financial cost aspects like cognitive costs (Abrahão et al. 2016, p. 226; Loh et al. 2021, p. 8). However, those studies mainly operationalize costs or switching costs as unidimensional, despite suggestions that multiple dimensions exist like pre-switching search and evaluation costs or post-switching behavioural and cognitive costs (Jones et al. 2002, p. 445). Therefore, our study re-operationalized the construct switching costs with the multidimensional scale by Jones (2002, p. 441). Furthermore, none of the former studies investigated the relationship between perceived switching costs and perceived risk. But this relationship is important to consider because customers tend to outweigh potential losses (e.g., having to invest time and effort or money) more than potential gains, which leads to an overestimation of the perceived threat and reduces the intention to use MP (Kim and Kankanhalli 2009, pp. 578-579).

## **Theoretical Framework and Hypotheses Development**

### *Diffusion of Innovation Theory*

For the investigation of the adoption process, two different families of theories are predominant in the IS literature: Studies that are based on Davis' (1989) TAM and its successors (e.g., UTAUT) on the one side and those based on Rogers' (2010, p. 233) DOI on the other side. In contrast to the user-centric view of the TAM, the DOI focuses on the adoption process of innovation in a social group. Earlier studies adapted the characteristics of innovations and the market situation and refined a set of constructs (e.g., complexity, compatibility or relative advantages) that could be used to study individual technology acceptance (Moore and Benbasat

1991, pp. 196-198; Rogers 2010, p. 233). In particular, many studies in the field of MP support the predictive power of DOI variables like compatibility (e.g., Dahlberg and Oorni 2007, p. 8; Lu et al. 2011, p. 399; Pham and Ho 2015, p. 167; Schierz et al. 2010, p. 214; Yang et al. 2012, p. 135) or relative advantage for the adoption process (Bailey et al. 2017, p. 634; Dahlberg and Oorni 2007, p. 8; Koenig-Lewis et al. 2015, p. 11; Lu et al. 2011, p. 399; Pham and Ho 2015, p. 167; Schierz et al. 2010, p. 214). Especially, the perceived benefits of a system play an important role in the adoption process. Therefore, this study also considers the relative advantage in the research model. Former studies operationalized the relative advantage with key attributes like the use around the clock (Lu et al. 2011, p. 402), usefulness or the speed and efficiency of MP (Pham and Ho 2015, p. 169; Lu et al. 2011, p. 402; Koenig-Lewis et al. 2015, p. 18).

However, such objective advantages are only one side of the “usefulness coin”. People evaluate innovations in comparison to existing payment options; therefore, an innovation must be good in absolute terms and in comparison to existing payment options (Bärsch et al. 2020, p. 6). The relative advantage can be defined as: *“the degree to which an innovation is perceived as being better than its precursor”* (Moore and Benbasat 1991, p. 195). In keeping with the definition, MP has to be compared with the existing payment option. For this, we compare MP with cash and card payment regarding the speed of the payment (e.g., customers do not need to control the change/ entering the pin at the terminal for the card payment) (Bärsch et al. 2020, p. 6; Koenig-Lewis et al. 2015, p. 18), reduced need for carrying a wallet (Slade et al. 2015, p. 214). Further included aspects are the hygienical factor (customers do not need to touch the money/terminal to enter the pin) (Deutsche Bundesbank 2019, p. 27; Pietrowiak et al. 2021, p. 40), the easiness of the payment process (e.g., customers do not need to count the coins) (Pham and Ho 2015, p. 169; Ramos de Luna et al. 2019, pp. 941-942; Schierz et al. 2010, p. 213;), and the improved overview of account movements (Bärsch et al. 2020; Lu et al. 2011; PWC 2019). Due to the similarities between MP and card payment, we expect that the “arguments” to convince users to switch to MP need to be stronger (Bärsch et al. 2020, p. 6). Hence, we hypothesize:

*H<sub>1</sub>: The relative advantages of MP positively influence the intention to use compared to card payment to a greater extent than cash payment.*

The introduction of MP is not a sure-fire success. MP needs to encompass and reconcile with existing values, behavioural patterns, and experiences of potential users. Extant research confirmed the positive effects of compatibility of innovative technology in general (Tornatzky and Klein 1982, p. 33) and in particular for MP (Dahlberg and Oorni 2007, p. 8; Lu et al. 2011, p. 399; Pham and Ho 2015, p. 167; Schierz et al. 2010, p. 214; Yang et al. 2012, p. 135). The construct compatibility is defined as *“the degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of potential adopters”* (Rogers 2010, p. 15). To address the idea of compatibility, we consider the following aspects: fits well with my lifestyle, the way I manage my finances, the way I pay for products and services

(Schierz et al. 2010, p. 213) and generally fits well with my payment behaviour (Oliveira et al. 2016, p. 410). Hence, we hypothesize:

*H<sub>2</sub>: Compatibility of MP positively influence the intention to use MP.*

### **Theory of Reasoned Action and Theory of Planned Behavior**

TRA is one of the most fundamental and influential theories of human behaviour to predict the determinants of consciously intended behaviour (Ajzen and Fishbein 1980). The TRA is very general designed and has been used to predict a wide range of behaviours and the individual acceptance of technology (Davis 1989, p. 320; Sheppard et al. 1988, pp. 325-326). The goal of the TRA is to understand an individual's voluntary behaviour, like the adoption of MP (Ajzen 1991, p. 206). The TRA incorporate the attitude toward behaviour and the subjective norm (social influence). Especially social influence was identified as a significant driver for the initial adoption of MP (Abrahão et al. 2016, p. 227; Koenig-Lewis et al. 2015; Slade et al. 2015, p. 220; Yang et al. 2012, p. 135). In particular, studies show that individuals are embedded in a social group and tend to consult their social network to reduce any anxiety regarding the adoption of new technology (Slade et al. 2015, p. 212). Further aspects are what relatives (friends/people around me) think (Abrahão et al. 2016 p. 226; Koenig-Lewis et al. 2015, p. 18; Yang et al. 2012, p. 140) or what the (social) environment expects (e.g., Media, Work, Society) regarding the usage of MP (Hongxia et al. 2011, p. 2). Therefore, the construct social influence can be defined as: "*the extent to which users perceive that important others (e.g., family and friends) believe they should use a particular technology*" (Venkatesh et al. 2012, p. 159). In line with the definition and former studies, our research included the impact of "*people who are important to me*" (Koenig-Lewis et al. 2015, p. 18) or "*people whose opinions that I value*" (Slade et al. 2015, p. 214). Moreover, former findings have shown that the evaluation of new technologies is indirectly shaped by friends, relatives, mass media, society, and the retailer (Hongxia et al. 2011, p. 2). Hence, we hypothesize:

*H<sub>3</sub>: Social Influence of MP positively influence the intention to use MP.*

### **Multidimensional Nature of Switching Cost**

To adopt MP, users have to bear the cost because there is no such thing as a free lunch. Therefore, users will conduct a cost-benefit evaluation before deciding (Hongxia et al. 2011, p. 2). In particular, cash payment is still the dominant way to pay in the retail market. Customers face higher investment costs for MP compared to cash than card payment. For instance, they need to evaluate the existing MP apps or learn how to pay contactless. Former studies partly confirm the cost-benefit evaluation intuition. A few studies reported a significant negative impact on the intention to use (Hongxia et al. 2011, p. 3; Lu et al. 2011, p. 399; Yang et al. 2012, p. 135), whereas other studies did not find any significant relationship between (perceived switching) costs and intention to use (Abrahão et al. 2016, p. 227; Pham and Ho 2015, p. 167).

In contrast to the former studies, we consider switching costs as a multiple dimension to address the various evaluation steps of the customers (Jones et al. 2002, pp. 441-442). Therefore, we incorporate the multidimensional scale of switching costs by Jones et al. (2002, p. 442).

The scale consider: 1. pre-switching search and evaluation costs: "*perception of the time and effort of gathering and evaluating information prior to switching*" (Jones et al. 2002, p. 442); 2. Post-switching behavioural and cognitive: "*perceptions of the time and effort of learning a new service routine subsequent to switching*" (Jones et al. 2002, p. 442); and 3. sunk costs: "*perceptions of investments and costs already incurred in establishing and maintaining relationship*" (Jones et al. 2002, p. 442). We excluded the cost of lost performance, uncertainty, and sunk costs because customers can switch back to cash or card payments anytime.

Furthermore, none of the former studies in the field of MP investigated the relationship between perceived switching costs and perceived risk. Although there have already been a number of studies in the field of status quo bias that have investigated the question: Why customers are skewed toward keeping the status quo which is "doing nothing or maintaining one's current or previous decision" (Samuelson and Zeckhauser 1988, p. 7). With a view to MP, it can be deduced that customers are looking for reasons not to switch. These reasons are then also evaluated with regard to the possible benefits and threats. For example, before using MP customers must invest time and effort to set up MP. Some customers also have to buy a new phone (Pietrowiak et al. 2021, p. 27). When customers find that the reasons like buying a new phone (costs) outweigh the benefits (e.g., faster payment), they will be unwilling to expend the effort required to switch (Loh et al. 2021, p. 5). Furthermore, customers tend to weigh potential losses like threads (e.g. performance or data security problems) as more significant than potential gains when switching to MP. This behaviour is also known as the upward bias, which leads to an overestimation of the perceived threat of a new system (Kim and Kankanhalli 2009, p. 579; Lin et al. 2015, p. 224; Polites and Karahanna 2012, p. 35). Hence, we hypothesize:

*H<sub>4</sub>: The perceived switching cost of MP positively influence the perceived threat of MP.*

### **Data Threat and Perceived Threat**

Although previous studies extensively made use of risk items within their research models, the findings are still ambiguous regarding the relation between the constructs of data threat and perceived threat. While Bärsch (2020, p. 10) revealed that data threat has a significant positive impact on the perceived threat, the study of Jenkins and Ophoff (2016, p. 9) did not find a significant impact. Nevertheless, German customers believe that "giving away too much information" is one of the most severe disadvantages of MP (PWC 2019). Therefore, the current study integrated data threat into their research model. Data threat is defined as the "*potential loss of control over personal information, such as when information about you is used without your knowledge or permission. The extreme case is where a consumer is 'spoofed' mean-*



ing a criminal uses their identity to perform fraudulent transactions" (Featherman and Pavlou 2003, p. 455). We compared MP with cash and card payment regarding the following aspects of data threat: the risk that criminals can access the user account (Hongxia et al. 2011, p. 2; Lu et al. 2011, p. 402; Slade et al. 2015, pp. 214-215; Yang et al. 2012, p. 141), the service provider could send personal information to other companies without the knowledge of the user (Pham and Ho 2015, p. 169). Moreover, we incorporate also the aspect of becoming a "transparent customer" (loss of privacy) (Bärsch et al. 2020, p. 7). Moreover, we expect that the data threat of MP is higher compared to cash than card payment because cash enhances privacy and leaves hardly any traces (Mai 2019). Hence, we hypothesize:

*H<sub>5</sub>: The data threat of MP positively influences the perceived threat of MP compared to cash payment to a greater extent than card payment.*

MP bears several risks for users, which shape their perception. Therefore, it is not surprising that former studies identified perceived risk as an essential factor for adoption (Abrahão et al. 2016, 227; Hongxia et al. 2011, p. 3; Koenig-Lewis et al. 2015, p. 11; Pham and Ho 2015, p. 167; Slade et al. 2015, p. 220; Yang et al. 2012, p. 135). The perceived threat can be defined as "the expectation of losses associated with the purchase and acts as an inhibitor to purchase behaviour" (Peter and Ryan 1976, p. 185). Thus, this study considers the general risk level of MP (Slade et al. 2015, pp. 214-215; Peter and Ryan 1976, p. 186) and the psychological aspect. Moreover, we also consider performance risk (technical and availability perspective) because the lack of availability of MP compared to existing payment options is among the main inhibitors for German customers to adopt MP (Pietrowiak et al. 2021, p. 27; PWC 2019). Moreover, we expect that the perceived threat of MP is higher in the cash than card model because cash payment is the legal tender in Germany and bears very low risks. Hence, we hypothesize:

*H<sub>6</sub>: The perceived threat of MP negatively influences the intention to use MP.*

The resulting research model is depicted in Figure 7.

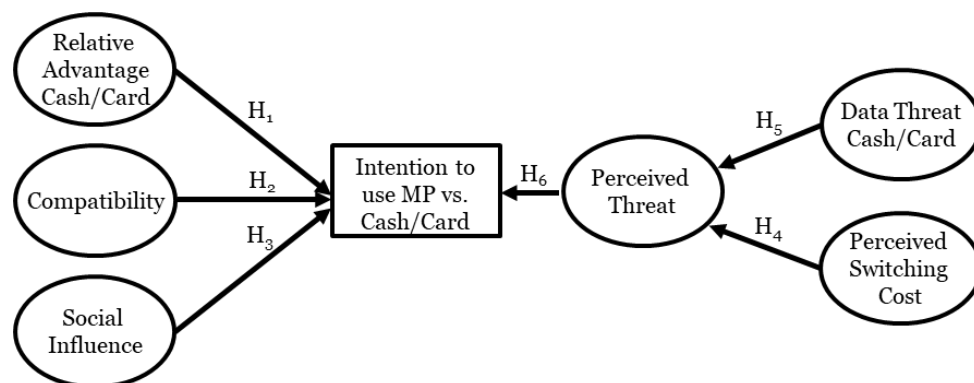


Figure 7: Research Model BIR 2022

## Methodology

### Data Collection

Our target population comprised customers in Germany. Each customer answered the questions about the MP usage compared to cash and card payments. This approach aligns with former research (Bärsch et al. 2020, p. 12; Boden et al. 2020, p. 4). In line with the actual MP usage in Germany, we considered MP as a proximity payment method (NFC and QR code) (Deutsche Bundesbank 2017, p. 44). The first part of the survey collected data on MP adoption. The second part was focused on demographic variables (e.g., gender and age). We also conducted a survey instrument pre-test to rectify any problems. Using the snowball principle for the survey distribution, we collected 401 responses (see Table 7 for the questions, mean and standard deviation and Appendix B.8 for the German questions). Considering the recommendation of Hair et al. (Hair et al. 2011, p. 144; Hair et al. 2017, p. 16), 144 observations with more than 15% missing values had to be eliminated, resulting in 257 observations. 227 participants answered the questionnaire completely, beyond the recommended sample size of 40, to receive stable model estimation results (Chin 1998a, p. 311). The demographics of the sample show that 51% (130) are female, 44% (113) are male, and 1% (three) are divers. 4% (11) did not provide any gender information. 56% (144) are between 18-34 years old, and 39% (102) are older than >35 years. 4% (11) did not provide any information regarding their age. We asked our participants to indicate if they had already used MP and which type of MP (QR code or NFC). 64% (165) did not use MP before, and 32% (81) used MP (59 via NFC, 22 via QR-Code). 4% (11) did not provide any information regarding the MP usage experience. In line with former studies in the MP field (e.g., Bärsch et al. 2020; Boden et al. 2020) as well as IS research (e.g., Venkatesh et al. 2012), we consider gender and age as control variables in both models. Gender was coded using a dummy variable of 0 (female) or 1 (male). In the case of age, we followed the approach of Liébana-Cabanillas et al. (2014, p. 469) and divided age into two groups (<35; >35).

Relative Advantages: (Scale: Strongly Disagree 1 - Strongly Agree 5)		Mean	Standard Deviation
R1 Cash	I think that the use of mobile payment is faster than cash payment.	4.14	1.08
R1 Card	I think that the use of mobile payment is faster than card payment.	3.55	1.20
R2 Cash	I think that the use of mobile payment, reduces the need to carry cash.	3.84	1.23
R2 Card	I think that the use of mobile payment, reduces the need to carry card.	3.52	1.22
R3 Cash	I think that the use of mobile payment, is more hygienic than cash payment.	4.03	1.10
R3 Card	I think that the use of mobile payment, is more hygienic than card payment.	3.10	1.18
R4 Cash	I think using mobile payment makes checking my spending more transparent compared to paying cash.	3.29	1.42
R4 Card	I think using mobile payment makes checking my spending more transparent compared to paying card.	2.59	1.21
R5 Cash	I think that mobile payment simplifies the payment process for me compared to cash payment (e.g., no more counting cash).	3.70	1.29
R5 Card	I think that mobile payment simplifies the payment process for me compared to cash payment (e.g. no PIN entry up to 25€).	3.37	1.25
Perceived Switching Cost: (Scale: Strongly Disagree 1 - Strongly Agree 5)			
PC1	I think that by using mobile payment, I have to invest a lot of time and effort in the beginning to gather enough information about the different mobile payment providers.	3.49	1.25
PC2	I think that by using mobile payment, I have to invest a lot of time and effort in the beginning to set it up on the smartphone.	2.84	1.18
PC3	I think that by using mobile payment, I have to invest a lot of time and effort in the beginning to learn how it works.	2.75	1.20
PC4	I think that by using mobile payment, I have to invest a lot of time and effort to buy a new smartphone in the beginning.	1.90	1.07
Social Influence: (Scale: Strongly Disagree 1 - Strongly Agree 5)			
S1	People who are important to me think that I should use mobile payment.	2.47	1.04
S2	People whose opinions I value think I should use mobile payment.	2.45	1.03
S3	I feel pressured by society to use mobile payment.	1.97	1.08
S4	I feel pressured by retail to use mobile payment.	1.81	1.00
S5	I am expected to use mobile payment.	1.79	1.04
Compatibility: (Scale: Strongly Disagree 1 - Strongly Agree 5)			
COM1	I think mobile payment fits my lifestyle.	3.31	1.30
COM2	I think mobile payments fit with the way I manage my finances (e.g., mobile banking).	3.49	1.21
COM3	I think mobile payment fits with the way I pay for products and services (e.g., often cashless).	3.59	1.21
COM4	I think mobile payments in general are a good fit for my payment behaviour.	2.47	1.04

Perceived Threat: (Scale: Strongly Disagree 1 - Strongly Agree 5)			
PT1	I am worried that mobile payment will not be accepted and I will not be able to buy the product.	3.38	1.22
PT2	I'm concerned that mobile payments won't work at checkout and that I would find this personally inconvenient.	3.35	1.23
PT3	I am concerned that mobile payments will not be executed properly and there will be incorrect bookings on my account.	2.82	1.25
PT4 Card	I am concerned that mobile payments have a generally higher risk when paying compared to card payments.	3.10	1.29
PT4 Cash	I am concerned that mobile payments have a generally higher risk when paying compared to cash payments.	3.40	1.35
Data Threat: (Scale: Strongly Disagree 1 - Strongly Agree 5)			
DT1 Card	I am concerned that, compared to card payments, mobile payments carry the risk that criminals reading my account data (hacker attack).	3.58	1.20
DT1 Cash	I am concerned that, compared to cash payments, mobile payments carry the risk that criminals reading my account data (hacker attack).	3.92	1.23
DT2 Card	I am concerned that when paying with mobile payments compared to card payment, my data will be shared with third parties.	3.44	1.17
DT2 Cash	I am concerned that when paying with mobile payment compared to cash payment, my data will be shared with third parties.	3.97	1.16
DT3 Cash	I am concerned that the use of mobile payment, compared to cash payment, risks becoming a "transparent customer" (loss of privacy).	4.11	1.15
DT3 Card	I am concerned that the use of mobile payment, compared to card payment, risks becoming a "transparent customer" (loss of privacy).	4.21	1.07
Intention to Use: (Scale: Strongly Disagree 1 - Strongly Agree 5)			
I1	I intend to use mobile payment in the future.	3.26	1.27
I2	I will try to use mobile payments for my daily purchases.	2.88	1.27
I3 Cash	I plan to use mobile payments instead of cash payments.	2.85	1.32
I3 Card	I plan to use mobile payments instead of card payments.	2.76	1.30

Table 7: BIR 2022 Survey: Questions, Mean and Standard Deviation

## Measurement Model

We applied a structural equation modelling approach that consists of an outer and an inner model (Hair et al. 2011, p. 141). The outer measurement model defines the relations between constructs and items. The inner structural model represents the relations among the constructs (Fornell and Larcker et al. 1981, pp. 45-50). All items were adapted from extant literature to improve content validity (Hair et al. 2011, p. 146; Straub et al. 2004, p. 424). All items were measured using a five-point Likert scale (1 "strongly disagree" to 5 "strongly agree"). We ran the statistical data analysis with SmartPLS 3. For assessing the reflective constructs, we consider the indicator and construct reliability and validity (Hair et al. 2011).

To assess the indicator reliability of the reflective constructs, we checked the outer loadings of the items and their significance. Because of insufficient outer loadings (Hair et al. 2011, p. 146; Straub et al. 2004, p.424), items in the constructs of perceived cost (PC4), perceived threat (PT4 CARD, PT4 CASH), and relative advantage (R2-R4) had to be eliminated in both models (see Table 7). All other items had sufficient outer loadings  $> 0.7$  and were significant at the 1 % level (see Appendix B.9 Item Loading and Construct Validity Check BIR 2022 and Appendices B.10 – B.11 for the Correlations of the Cash and the Card Model BIR 2022). We checked Cronbach's alpha and the composite reliability to assess the construct reliability. The calculated Cronbach's alpha coefficient exceeds the recommended threshold of 0.7 (Nunnally 1978, pp. 97-100) for all constructs of both models, except for the perceived threat construct in the cash (0.639) and card model (0.699). However, the perceived threat construct exceeds the recommended thresholds of the composite reliability and the AVE in both models. Therefore, we contextualised our measurement of Cronbach's alpha and decided to keep both constructs. Moreover, the composite reliability is more suitable for PLS-SEM, which supports our decision to keep both constructs (Hair et al. 2011, p. 145). The composite reliability of the remaining constructs for both models is higher than 0.7. The AVE of each latent construct in both models exceeds the threshold of 0.5 (Bagozzi and Yi 1988, p. 82) (See B.12 for an Overview of the Measurement Model Results BIR 2022).

Furthermore, all model construct correlations are significant, except for social influence on relative advantage in the card model. For the assessment of the validity, we consider the cross-loadings of the constructs and the Fornell-Larcker criterion. The cross-loadings must exceed all other loadings to the other constructs, which is the case (Hair et al. 2014, p. 112). For the Fornell-Larcker criterion requires, the squared AVE of a construct must be greater than its highest correlation with another construct, which is also the case (Fornell and Larcker 1981, p. 43; Hair et al. 2014, p. 112). Additionally, we used the HTMT to identify discriminant validity. We selected the  $HTMT_{85}$  and  $HTMT_{90}$  to assess discriminant value and confirm discriminant validity with an  $HTMT_{85}$  and  $HTMT_{90}$  of all constructs for both models (Henseler et al. 2015, p. 128-129).

### **Structural Model**

To validate the model, we tested for the VIFs of each item and construct to identify potential multicollinearity. We deleted the item COM4 (compatibility) with a value of  $5.213 > 5$ , the item S1 (social influence) with a value of  $5.187 > 5$ , and S2 (social influence) with a value of  $5.181 > 5$  in both models (Hair et al. 2011, p. 145). The VIF values of constructs ranged from 1.064 to 1.800 in the cash model and from 1.073 to 1.546 in the card model, suggesting that multicollinearity is not a concern (Hair et al. 2011, p. 145). In the next step, we assessed the primary evaluation criteria for the structural model: the  $R^2$  level and the significance of the path coefficients. The structural model for MP compared to cash shows a moderate  $R^2$  level for MP intention to use with 64.6% and a weak  $R^2$  level for perceived threat with 40.5%.

Also, for the card model, the  $R^2$  level can be considered as moderate with 66.1% for MP intention to use and weak with 44.2% for perceived threat (Hair et al. 2011, p. 145).

Furthermore, we quantified how substantial the significant effects are by assessing their effect size  $f^2$ . The values of their effect size  $f^2$  can be described as strong (0.35), moderate (0.15) and weak (0.02) (Cohen 1988, p. 79).

Additionally, we controlled for a common method bias by checking for overlap in items in different constructs in the first step (Conway and Lance 2010, p. 329). For instance, in the text for the construct compatibility question, we do not use the word "need" to avoid confounding the construct relative advantages (Moore and Benbasat 1991, p. 198). In the second step, we run Harman's single-factor test with unrotated factor analysis. The result indicates 46.89 percent of the total variance for a single factor in the cash model (46.45 percent in the card model), implying that common method bias is not substantial in both models (Podsakoff et al. 2003, p. 879). In the third step, the correlation matrix revealed that all correlations are below 0.74 in both models, while common method bias is a problem with high correlations ( $r > 0.90$ ) (Bagozzi and Yi 1991, pp. 447-449). Lastly, we also consider the approach of Kock (2015). The results show that all construct VIF value relationships are below 3.3 at the factor level in both models, which indicates that the common method bias is not a concern (Kock 2015, pp. 5-7). The bootstrapping analysis of 5000 sub-samples allows for statistical testing of the hypotheses.

## Results

To test our hypothesis, we also need to consider a modified t-test (Liébana-Cabanillas et al. 2014, p. 472; Liébana-Cabanillas et al. 2017, p. 904) to check for significant differences in the regression coefficient between both models. We could confirm four out of six hypotheses of our research model (see Table 8). The relation between the relative advantage of MP and the intention to use MP is significant in both models, and the path coefficient for relative advantage is significantly higher in the card model, which confirms our hypothesis  $H_1$ . The results also support Hypothesis  $H_2$  in both models.

Moreover, the effect size of Hypothesis  $H_2$  is strong in both models. We cannot support Hypothesis  $H_3$  in both models. The relation between perceived switching cost and the perceived threat is significant in both models, and the path coefficient is significantly stronger in the cash model, which confirms our hypothesis  $H_4$ . Both models show a significant relationship between data threat and perceived threat. However, the relationship is significantly stronger for the card model. Therefore, we can only partially confirm our hypothesis  $H_5$ . The relationship between perceived threat and intention to use is significant in both models, and the relationship is significantly stronger for the cash model, which confirms our hypothesis  $H_6$ .

Hypothesis	Path Coefficient				Differences Path Coefficients
	Cash Model	f <sup>2</sup> Cash Model	Card Model	f <sup>2</sup> Card Model	
H <sub>1</sub> confirm	0.232**	0.098	0.323**	0.237	-0.091**
H <sub>2</sub> confirm	0.536**	0.451	0.516**	0.507	0.021 <sup>ns</sup>
H <sub>3</sub> not confirm	0.082 <sup>ns</sup>	0.017	0.027 <sup>ns</sup>	0.002	-
H <sub>4</sub> confirm	0.207**	0.065	0.128*	0.025	0.079**
H <sub>5</sub> partial confirm	0.542**	0.446	0.605**	0.561	-0.064**
H <sub>6</sub> confirm	-0.212**	0.092	-0.177**	0.070	-0.034*

ns: non-significant, 1% level\*\*, 5% level\*; f<sup>2</sup>: strong (0.35), moderate (0.15), weak (0.02)

Table 8: Estimation Results MP BIR 2022

Regarding control variables, only age significantly influences the intention to use in both models (0.103\*\* cash model; 0.098\*\* card model).

## Discussion

The present study examined two central research questions: (RQ1) How does the perception of drivers of MP differ compared to cash and card payment, and (RQ2) How does the perception of inhibitors of MP differ compared to cash and card payment?

With regard to RQ1, our study confirms the decisive role of the relative advantage of MP for convincing cash and card preferring users in general (Boden et al. 2020, p. 7; Koenig-Lewis et al. 2015, p. 11; Slade et al. 2015, p. 220). The results show that the relative advantage of MP is more vital compared to the card than cash payments. This result makes sense because MP and card payment processes have similarities, like the fast and easy payment process (e.g., no money counting) (Bärsch et al. 2020, p. 6). Therefore, MP needs some "good" arguments to convince users to switch from card payment to MP. The compatibility of users with MP is the strongest driver for the MP intention to use. The impact and strength of the result of compatibility are in line with previous findings (Pham and Ho 2015, p. 167; Schierz et al. 2010, p. 214; Yang et al. 2012, p. 135). Therefore, it is essential for users that MP fits users' way they manage their finance or pay for products and services. Interestingly, the structural model revealed that social influence is not essential for users to start using MP in both models. These findings contrast the existing research (Abrahão et al. 2016, p. 227; Koenig-Lewis et al. 2015, p. 11; Yang et al. 2012, p. 135). This finding indicated that users are not influenced by their environment, society or the retailer. An explanation could be the low usage rate by other customers.

With regard to the RQ2, none of the former studies investigated the relationship between perceived switching costs and perceived threat (Hongxia et al. 2011, p. 2; Lu et al. 2011, p. 397; Yang et al. 2012, p. 131). The findings revealed a significant impact of the perceived switching costs on the perceived threats of MP compared to cash and card payments. Moreover, the finding for MP compared to cash is significantly stronger, which confirms Germans' strong "love" for cash payment as the incumbent payment option (Cabinakova et al. 2019, p. 14; EHI Retail Institute 2019a; Pietrowiak et al. 2021, p. 18). Therefore, German customers are more unwilling to expend their effort to switch and form an increased perceived threat toward using MP (Loh et al. 2021, p. 5). Whereas the perceived switching cost for MP compared to card payment is significantly lower. An explanation could be the similarity of the payment process of both payment options (e.g., contactless). In addition, the outer loadings of the items pre-switching search and evaluation costs and cognitive costs of the construct switching cost are significantly relevant in both models, except for the item setup costs, which are not relevant. The results also show that data threat significantly increases the perceived risk of MP compared to cash and card payments. The finding is in line with Bärsch et al. (2020, p. 10) but in contrast with Jenkins and Ophoff (2016, p. 9). Moreover, the result revealed data threat is significantly stronger for MP compared to card payment. It seems that users are more afraid of "giving away too much information" when MP is compared to the card. An explanation for the higher data risk could be that users have to enter a lot of information into their smartphone or MP app (e.g., card numbers, bank account details and other personal information) to use MP.

In addition, the finding extended the former research results and revealed that customers' data threats differ regarding comparing MP with cash or card payments. Therefore, it is important to analyse technology adoption not only one absolute level but also on the relative level (e.g., comparison with existing alternatives). The estimated results also confirmed the significant negative impact of perceived threats on the intention to use MP, which is in line with previous research (Abrahão et al. 2016, p. 227; Hongxia et al. 2011, p. 3; Pham and Ho 2015, p. 167; Slade et al. 2015, p. 220). The results also show that the perceived threat of MP is significantly stronger compared to cash than card payment. The result is in line with our expectations and confirms that people are used to paying with cash as the most common payment option in Germany. Therefore, people regard MP as more similar to the card than cash payment and are still stuck to cash payment, so they regard MP as much more critical and risky (Bärsch et al. 2020, p. 12).



## **Managerial Implications**

Users who compared MP with cash payment are less susceptible to objective advantages and focus more on the compatibility of MP. Users who compared MP with card payment are more susceptible to objective advantages than compatibility of MP.

Second, practitioners need to advertise the compatibility of MP in general. Practitioners should tailor their marketing measures accordingly so that MP is perceived as compatible with German users' lifestyles. Thirdly, practitioners should also use their marketing effort to explain how easy it is to adopt MP to reduce the perceived switching cost compared to cash and card payments. In particular, it is essential for cash preferring users to make the switch from cash to MP as simple as possible. For instance, provide an operating manual in simple language to reduce the cognitive effort for MP's installation and learning process. Fourthly, privacy plays a vital role in adopting decisions for German users. In particular, users are not likely to trust companies like Apple or Payback Pay compared to their bank institutes (Barley and Berg 2019). Therefore, practitioners need to highlight the security of MP in general. For instance, practitioners should signal and explain security measures to protect bank accounts or users' identities. Moreover, they should transparently communicate the collected data and the data processing.

## **Limitation and Future Research**

First, the collected data comprises only German-speaking users of younger age. However, young people have been proven to be adequate surrogates for decision-makers (Remus 1986, p. 23), so that this sampling hardly distorts the results. Future research should collect a more representative and also enlarge the sample size in different cultural regions. Second, our work only examines the drivers and inhibitors of MP compared to cash and card payments based on questionnaire statements and not the actual decision. Future research may consider replicating our findings with another research design to provide further insights with an experiment, interviews or actual data. Third, we do not split the sample based on users' prior experience (self-report) and analyse the difference between inexperienced and experienced users. Hence, future research should consider users' experience level, like how long a user has already used MP and its effect on the perception of driver and inhibitors of MP. Fourth, although the results indicate that users value data privacy, the reality shows that they also ignore privacy in their everyday use (e.g., social media). Therefore, it remains unclear what exactly does full transparency mean? Do digital customers want full transparency? And how does full transparency affect the interaction with the digital services (more data processing dialogue boxes). Future research needs to address these questions in the context of MP and other human-computer interactions.

### 3.3 It it all about Fun? Self-Service Technology Acceptance in Germany

The rising service competition between pure online and stationary retailers has led to a dramatic change in the retail environment (EHI Retail Institute 2019c). Therefore, retailers started to experiment with new technologies to address their customers' changing needs and to create a sustainable competitive advantage compared to the online retail. For instance, retailers use personalized pricing (promotion), smart shelves, or SST (Inman and Nikolova 2017, pp. 2-6; Varadarajan et al. 2010, pp. 96-97). In particular, self-checkout and self-scan services have been one of the fastest-growing business phenomena in the past decade in retailing. They enabled an increasing differentiation through interactive technologies (Leung and Matanda 2013, pp. 549-550; Varadarajan et al. 2010, pp. 96-97). In general, SST can be defined as "technological interfaces that enable customers to produce a service independence of direct service employee involvement" (Meuter et al. 2000, p. 50). Two SSTs can be distinguished: self-scanning checkout services and self-scan services. Self-scanning checkout services, also called self-checkout, enable customers to scan, bag, and pay for their purchases after waiting in a checkout line (Djelassi et al. 2018, pp. 1-2; Inman and Nikolova 2017, pp. 4-6). Self-scan services, also called self-scanner, introduce devices with optical readers into the customer's shopping process. With these devices, customers scan product bar codes in order to display information about a product's price, type, or quantity, and to add the product into the basket (Djelassi et al. 2018, pp. 1-2; Marzocchi and Zammit 2006, pp. 655-656). SST technologies provide many benefits to retailers and customers. They optimize the purchase process and greatly reduce customers' waiting time. Hence, more customers can be served at higher speed with fewer resources inducing lower costs for retailers (e.g., cost in training or operating cost) (Yang and Klassen 2008, p. 458). This not only enables retailers to provide more cost-effective services to their customers and a more consistent service atmosphere independent of employees' personality and mood (Weijters et al. 2007, pp. 3-4). It also avoids a huge amount of revenue losses. Waiting queues alone are responsible for a potential revenue loss of 17.9 billion Euros in Germany due to abandoned purchases (Adyen Retail 2018). Customers also receive more information about product ingredients (e.g., origin, allergens), which is important for more and more environmentally conscious customers (Djelassi et al. 2018, p. 4; Marzocchi and Zammit 2006, pp. 655-657).

In stark contrast to the high adoption levels of SST in Europe (e.g., UK, Switzerland) or Australia (Leung and Matanda 2013, pp. 552), the adoption of SST in Germany is quite low. A major pushback is the low availability of SST in retail stores. By the end of 2019, only 970 stores (a total of 34.947 stores exist in the grocery retail) offer SST in Germany (EHI Retail Institute 2019c). To make it more straightforward: only 3000 self-checkout terminals exist in the German retail market compared to 235.000 traditional checkouts.

In opposition to Germany, self-checkouts account for one out of every six sales points in the grocery sector in the UK (Deutsche Welle 2021). But also customer behaviour seems to account for the low diffusion of SST. Despite being aware of the advantages of SSTs, only 18% of German customers used a self-checkout system, and only 3% used a self-scanner (EHI Retail Institute 2019c). A recent study among 1591 customers about the SST system usage in Germany revealed that reasons for the German customers' reluctance are manifold. 26.5% of the German customers are worried that using SST discloses too much information about the user. 25.7% still prefer to use the traditional counter as a habit and as a matter of principle to protect jobs in the retail sector. 14.7% do not trust the technology in general (EHI Retail Institute 2019c).

The adoption of SST is still considered an understudied field in the retail context (Fernandes and Pedroso 2017, p. 85), particularly when it comes to self-scanning and self-checkout as a single holistic system (see next section). A holistic system consists of self-scanning and self-checkout functionalities (Inman and Nikolova 2017, p. 4). With the further development and diffusion of SST varieties in the retailing context (e.g., loyalty-based SST, mobile Apps), it is important to shed more light on these holistic systems as they provide additional advantages. Moreover, a single holistic system is in line with the customer behaviour's reality and addresses the main advantage of an SST system: reducing the customer waiting time during the service experience (Meuter et al. 2000, p. 51; EHI Retail Institute 2019c; Weijters et al. 2007, p. 16). For instance, SST as a single holistic system removes the hassle of scan and bag at the self-checkout. This helps the customer to save time during the shopping trip. Moreover, 68% out of 116 big retailers in Europe believe that a holistic system (e.g., scan-and-go technology) would make shopping in the retail store more attractive (e.g., speed, easier, fun). 57% out of 116 retailers agreed that customers prefer to use an app-based solution for product scan and checkout instead of a physical scanner (Scandit 2020). Even in Germany, retailers have started to offer holistic systems like Edeka or Rossmann. Despite the increasing scan and go apps and customer demand, only one study investigated the adoption of such a holistic SST system (Vučkovic et al. 2017, p. 932).

However, advantages alone do not draw German customers towards SSTs. Obviously, the lack of trust plays a critical inhibiting role, particularly for German customers (EHI Retail Institute 2019c). But trust is usually formed between people while IT artifacts like SST systems are no human beings. Hence, the question arises of how organisations that offer self-checkout or self-scan services can gain customers' trust when human contact is absent and limited to the human-computer interaction (Fernandes and Pedroso 2017, p. 88; Leung and Matanda 2013, p. 557; Meuter et al. 2000, p. 62; Robertson et al. 2016, p. 91). In particular in the field of SST, this is still unanswered (Leung and Matanda 2013, p. 557), while studies in the field of online recommendation agents, mobile payment, or website usage already demonstrate the importance of trust for adopting new technologies or services (Benbasat and Wang 2005, p. 87;

Gefen et al. 2003, p. 317; Zhou 2013, p. 1089). Therefore, this study aims at shedding more light on the importance of trust for the adoption of SST.

The question is how retailers can animate their customers to use SSTs (more frequently). Besides usefulness (e.g., Elliot et al. 2012, p. 323) and waiting time (e.g., Collier et al. 2015, p. 708), fun has also been found to be an essential factor for using SSTs in the retail context. Research in various IS contexts (e.g., live-stream shopping, fitness wearable technology) show the importance of fun as a primary driver of technology or service adoption (Dabholkar and Bagozzi 2002, p. 190; Ma 2021, p. 8; Park and Lin 2020, p. 5; Talukdar et al. 2010, p. 349). Not surprisingly, study results in the SST domain also indicated that increasing the fun of using an SST helps getting customers' adoption (e.g., Elliot et al. 2012, p. 323). A further reason for incorporating fun is that German customers consider the fun aspect as important for SSTs (EHI Retail Institute 2019c). Moreover, when SST can be considered fun, the chances of engaging with it in the long-term may be increased (Carrol and Thomas 1988, p. 23; Lepper et al. 1973, pp. 134-136; Leng and Wee 2017, p. 9; Weijters et al. 2007, p. 12). However, former studies primarily focused on the enjoyment (fun) or entertainment value of fun (e.g., Leng and Wee 2017, p. 554; Orel and Kara 2014, p. 6; Weijters et al. 2007, pp. 18-19). The current study extends the view of fun with the escapism value (Mathwick et al. 2001). But solely enhancing fun may increase the adoption of unproductive SST. For that, it is decisive to understand also the interplay between fun and the perceived usefulness because SST that are fun reinforce the perceived usefulness and the adoption compared to those that are not. Therefore, an SST can be characterised to aim for productivity through fun. Although the interplay makes intuitive sense, none of the reviewed literature in the SST domain investigated this aspect. Moreover, we provide theoretical insight for fun as a related variable to usefulness (Davis et al. 1992, p. 1125). Hence, the following research question shall be answered:

*RQ1: How do trust and fun affect the acceptance of self-checkout and self-scan?*

When investigating the acceptance of IT artifacts, mostly the initial technology acceptance is in focus. This also holds for SST studies (Djelassi et al. 2018, p. 1). However, the usability of innovation like SST becomes less important once users have made enough experience with the innovation (Karahanna et al. 1999, p. 185). Therefore, a retail company's success depends on the continued use rather than first-time use (Bhattacharjee 2001, p. 352). In particular, in the retail sector with low switching costs and high competition, retailers need to know what drives people to adopt and what makes them continuously use the technology (Djelassi et al. 2018, p. 1). Previous studies have shown that the factors do not only differ. They can become significant over time or lose their importance. In the worst case, the same factor may have the opposite effect in the post-adoption stage than in the pre-adoption stage (Bhattacharjee 2001, p. 352; Karahanna et al. 1999, p. 185). Surprisingly, research on differences among prospective adopters and experienced users concerning SST in the retail context is scarce (Fernandes and Pedroso 2017, p. 70; Wang et al. 2013, p. 402; Weijters et al. 2007, p. 18).

Former studies solely focused on the differences between prospective and experienced users considering the SST characteristics without investigating the impact on the intention (Leng and Wee 2017, p. 9), or limited the difference between both user groups to the dependent variable (Weijters et al. 2007, p. 12). Therefore, this paper focuses on the difference between prospective adopters and experienced users concerning the evaluation of the SST characteristics and the intention to use. To address the research gap, we follow former studies and asked our participants to indicate if they already used the SST system to answer the following research question (Leng and Wee 2017, p. 8; Oyedele and Simpson 2007, p. 294):

*RQ2: How does the adoption of self-checkout and self-scan differ among inexperienced prospective adopters and experienced users?*

## **Literature Review**

Already 22 papers investigated different aspects of SST usage behaviour in the retail context. 6 Out of 22 papers look solely at users' demographic and psychographic characteristics in determining the acceptance of SST technology without investigating the SST characteristic (Blumer et al. 2018, p. 110; Djelassi et al. 2018, p. 4; Lee et al. 2010, pp. 51-52; Lee 2017, pp. 220-221; Leung and Matanda 2013, pp. 552-553; Wang et al. 2013, pp. 402-404). In contrast to our study, they do not explain users' evaluation of the SST characteristics. The study of Oyedele and Simpson (2007, pp. 294-295) investigated the users' demographic and psychographic characteristics but considered the experience level. Therefore, we keep this study (see below Table 9 the discussion of the experience level).

13 of the remaining 16 papers included the users' evaluation of the SST characteristics for a single SST self-check-out (Collier et al. 2015, p. 705; Dabholkar et al. 2003, p. 69; Fernandes and Pedroso 2017, p. 83; Jia et al. 2012, p. 214; Leng and Wee 2017, p. 8; Mukerjee et al. 2019, p. 4; Marzocchi and Zammit 2006, p. 663; Orel and Kara 2014, p. 3; Wang et al. 2012, p. 61) or self-scan system (Eastlick et al. 2012, p. 338; Elliot et al. 2012, p. 316; Elliot et al. 2013, p. 132; Weijters et al. 2007, p. 9). The results indicated that usefulness is a decisive factor for the adoption (Collier et al. 2015, p. 708; Elliot et al. 2012, p. 323; Jia et al. 2012, p. 218; Weijters et al. 2007, p. 12) but also for the extrinsic motivation (Eastlick et al. 2012, p. 356). The studies also highlight the importance of fun for the adoption (Elliott et al. 2012, p. 316; Elliot et al. 2013, p. 132; Jia et al. 2012, p. 218; Fernandes and Pedroso 2017, p. 85; Leng and Wee 2017, p. 9; Marzocchi and Zammit 2006, p. 664; Orel and Kara 2014, p. 8; Weijters et al. 2007, p. 12). As it seems fun is more important for self-scanning systems than for self-checkout systems (Elliott et al. 2012, p. 316; Elliot et al. 2013, p. 132). However, previous research solely incorporated fun basically as an enjoyment (fun) or entertainment value (Elliott et al. 2012, p. 322; Elliot et al. 2013, p. 134; Fernandes and Pedroso 2017, p. 83; Jia et al. 2012, p. 225; Leng and Wee 2017, p. 11; Orel and Kara 2014, p. 6; Wang et al. 2012, p. 66; Weijters et al. 2007, p. 5). In contrast, this study also considers escapism as an influencing factor.

Moreover, previous research in the IS field indicated that increasing the fun of using a system helps to get a productive system like a SST accepted by users. But none of the former studies in the SST literature investigated the interplay between fun and usefulness like we do in this study.

The remaining two studies investigated a holistic system (Inman and Nikolova 2017, p. 15; Vučkovic et al. 2017, p. 932). The study of Inman and Nikolova (2017, p. 12) asked how participants' perceptions of the retailer would change when a holistic system (scan & go app) is installed. They found that adding this technology would positively change the customers' value perception, trust or satisfaction in the retailer. Moreover, Inman and Nikolova (2017, p. 10) is the only study that took trust into account. However, they focused on customers' perception of the retailers' reliability and integrity when an SST is installed. They neither considered the trust between the customer and the SST, nor the impact on the intention to use. This holds for most of the SST papers. A reason for this research gap may be that most papers – except for the loyalty card-based SST system of Weijters et al. (2007, p. 9) and the SST scan & go systems of Inman and Nikolova (2017, p. 15) and Vučkovic et al. (2017, p. 932) – investigated SST systems that can be used without prior registration. To better understand the trust-based relationship between the customer and the technology our study explicitly focuses on this aspect.

<b>Paper</b>	<b>Objective/ Technology</b>	<b>Basic Theory</b>	<b>Sample/ Country</b>	<b>Findings</b>
Blumer et al. 2018	Adoption of self-checkout	Paradoxes of Technology	20/New Zealand	Self-checkout fulfills needs (e.g., speed up) and create inefficiency (e.g., Technology failure). Shoppers can very quickly move from feeling competent to inept.
Collier et al. 2015	Attitude toward using self-checkout	Resource Matching Theory	1154/USA	Shopping effectiveness has a significant strong positive impact and time pressure a significant negative impact on the attitude.
Dabholkar et al. 2003	Intention to use and avoid self-checkout	Own Model	150/USA	Ease of use and enjoyment were important to customers in using self-checkouts.
Djelassi et al. 2018	Satisfaction with self-scan or self-checkout	Own Model	714/France	SST experience evaluation and customer satisfaction toward the store is stronger for self-checkout than for self-scanning.
Eastlick et al. 2012	Future intention to use self-scan	Own Model	228/USA	Attitude toward co-producing the scanning service is a central construct leading to future intent to use.
Elliott et al. 2012	Attitude toward self-scan	TAM & TRI	1079/USA	Perceived Usefulness and perceived fun have the most significant impact on the attitude.
Elliott et al. 2013	Intention to use self-scan	TRI	1079/USA	Perceived fun appears to be an important driver of intention to use self-scanning.
Fernandes & Pedroso 2017	Intention to repatronize the Store (self-checkout)	Extended TAM	294/Portugal	Self-checkout attributes fun and ease of use have a significant impact on the perceived quality of self-checkout.
Inman & Nikolova 2017	Adoption of self-checkout	Shopper-focused Decision Framework & TAM	306/USA	Perceived Usefulness has the highest impact on the adoption for scan & go and self-checkout.
Jia et al. 2012	Trial intention of self-checkout	Regulatory Focus Theory	359/China	Functional and Experiential Value has the most significant impact on the trial intention.
Lee et al. 2010	Intention to use self-checkout	Own Model	285/USA	Demographic factors (Gender, Age) only indirectly influence intention to use retail self-checkouts.
Lee 2017	Intention to use self-checkout	LOC	823/Korea	The need for interaction with a retail employee is inversely associated with the intentions to use SSTs.
Leng & Wee 2017	Comparison of users and non-users of self-checkout	Own Model	778/Singapore	In contrast to non-users, self-checkout users consider self-checkout as more fun and also see the relative advantage.

Leung & Matanda 2013	Intention to use self-checkout	Self-Determination Theory	361/Australia	Self-determined motivation and autonomy has the highest impact on the intention to use self-checkout.
Marzocchi & Zammit 2006	Intention to repurchase (self-scan)	Own Model	353/Italy	Enjoyment seemed to be the factor having the largest impact on satisfaction with self-scanning.
Mukerjee et al. 2019	Likelihood to use self-checkout	TRI & TAM	152/India	Perceived Usefulness and perceived ease of use has the highest impact on the likelihood to use self-checkout.
Orel & Kara 2014	Customer Satisfaction and Loyalty (self-checkout)	SSTQUAL	275/Turkey	Service quality and satisfaction of self-checkout have a significant impact on customer loyalty.
Oyedele & Simpson 2007	Intention to use self-checkout in different context	LOC	186/USA	Non-users of SSTs are more technologically anxious and more disposed than users to prefer check-out service personnel rather than self-service check out.
Vučkovac et al. 2017	Mobile Scan & Go usage	Us-Own model	Transaction data/Swiss	Half of all users regularly fail to make purchases because of time pressure and long queues. App users on average save 60 seconds during peak hours.
Wang et al. 2012	Actual choice between self-checkout and personal service	Own Model	47/Interviews Australia	Perceived waiting time, perceived task complexity, and companion influence are the three situational factors that impact on a customer's actual choice between self-service and personal service.
Wang et al. 2013	Intention and continued intention to use self-checkout	Own Model	115/-	Habit, self-efficacy, and satisfaction affect SST usage over time in a retailing context.
Weijters et al. 2007	Attitude towards self-scan	TAM	497/-	Perceived usefulness has the most significant impact on attitude, whereas perceived fun also has an effect on customer attitude towards self-scan.

Table 9: Related Literature SST

The study of Vuckovac et al. (2017, p. 934) used one-year transaction data to investigate conversion, usage, and time performance for a fully autonomous self-checkout solution that combines self-scanning and mobile payments. The study revealed that on average app users save 60 seconds compared to regular shoppers during peak hours. However, the impact of this effect on the perception of SST and its usefulness has not been investigated. Also, both studies did not consider fun or the difference between prospective and experienced users for a single holistic system.



Only five out of 22 studies focused on the difference between prospective and experienced users. Three studies investigated the difference in the context of a self-checkout system (Leng and Wee 2017, p. 7; Oyedele and Simpson 2007, p. 298; Wang et al. 2012, p. 60) and two in the context of a self-scan system (Eastlick et al. 2012, p. 338; Weijters et al. 2007, p. 9). Leng and Wee (2016, p. 9) identified significant differences between prospective and experienced users for the relative advantages, fun, compatibility, reliability, and complexity. However, they only investigated the differences concerning the perception of SST characteristics and did not consider the usage intention of SST. Oyedele and Simpson (2007, p. 298) studied control-related customer difference variables (self-efficacy, autonomy, locus of control (LOC), technological anxiousness, and time pressure) on the decision to use SST in various contexts (e.g., shopping context). The results show that prospective and experienced users differ concerning their locus of control and technology anxiety in the shopping context. However, they did not investigate significant difference regarding the SST characteristics.

The study of Wang et al. (2012, p. 61) explored the impact of the SST experience (e.g., first time usage) on attitudes and actual use or choice of the SST. The results show that a good first-time experience will lead to a positive attitude and thereby encourage future use. However, the study solely investigated if the first-time experience was good or bad and did not consider the impact of the experience on the perception of SST characteristics and the usage intentions.

Eastlick et al. (2012, p. 349) collected information about the experience level via surveying customers with a five-point Likert frequency scale. Eastlick et al. (2012, p. 356) empirically show that the construct of previous self-scanning experience significantly influences customers' perceived role clarity and perceived ability to use the self-scan. Moreover, previous self-scanning experience also significantly influences customers' future usage intention of self-scan. Nevertheless, they solely focused on the experience influence instead of investigating the perception of experienced users among all other variables.

Weijters et al. (2007, p. 9) investigated the antecedents of attitude toward SSTs (e.g., perceived usefulness), the moderating effects of SST use (e.g., gender, age) and two outcome variables of SST usage (perceived waiting time and actual time in-store). They only investigated the difference among prospective and experienced users for the two outcome variables of the SST usage and not for the SST characteristics. For instance, they revealed that only perceived waiting time significantly differs between both user groups.

### **Theoretical Framework and Hypotheses Development**

Historically, IS researchers have derived models for IS acceptance from social psychology as a theoretical basis for investigating the determinants of user behaviour (Venkatesh et al. 2003, p. 427). Davis et al. (1989, p. 983) uses the TRA as a theoretical basis for the TAM model. Unlike the very general approach of the TRA, the TAM is tailored to IS contexts and was designed to predict information technology adoption behaviour in organisations (Venkatesh et

al. 2003, p. 427). Moreover, the TAM focuses on the users, how they perceive innovation as useful or easy to use, and how these perceptions influence the users' attitudes towards the innovation and finally, the usage behaviour. Therefore, former studies also used the TAM for information technology adoption behaviour in the non-organisation context like mobile payment (Dahlberg et al. 2015, p. 9), mobile banking (Shaikh and Karjaluo 2015, p. 133) or SST adoption (e.g., Elliott et al. 2012, p. 315; Inman and Nikolova 2017, p. 17). Despite the increasing usage of the UTAUT model, researchers still use the TAM model to explain adoption due to its simplicity and very high explanatory power (Gentry and Calantone 2002, pp. 948-949; Mathieson 1991, pp. 8-10). However, this simplicity is also the reason for much criticism (Lee et al. 2003, p. 766). Therefore, the current study does not limit the focus to TAM-related constructs and considers further empirically relevant factors for the adoptions of SST.

The introduction of SST is not a sure-fire success. Perceiving its usefulness is crucial, otherwise customers will likely refuse to use SST (e.g., Inman and Nikolova 2017, p. 15; Mukerjee et al. 2019, p. 11; Vučkovic et al. 2017, p. 939; Weijters et al. 2007, p. 12). Interestingly, perceived usefulness seems to be less critical for female than for male customers (Leng and Wee 2017, p. 10; Weijters et al. 2007, p. 12). Hence, different assessments among user groups are conceivable. Reduced waiting time (e.g., Vučkovic et al. 2017, p. 939; Wang et al. 2012, p. 63; Weijters et al. 2007, p. 15), efficiency (Elliott et al. 2012; Weijters et al. 2007, p. 12), faster shopping (Elliott et al. 2012, p. 323; Weijters et al. 2007), and better control of the checkout process (Leng and Wee 2017) have been identified as the main factors of perceived usefulness of SSTs. These factors can mostly be observed and experienced when using SST. Therefore, the evaluation of the benefits is challenging for prospective adopters, so that they need an adequate level of support to experience them (Dabholkar et al. 2003, p. 74). As a result, inexperienced prospective customers' attitude is based solely on cognitive beliefs formed potentially via second-hand information (Bettman and Sujan 1987, p. 148) (e.g., social media, friends). These influencing sources may be biased in the evaluation of the usefulness of prospective users.

In contrast, experienced users have the first-hand experience and can evaluate the SST more realistically and unbiasedly (Bhattacharjee 2001, p. 357; Fazio and Zanna 1981, p. 197). As studies from different contexts like mobile payment (e.g., Talwar et al. 2020, p. 7), online banking (Bhattacharjee 2001, p. 352), or software adoption (Karahanna et al. 1999, p. 190) have proven, perceived usefulness is a salient factor for experienced users to use the technology continuously. Users undergo a learning process to understand how things work and make judgments about more specific criteria (Bettman and Sujan 1987, p. 148) (e.g., time-saving) which increases the importance of usefulness over time for the usage intention (Leng and Wee 2017, p. 9). Hence, we expect a significantly stronger influence of usefulness for the intention to use of experienced users. Summing up, the perceived benefits of a system play an important role for the initial adoption and continuance usage intentions.

Therefore, this study also incorporates perceived usefulness into the research model. We adopt Venkatesh's definition of perceived usefulness as "the degree to which a person believes that using a particular system would enhance his or her performance" (Venkatesh et al. 2003, p. 428). In line with former studies, we consider reduced waiting time (Leng and Wee 2017, p. 10; Weijters et al. 2007, p. 12), better control of the checkout process (Leng and Wee 2017, p. 10) and a continuous overview of the total amount of the shopping trip as benefits. The latter is of particular interest as German customers are afraid of losing control and spending too much money (EHI Retail Institute 2019c). Concerning the perceived usefulness, we hypothesize:

*H<sub>1a</sub>: Perceived Usefulness of SST positively influences the intention to use SST of inexperienced prospective adopters.*

*H<sub>1b</sub>: Perceived Usefulness of SST positively influences the intention to use SST of experienced users to a greater extent than of inexperienced prospective adopters.*

The motivation of customer consumption behaviour has been attributed to functional, social, emotional, and epistemic utility (Sheth et al. 1991, p. 160). But empirical researchers have solely focused on the utilitarian benefits of products or services (Babin and Darden 1995, pp. 48-49). This excluded numerous intangible and emotional aspects related to the shopping trip (Babin et al. 1994, p. 644; Weijters et al. 2007, p. 17). However, consumption experience itself is rich in value, and the experiential value perception is based upon interactions involving either direct usage or distanced appreciation of goods and services. The customer interaction with the product or services provides the fundament for the relativistic preferences held by the customers involved (Holbrook and Corfman 1985, p. 40). Therefore, experience value offers both: extrinsic and intrinsic benefits (Babin and Darden 1995, p. 49). An extrinsically oriented shopper is often happy to get through and focuses on the task completion.

In contrast, intrinsic value derived from the appreciation of an experience for its own sake and, therefore, the perception of the intrinsic values of shoppers results from the fun (enjoyment) (of an experience), rather than from task completion (Babin et al. 1994, p. 646; Holbrook 1994, pp. 40-43). Holbrook (1994, p. 21) broadens the extrinsic-intrinsic conceptualization of experiential value by including an active or participative value which implies a collaboration (e.g., gamelike exchange experience) between the customer and companies' broad range of value sources (e.g., SST) (Mathwick et al. 2001, p. 41). In opposition to the active value, reactive or passive value derives from the customers' response to a consumption product or experience (Holbrook 1994, pp. 40-43). Based on the typology of Holbrook (1994, pp. 40-43), Mathwick et al. (2001, p. 43) developed four dimensions of experiential value: The intrinsic value playfulness incorporates escapism and enjoyment (fun) as an active value and aesthetics with visual appeal and entertainment as reactive value.

The extrinsic value incorporates customers' return on investment (active value) and service excellence (reactive value) (Mathwick et al. 2001, p. 41). Former studies solely focused on the enjoyment (fun) and entertainment value of SST (Elliott et al. 2012, p. 322; Elliot et al. 2013, p. 136; Fernandes and Pedroso 2017, p. 78; Leng and Wee 2017, p. 9; Orel and Kara 2014, p. 6; Weijters et al. 2007, p. 19). In general, they revealed that enjoyment (fun)/entertainment is an essential component of service quality (Orel and Kara 2014, p. 6), service satisfaction (Marzocchi and Zammit 2006, p. 658), perceived quality of the service (Fernandes and Pedroso 2017, p. 78), attitude toward SST (Dabholkar et al. 2003, p. 74; Elliott et al. 2012, p. 322; Weijters et al. 2007, p. 19), and intention to use SST (Elliott et al. 2013, p. 322).

However, SST is a form of collaboration between customers and the system (Mathwick et al. 2001, p. 41). Particularly inexperienced customers engage with a cognitive investment in the scanning activities that are absorbing, to the point of offering an escape from the demands of the day-to-day world (Unger and Kernan 1983, p. 383). Therefore, we added escapism as a new item that incorporates the customers' aspect "to get away from it all" temporarily (Huizinga 2016, p. 130). Furthermore, we consider that SST is fun (e.g., Elliott et al. 2012, p. 322) and interesting (e.g., Weijters et al. 2007, p. 19) as factors. Regarding the user types, previous research indicated that fun is important for the adoption of an SST in general (Elliott et al. 2012, p. 322, Orel and Kara 2014, p. 6). In particular, studies that distinguished between the user type show that fun is less important for prospective adopters than for experienced users (Fernandes and Pedroso 2017, p. 83; Leng and Wee 2017, p. 9). In contrast, prospective adopters in Germany reported fun as an important driver for using SST (EHI Retail Institute 2019c). Therefore, we argue in the opposite direction that fun is more important to convince prospective adopters to use SST than for the continuous usage of experienced users.

Hence, we hypothesize:

*H<sub>2a</sub>: The Fun using SST positively influences the intention to use SST of inexperienced prospective adopters to a greater extent than of experienced users.*

*H<sub>2b</sub>: The Fun using SST positively influences the intention to use SST of experienced user*

Intrinsic motivation like fun is concerned with performing a behaviour per se, irrespective of whatever external outcomes are generated (utility or reward) by such behaviour (Deci 1975, p. 23; Davis 1992, p. 1125). Studies in the context of Deci's cognitive evaluation and others have often found that introducing an extrinsic reward can reduce the effect of intrinsic motivation on task due to the shift in locus of causality for the activity from internal to external (e.g., Lepper and Greene 1973, p. 130; Pritchard et al. 1977, p. 9; Ryan et al. 1983, pp. 736-737). However, the use of SST is not purely triggered by intrinsic motives (e.g., fun) in the first place but also by extrinsic motives relating to efficiency (Fernandes and Pedroso 2017, p. 77; Wang et al. 2012, p. 62).

For instance, customers are enjoying the use of the SST in the first place but also realize that they can perform their task in an efficient and timely manner (Oghazi et al. 2012, p. 206). Therefore, we do not expect a diminished effect between usefulness and fun for SSTs. Instead, we expect that fun will positively influence the SST's usefulness and create a positive reinforcement spiral (Davis 1992, p. 1125). Moreover, the positive reinforcement spiral will be stronger for experienced users than for prospective adopters due to their first-hand experience (e.g., Leng and Wee 2017, p. 9). Hence, we hypothesize:

*H<sub>3a</sub>: The Fun using SST positively influences the perceived usefulness of SST of inexperienced prospective adopters.*

*H<sub>3b</sub>: The Fun using SST positively influences the perceived usefulness of SST of experienced users to a greater extent than of inexperienced prospective adopters.*

Trust is the enabler of social interaction. Therefore, it is not surprising that the origins of trust research lie outside the IS domain (Söllner et al. 2018, p. 1). Trust has been conceptualized by previous research in a variety of ways. For instance, researchers view trust as a set of specific beliefs dealing with the integrity, benevolence and ability of another party (Doney and Cannon 1997, p. 40); a general belief that people can be trusted by another party (Gefen 2000, p. 30), "the willingness of a party to be vulnerable to the actions of another" (Mayer et al. 1995, p. 7), or a combination of these elements. Four overall clusters of trust relationships were investigated in IS research (Söllner et al. 2018, p. 3): between (1) people or groups, (2) people and organisation, (3) organisations, and (4) people and technology. The current study focuses on the trust relationships between people and technology and defines trust as "the extent to which one believes that the new technology usage will be reliable and credible" (Ha and Stoel 2009, p. 566). Prior research has shown that trust develops over time with the accumulation of trust-relevant knowledge resulting from experience with the other party (e.g., Lewicki and Bunker 1995, p. 156). This also holds for the trust-relationship between people and technology (Xiao and Benbasat 2007, p. 164). Trust theorists implicitly assume that trust levels start small and gradually increase. Therefore, the trust level of experienced customers should be greater than for prospective adopters because of prior successful interactions with the system (e.g., SST) (Gefen 2000, p. 40). In contrast to this implicit assumption, researchers have been surprised at how high their subjects' early (initial) trust levels of prospective adopters were (e.g., McKnight et al. 1998). This initial trust is not based on experience or firsthand knowledge of the innovation (McKnight et al. 1998, p. 474). Obviously, trust is a mechanism helping to reduce uncertainty and to get a positive picture of innovation (e.g., Söllner 2020, p. 5132). In line with former studies, we consider the emotional aspect of trust (Komiak and Benbasat 2006, p. 943; Ha and Stoel 2009, p. 567) and trusting stance (McKnight et al. 2002, p. 340) in the survey. Moreover, studies in related IS fields (e.g., mobile-payment/banking) show the significant importance of trust for the intention to use of prospective adopters (Shaikh and Karjaluo)

2015, p. 135; Shao et al. 2019, p. 9). Therefore, we do not expect significant differences between both user types.

*H<sub>4</sub>: Trust towards SST positively influences the intention to use SST of inexperienced prospective adopters as well as experienced users without significant difference.*

Trust reduces the need for customers to understand, monitor, or control the situation and creates a reservoir of goodwill (Pavlou 2003, p. 106). This lowers the time and effort that has to be spent and made when using the innovation (Ring and van de Ven 1994, p. 112). As a result, customers can concentrate on the task and the associated benefits. When customers lack trust in the SST technology (e.g., systems do not work correctly), they will be less likely to adopt them, perhaps even seeing their adoptions as detrimental. Moreover, if the SST technology cannot be trusted to work according to the customers' confident beliefs, there is no reason why customers should expect to gain any benefits from using the technology (Pavlou 2003, p. 110). Therefore, customers' expectations of gaining advantages from using an SST, leading to their perceptions of usefulness, largely depend on their trust in the SST system (Benbasat and Wang 2005, p. 81; Chircu et al. 2000, p. 712; Pavlou 2003, p. 110). Thus, trusting SST even strengthens its advantages. Studies in various IS domains (e.g., mobile payment, e-commerce, knowledge management systems) also demonstrate that this holds for prospective adopters and experienced users (Khalilzadeh et al. 2017, p. 468; Pavlou 2003, p. 117; Thatcher et al. 2011, p. 64; Zhou 2013, p. 1089). In particular, more trust is needed when the involved customers have little acquaintance with the technology and only second-hand information (Gefen et al. 2003, p. 317; Karahanna et al. 1999, p. 197). Hence, we hypothesize:

*H<sub>5a</sub>: Trust towards SST positively influences the perceived usefulness of inexperienced prospective adopters users to a greater extent than of experienced users.*

*H<sub>5b</sub>: Trust towards SST positively influences the perceived usefulness of experienced users.*

The resulting research model is depicted in Figure 8.

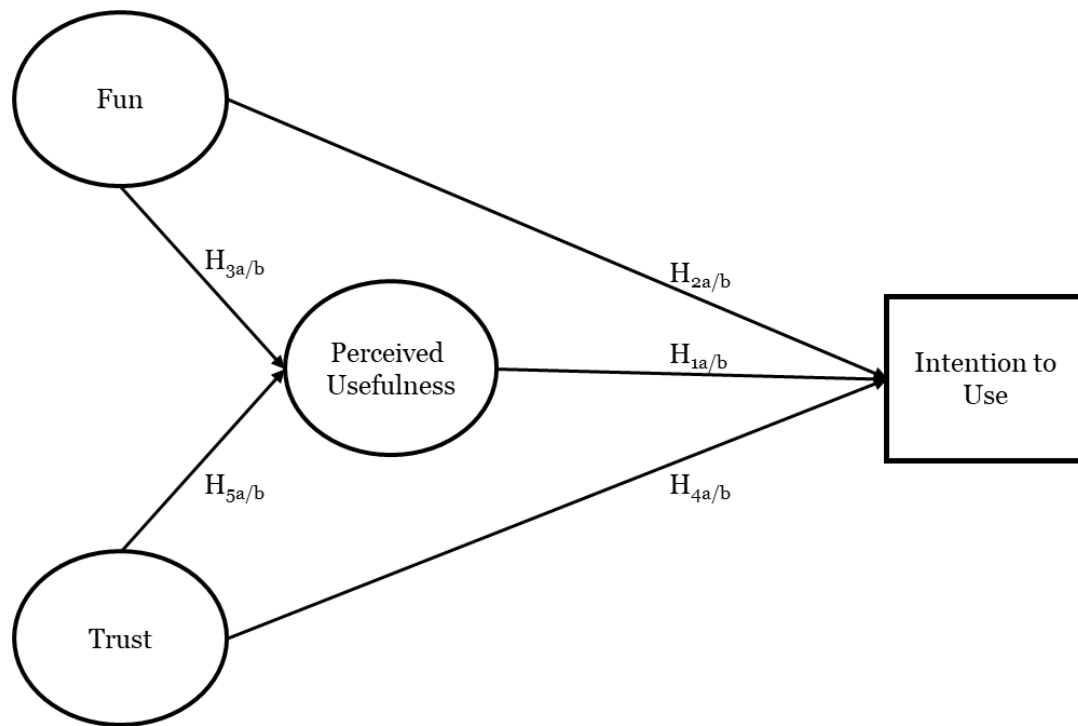


Figure 8: Research Model Working Paper 2023

## Analysis

### Data Collection

The standardised survey with 28 questions started with an introduction to the topic of self-checkout and self-scanning as a single holistic process. In line with the actual SST usage in Germany (EHI Retail Institute 2019c), we considered SST as self-checkout and self-scanning via device and not mobile app. The first part of the survey collected data on the exogenous variables and SST adoption. The second part focused on demographic variables about users' experience, gender, and age. The data was gathered in Germany with the online survey tool "LimeSurvey" and a paper-based version in front of a market which already established a self-checkout and self-scanning system as a single. Using the snowball principle for the distribution of the survey, we collected 273 responses in total. 31 completed the paper-based and 242 participants completed the online questionnaire (see Table 10 for the questions, mean and standard deviation and B.13 for the german questionnaire). Considering the recommendation of Hair et al. (2014, p. 112), 51 observations with more than 15% missing values had to be eliminated resulting in a total of 222 observations. 167 participants answered the questionnaire completely which is beyond the recommended sample size of 30 for receiving stable results of the model estimation (Chin 1998b, p. 311). The demographics of the sample show that 53.6% are male, and 43.7% are female; 10% are under 20 years old, 34.3% are between 20-29 years old, 13% are between 30-39 years old, 12.2% between 40-49 years old, 11.7% between 50-59 years old, 6.3% are between 60-69 years old, and 5% are older than 70 years. 7.5% did not

provide any information regarding the age and 2.7% regarding the gender. 47.7% can be categorized as experienced users, and 48.6% as inexperienced prospective adopters based on their self-reports. 3.7% did not provide any information regarding their previous experience.

Usefulness (formative): (Scale: Disagree 1 – Agree 5)		Mean	Standard Deviation
U1	I save time by doing my own scanning.	3.71	1.23
U2	I have a better overview of my shopping cart.	3.73	1.20
U3	I have a better overview of my expenses.	3.72	1.23
Usefulness (reflective): (Scale: Disagree 1 – Agree 5)			
U5	Shopping with this system is advantageous.	3.96	1.05
U6	I imagine shopping with this system to be useful.	3.94	1.06
U7	Using this system makes my shopping easier.	3.85	1.11
U8	Shopping with this purchase is efficient for me.	3.72	1.08
Fun: (Scale: Disagree 1 – Agree 5)			
F1	I think I would have fun shopping with this system	3.94	1.12
F2	I imagine shopping with this system to be interesting.	3.90	1.15
F3	Shopping with a scanner would be varied (gets me away from it all).	3.79	1.10
Trust: (Scale: Disagree 1 – Agree 5)			
T1	I generally trust the technology of this system.	3.61	1.17
T2	I am not afraid that the system is not secure.	3.53	1.14
T3	I generally have the feeling that I can trust this system.	3.47	1.08
Intention to Use: (Scale: Disagree 1 – Agree 5)			
IN1	I would like to use this system whenever possible.	3.26	1.32
IN2	I would not want to do without such a system.	3.42	1.30
IN3	I can imagine replacing "normal" purchasing with the system.	3.10	1.29

Table 10: BIR 2022 Survey: Questions, Mean and Standard Deviation

### Measurement Model

We applied a structural equation modelling approach that consists of an outer and an inner model (Hair et al. 2011, p. 141). The outer measurement model defines the relations between constructs and items. The inner structural model represents the relations among the constructs (Fornell and Larcker et al. 1981, pp. 45-50). We ran the statistical data analysis with SmartPLS 3 to address the identification problems of formative indicators with a covariance-based approach (Hair et al. 2011, p. 141; Jarvis et al. 2003, p. 201). Another advantage is that PLS has no distributional prerequisites and no sample size limitation (Hair et al. 2011, pp. 143-144). All items were adapted from extant literature to improve content validity (Hair et al. 2011, p. 146; Straub et al. 2004, p. 424). In addition, we used a new formative measurement for the perceived usefulness in parallel. In evaluating the SEM, we follow the guidelines of Hair et al. (2017, p. 16).



For a non-parametric bootstrapping, 5000 samples were drawn with 222 cases (Hair et al. 2011, p. 145; Hair et al. 2014, p. 112) (see Appendix B.14 for the Item Loading Under Review Paper).

For the assessment of the reflective constructs reliability, we checked the Cronbach's alpha (CA) and the composite reliability (CR). Both exceed the recommended threshold of 0.7 for all constructs (Nunnally 1978, pp. 97-100): Intention to Use (CA: 0.806; CR: 0.885), Fun (CA: 0.885; CR: 0.929), Trust (CA: 0.883; CR: 0.928). For the construct Perceived Usefulness, the level of CR even exceeds 0.95, which may indicate redundant items. However, since CR is known to tend to overestimate reliability, it should only be considered in conjunction with CA which reflects the internal consistency (Cronbach 1951, p. 300; Hair et al. 2014, p. 111). In our case, CA lies in the recommended range of (0.7; 0.95) so that the criteria for internal consistency reliability are met (Hair et al. 2014, p. 111). We test the validity of reflectively specified constructs via convergence validity and discriminant validity. For convergence validity, we examine indicator reliability and AVE: Intention to Use (AVE: 0.720), Fun (AVE: 0.813), Trust (AVE: 0.811), Perceived Usefulness (AVE: 0.841).

To examine the discriminant validity, the cross-loadings and the Fornell-Larcker criterion are used. For the indicator reliability test, we consider the loadings of the items, which display the commonality of the items with their respective construct. All items of the reflectively specified constructs are significant and have loadings above the required minimum value of 0.708 (Hair et al. 2017, p. 17). The AVE for all constructs is above the critical value of 0.5 (Chin 1998a, p. 5; Fornell and Larcker 1981, p. 43; Hair et al. 2014, p. 108), so that the majority of the variance in the items can be explained by their associated construct (Hair et al. 2014, p. 108). The cross-loadings, which are important for discriminant validity, make it possible to check whether the items describe the right construct. For this, the loading of an item to its construct must exceed all other loadings to the other constructs, which is the case (Fornell and Larcker 1981, p. 43; Hair et al. 2014, p. 109). The Fornell-Larcker criterion requires for the discriminant validity that a construct should share more variance with its associated items than with any other construct (Hair et al. 2014, p. 108). To meet this condition, the squared AVE of a construct must be greater than its highest correlation with another (Fornell and Larcker 1981, p. 43) construct, which is also the case (Chin 1998a, p. 9; Hair et al. 2014, p. 111).

We test the goodness of formatively specified measurement models via content validity, convergence validity, collinearity between items, and the strength and significance of their weights. First, we ensured the content validity by an intensive comparison with the existing literature (Hair et al. 2011, p. 146; Straub et al. 2004, p. 424). Second, we conducted a redundancy analysis for the formative construct by measuring the same construct but reflectively specified (Chin 1998a). The size of the path coefficient provides information about convergence validity and should be above 0.8 (Hair et al. 2017, p. 17), which holds in our case.

In addition, the measured  $R^2$  of 0.668 is above the required threshold of 0.64. Thus, the convergence validity is given. Third, we test for collinearity using the VIF, which describes the increase in the standard error of an estimator due to collinearity (Sarstedt et al. 2014, p. 110).

The highest VIF is 2.75, so that the limit of 5 is undercut (Hair et al. 2011, p. 145). Fourth, the weights of formative items describe the relative contribution that this item provides to explain the corresponding construct. All items (time saving: 0.504; overview of shopping basket: 0.279; overview of expenses: 0.396) have a significant weight. Therefore, they contribute to the formation of the respective construct and can be retained (see Appendix B.7 Item Loading Working Paper for the formative and reflective items).

Testing for common method bias involved fourth steps in this study. First, we adopted the items from extant literature. Second, we checked for overlap in items in the different constructs (Conway and Lance 2010, p. 329). Third, the correlation matrix shows that all correlations are below 0.77, while common method bias is evidenced by high correlations ( $r > 0.90$ ) (Bagozzi et al. 1991, pp. 447-449) also consider the approach of Kock (2015, pp. 5-7). The results show that all constructs VIF values relationships are below 3.3 at the factor level, which indicates that the common method bias is not a concern.

### **Structural Model**

The quality assessment of the structural model examines the extent to which the model explains the variance of the dependent variables. This is done by testing the multicollinearity, the relevance and significance of the path coefficients and the coefficient of determination  $R^2$ . The quality of the estimation will be further checked by the effect size  $f^2$  and the predictive relevance  $Q^2$ . We tested the VIF of each construct to identify potential multicollinearity. The highest VIF (2.284 between fun and intention to use) are below the critical value of 5 (Huber 2007, p. 98; Hair et al. 2011, p. 145). Thus, multicollinearity cannot be assumed. The path coefficients indicate the relevance of the significant influence. All postulated relationships have significant path coefficients at the 1% level (see Table 11). Fun has the most relevant influence on intention to use ( $H_2$ ). Perceived usefulness is the second influencing construct on intention to use ( $H_1$ ). Fun has the most relevant influence on perceived usefulness ( $H_3$ ). The coefficient of determination  $R^2$  represents the measure of the forecasting performance of the models. Intention to use (0.548) and perceived usefulness (0.534) reach a moderate  $R^2$  value (Hair et al. 2011, p. 145). The effect size  $f^2$  provides information on the influence of an exogenous construct on the  $R^2$  value of an associated endogenous construct and is divided into small (0.02), medium (0.15) and large (0.35) effects (Cohen 1988, p. 79). While hypotheses  $H_1$  ( $f^2$ : 0.090),  $H_2$  ( $f^2$ : 0.094),  $H_4$  ( $f^2$ : 0.067), and  $H_5$  ( $f^2$ : 0.113) possess only small effect sizes, hypotheses  $H_3$  ( $f^2$ : 0.310) achieves a medium effect size. We use the Stone-Geisser  $Q^2$  value to check the predictive relevance of the models. Intention to use has the smallest measured  $Q^2$  value with 0.410.

	Full model		Experienced		Inexperienced		Differences in PC
	PC	f <sup>2</sup>	PC	f <sup>2</sup>	PC	f <sup>2</sup>	
H <sub>1</sub> Perc. Usefulness → Int.	0.294***	0.090	0.361***	0.183	0.190 <sup>ns</sup>	0.037	0.171***
H <sub>2</sub> Fun → Int.	0.310***	0.094	0.255*	0.083	0.376***	0.125	-0.121***
H <sub>3</sub> Fun → Perc. Useful.	0.500***	0.310	0.486***	0.294	0.453***	0.297	0.033*
H <sub>4</sub> Trust → Int.	0.240***	0.067	0.260**	0.091	0.242***	0.050	0.018 <sup>ns</sup>
H <sub>5</sub> Trust → Perc. Useful.	0.302***	0.113	0.305**	0.132	0.380***	0.109	-0.075***
Perc. Useful. → Perc. Useful. (R)	0.818***	2.023	Note: ***: $p < 0.001$ ; **: $p < 0.01$ ; *: $p < 0.05$ ; <i>ns</i> : not significant				

Table 11: Estimation Results and significant differences between user types

Thus, all Q<sup>2</sup> values are clearly above the required minimum of 0 (Chin 1998b, p. 318): reflective Perceived Usefulness (Q<sup>2</sup>: 0.546), and formative Perceived Usefulness (Q<sup>2</sup>: 0.370). Finally, we divide the sample into experienced and inexperienced users. First, the influence of perceived usefulness on intention to use is only significant for experienced and not for prospective adopters. Therefore, H<sub>1</sub> can only be partially confirmed. Since there is no significant influence of perceived usefulness on intention to use, H<sub>1a</sub> must be rejected. However, H<sub>1b</sub> can be accepted, since the influence is significant for experienced users. For the other hypotheses whose significance does not differ between the two groups, we use a t-test to identify significant differences between the path coefficients (PC) (Oyedele and Simpson 2007, p. 298; Leng and Wee 2017, p. 9). H<sub>2</sub>, H<sub>3</sub> and H<sub>5</sub> could also be completely confirmed. H<sub>4</sub> was only partially confirmed, since a significant positive influence of trust on intention to use was measured, but this was not significantly greater for experienced users than for prospective adopters (see Table 11).

## Discussion

### Results

This paper aimed at explaining how trust and fun influence the adoption of a holistic self-checkout and self-scan system (RQ1), differentiated by experienced and inexperienced prospective adopters (RQ2). Only one of the ten hypotheses (H1b) could not be confirmed.

In general, our study confirmed the importance of perceived usefulness found in prior studies for the adoption of technology, in this case of a holistic SST system (e.g., Inman and Nikolova 2017, p. 15; Jia et al. 2012, p. 218; Mukerjee et al. 2019, p. 10). In line with studies that solely focused on self-checkout (Fernandes and Pedroso 2017; Leng and Wee 2017) or self-scan systems (Elliott et al. 2012, 2013; Weijters et al. 2007), fun is also a decisive factor for a holistic SST system that incorporates the task of self-scanning and self-checkout.

This demonstrates that customers' consumption behaviour is not exclusively benefit-driven but influenced by numerous intangibles and emotional aspects related to the shopping journey (Babin et al. 1994, p. 645). Fun is one of the key drivers of acceptance and perceived service quality (Fernandes and Pedroso 2017, p. 84; Marzocchi and Zammit 2006, p. 664). None of the former studies investigated the relationship between fun and usefulness in the SST context. The result shows that fun positively influences the SST usefulness, which in turn increases the intention to use. This finding confirms our expectation that customers are enjoying the use of the SST in the first place but also realize that they can perform their tasks in an efficient and timely manner (Oghazi et al. 2012, p. 204). To a much lesser extent, the adoption decision is influenced by trust. In addition to the well-known impact of trust on users' intention (Dahlberg et al. 2015, p. 274; Gefen et al. 2003, p. 317), we could confirm a significant positive influence of trust on the perceived usefulness of SSTs.

This relationship has not been previously identified in the SST context. However, the perception of usefulness is more driven by fun than by trust. Apparently, customers value an enjoyable SST with useful features more than SSTs that are less enjoyable, irrespective of the useful features.

Considering the different user groups (RQ2), experienced and prospective users, the result is even clearer. Fun has a strong influence on the intention to use for both user groups, even if this is manifested in different ways. For experienced users, the indirect effect of fun is decisive, since fun increases the usefulness for these users, which in turn increases the intention to use. For inexperienced users, in contrast, fun has a direct effect on intention. As expected, but in contrast to Leng and Wee (2016, p. 9), the fun aspect plays a (much) stronger role for potential adopters than for experienced users for the intention to use. Instead, experienced users value utilitarian benefits more than potential users in terms of their intention to use (Karahanna et al. 1999, p. 196; Leng and Wee 2017, p. 9). Based on their experience with SST, experienced users are better able to appreciate the utility of SST, while inexperienced users do not seem to have a clear picture of the utility of SST. Therefore, inexperienced users are more likely to focus on fun before using the system. However, the lack of a significant relationship contradicts previous findings that are unrelated to experience (e.g., Fernandes and Pedroso 2017, p. 84; Weijters et al. 2007, p. 12). It is possible that the relationship between usefulness and intention does not exist when these studies account for experience.

Usually, trust evolves over time with the accumulation of trust-related knowledge (e.g., Lewicki and Bunker 1995, p. 156). It is therefore not surprising that trust influences the intention of experienced users significantly. However, this does not mean that trust is irrelevant for prospective adopters. The result shows a significant influence of trust on the intention to use for prospective adopters and confirms the high (initial) trust levels of prospective adopters for the SST adoption (e.g., McKnight et al. 1998, p. 473). Moreover, trust is significantly stronger for the perception of usefulness for prospective adopters than experienced users.

The result also revealed that prospective adopters have a higher degree of trust regarding the promised usefulness of SST, despite the lack of first-hand experience.

### **Managerial Implications**

Several lessons can be learned from this study. First and foremost, fun is the most influencing driver for the adoption and usage of SSTs. This holds particularly for prospective adopters. As a consequence, practitioners should advertise the fun aspect of SSTs to convince prospective adopters. A suitable approach can be gamification elements like leaderboards for collected loyalty points or virtual scavenger hunts in the shop. Secondly, for experienced users, benefits and trust become more important for long-term usage. Hence, practitioners have to tailor their marketing measures accordingly. For instance, non-gamification elements can enhance the usefulness of the system, like, for example, in-store maps with a product finder, personalized or historical shopping lists. The fun aspect of SST should be foregrounded to attract new users and make them experience the technology by trying it out. This turns first-time SST users into a stage between prospective adopters and experienced users and let them perceive the advantages. Otherwise, inexperienced SST users could use second-hand information and underestimate the benefits of SST. Once users have experienced SST and the associated benefits like time-saving, the fun aspect becomes less important, although remaining influential. Hence, by providing a system that is fun, practitioners can address customers' high initial trust level by lowering the entry barriers. In parallel, they optimize the benefits of the SST to turn the customers into long-time users. For instance, retailers can adjust the layout of store entrances and checkout so that customers can directly access the SST devices without waiting in a registration queue. This even reinforces the main benefit of SST, the time-saving aspect. Thirdly, trust is an essential aspect for both user types. Therefore, practitioners need to ensure and invest in the trustworthiness of the technology and make it as reliable as possible. A well-functioning technology creates fertile ground for growing the customer's trust in SST over time. In contrast, a negative performance experience creates a negative stimulus that negatively affects the trust in the technology, which in turn deters users from using SST. This also holds for both user types as trust forms the perception of the technology's usefulness. For instance, there need to be solutions when customers have accidentally scanned a product twice and already paid at the self-checkout counter or when the self-scan device cannot scan the customers' loyalty cards.

### **Limitation and Future Research**

First, the data sample is relatively small and suffers from many incomplete responses. The reason is that answering the survey questions was not mandatory for each question so that participants could omit several answers. However, the sample size is still big enough so that inexperienced and experienced users can be investigated with regard to the SST characteristics and trust.

Nevertheless, future research should collect a more representative sample to verify or validate our results. Secondly, the study solely investigated for inexperienced and experienced users the intention to use SST. This is a common approach in IS research (e.g., Karahanna et al. 1999, p. 197; Oyedele and Simpson 2007, p. 299; Weijters et al. 2007, p. 9), but future research should also incorporate continuance intention for a better understanding of the long-term usage. Thirdly, our paper has shed more light on the relationship between trust and usefulness as well as fun. Future research could also investigate the interaction of trust and satisfaction. This could provide further insights into customers' usage intention and continuance intention. Fourthly, although this is the first study that incorporated trust into its research model when investigating SST, a more comprehensive approach considering the different trust aspects could provide more detailed information about what type of trust (e.g., institution-based trust, structural assurance) is vital for the intention and continuance intention to use SST. Lastly, we used a formative construct for the perceived usefulness that performed as well as a well-established reflective construct. While formative constructs are problematic with regard to completeness, the advantage is that the influence of single benefits could be measured with one construct. Hence, future research should consider more formative constructs to better measure different aspects in more detail than with only one single reflective construct.

### **3.4 Live-Stream Shopping is Landing in Germany: An Analysis of the Stickiness Intention of German Customers<sup>4</sup>**

LSS is the next frontier of e-commerce and promises to revolutionize the retail industry and customer shopping habits (Hu and Ming 2020, p. 1; Forrester Consulting 2021, p. 4). Moreover, LSS is a relatively new phenomenon with which retailers can introduce and showcase products, engage with customers in real-time and allow customers to purchase products without leaving the session (Cai et al. 2018, p. 5; Forrester Consulting 2021, pp. 4-7). Especially in China, LSS has become one of the most popular forms of social commerce (s-commerce) since 2015 (Zhang et al. 2019, p. 2). The outbreak of COVID-19 positively influenced this trend and led to a market size increase from 433 billion Yuan in 2019 to 991 billion Yuan with 20 million sold products via live stream platforms in 2020 (Arvato Bertelsmann 2021, p. 8; Ma 2021, p. 2; Statista 2021c). The outbreak of COVID-19 also drives the interest of European customers and the offering of LSS events by retailers. For instance, the share of retail brands (mostly domiciled in the fashion & beauty industry) offering LSS events increased from 3% in Q4 in 2019 to 28% in Q4 2020 (Arvato Bertelsmann 2021, p. 9; Forrester Consulting 2021, p. 8). In contrast, only 4% of all German customers and only 5% of the young customers between 18 and 29 years used LSS. Moreover, 67% of German customers do not know that LSS exists (IFH Köln 2021f). A possible explanation may be the low offering of live-stream retailers. Only a few small retailers and retail chains (e.g., Douglas, Tchibo, Tamaris) or platforms (e.g., livebuy, Ritzi) started with the new service (Parfümerie Douglas GmbH 2021; Tchibo GmbH 2021; Wortmann Fashion Retail GmbH & Co. KG 2021; Livebuy UG 2021; Ritzi GmbH 2021). Mainly fashion and cosmetic products are the top categories that draw (predominantly female) customers' attention in Germany (Arvato Bertelsmann 2021, p. 8; IFH Köln 2021f). However, the different shopping behaviour of German customers in comparison to other European countries is astonishing. For retailers, it is crucial to know the reasons as LSS provides them with a cost-effective channel, reducing the marketing cost and increasing the add-to-cart and conversion rate (Arvato Bertelsmann 2021, p. 19).

Research on LSS, which is usually characterised as a form of s-commerce with special media attributes (Kang et al. 2021, p. 1; Wongkitrungrueng and Assarut 2020, p. 543), is nascent. Hence, this study contributes to the s-commerce and live-stream literature as follows. Emerging from Asian countries, western countries are mostly not present in current LSS studies (Kang et al. 2021, p. 7; Xu et al. 2020, p. 154). First of all, this paper addresses this research gap. Secondly, it takes a new perspective on the analysis of LSS that does not aim at explaining what drives customers to use but what makes them to stick with LSS (see next section). Not only but particularly for inexperienced retailers, it is essential to know what keeps the customer in the

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<sup>4</sup> This subchapter is based on Bärsch et al. (2022).

live-stream as this increases the buying opportunity (Lin et al. 2010, p. 133; Zhang et al. 2017, p. 5).

Thirdly, interactivity plays a crucial role in s-commerce but lacks a consistent understanding and operationalization (Ma 2021, p. 8; Liu 2003, p. 214; Zhang et al. 2014, p. 1025; Zhang et al. 2021, pp. 319-320). It is usually used as a general antecedent of the usage behaviour without specifying its dimensions. This paper investigates the impact of different dimensions of interactivity on stickiness in more detail. Fourthly, people's behaviour usually is not uniform among different groups. For example, young people have other preferences and are more prone to new technology than older people. Interestingly, in Germany there is low usage of LSS in all age groups. The question is if the inhibiting factors are the same or differ among the groups. Also the underlying technology (e.g. PC/Laptop vs. smartphone) may impact the usage behaviour, in particular as LSS is said to be a mobile technology (Arvato Bertelsmann 2021, p. 20; Forrester Consulting 2021, p. 8). Hence, this paper takes these influencing factors into account and distinguishes between these differentiators addressing another research gap of the LSS literature (Ma 2021, p. 12; Xu et al. 2020, pp. 157-160).

In sum, the following research questions shall be answered:

*RQ1: What are the antecedents of customers' stickiness intention of LSS?*

*RQ2: How do the different dimensions of interactivity affect customers' stickiness intention of LSS?*

*RQ3: How do the customers' devices and other group differentiators affect customers' stickiness intention of LSS?*

## **Literature Review**

China is the biggest LSS market. Therefore, it is not surprising that the majority of studies are based in China, respectively Asia. Only Cai et al. (2018, p. 3) investigated LSS in the United States. None of the existing studies investigated LSS in Europe or Germany, respectively. Former studies have explored how various drivers and motivational aspects (Cai et al. 2018, p. 4; Zhang et al. 2019, p. 9) as well as the role of the presenting celebrity and the presented content (Park et al. 2020) exert an impact on customer engagement (Hu and Chaudhry 2020, p. 1031; Kang et al. 2021, p. 7; Lu et al. 2018, p. 9; Wongkitrungrueng and Assarut 2020, p. 549) customer loyalty (Hsu et al. 2020, p. 4), purchase intention (Ma 2021, p. 8; Sun et al. 2019, p. 8; Xu et al. 2020, p. 156; Zhang et al. 2021, p. 320) and how LSS influences sale and product recommendation (Hu and Ming 2020, p. 3). However, none of them investigated stickiness intention and therefore cannot explain what keeps the customer in the live streaming session.



Only two out of ten studies considered the communication in their research model but focused only on the retailer's perspective with personalization and responsiveness (Kang et al. 2021, pp. 3-4) or general aspects of interactivity (Ma 2021, p. 12). No paper considered further dimensions like two-way communication or synchronicity, which are most effective in contributing to the communication in the online context (Ou et al. 2014, p. 218). Lastly, previous research only used group differentiators like age and gender as control variables but did not analyse the impact of these demographics on the model itself (Sun et al. 2019, p. 9; Zhang et al. 2019, pp. 17-18). In particular, the customer device used for LSS has not been investigated before.

## **Theoretical Framework and Hypotheses Development**

### **Stickiness and Perceived Value**

Stickiness has been used in prior research on e-commerce. It is defined as customers' time spent on a company website, a deep-rooted commitment which ensures them of repeated visits and use of that website (Li et al. 2006, p. 105), visit time length (Gao et al. 2018, p. 4), or customers' underlying as well as unconscious willingness to revisit the website (Lin 2007, pp. 507-508). Stickiness influences customers' commitment to and trust in the website (Roy et al. 2014, p. 1831). When customers stick to a website, this forms a positive attitude towards the content, products, and services and finally increases the purchase intention (Lin et al. 2010, p. 133; Zhang et al. 2017, p. 5). Therefore, stickiness is a critical factor for e-commerce websites to create business value (Friedrich et al. 2019, p. 1) and can be considered as a compound of relationship marketing like customer loyalty in a cyber context (Palmatier et al. 2006, pp. 139-140; Zhang et al. 2017, p. 5). We employ the measurement of stickiness used in former studies on e-commerce websites based on different items as a form of time length and user retention (Gao et al. 2018, p. 4; Friedrich et al. 2019, p. 4; Zhang et al. 2017, p. 5).

Customer value creation is an essential factor for explaining usage behaviour because the consumption activities of customers produce both hedonic and utilitarian (functional) outcomes (Babin et al. 1994, pp. 645-647; Zhang et al. 2017, p. 5). An analysis exclusively based on the merit of any goods or services acquired fails to recognize and understand these numerous intangible and emotional costs and benefits (Holbrook 1986, pp. 25-28). Therefore, former research developed the perceived personal shopping value and brought the so-called dark side and the fun side of shopping together (Babin et al. 1994, p. 653; Hirschman 1984, pp. 128-134). In the context of social media or live streaming, customers and retailers interact with each other and pay attention to common topics about products and trends. Providing valuable information in this process, would drive customers to stick to the live streaming when they realize that they get more useful information about products and trends (Ma 2021, p. 13; Wongkitrungrueng and Assarut 2020, p. 552).

The utilitarian value reflects shopping with a work mentality (Hirschman and Holbrook 1982, pp. 94-95) and can be understood as "*the degree to which a product/service provides the expected utility*" (Wongkitrungrueng and Assarut 2020, p. 3).

Studies in the field of live-stream and s-commerce found a positive impact of the functional value on the engagement (Wongkitrungrueng and Assarut 2020), product-related information (Cai et al. 2018, p. 2), stickiness intention (Friedrich et al. 2019, p. 3; Zhang et al. 2017, p. 2) and intention to purchase (Ma 2021, p. 2). A recent study revealed that German customers perceived LSS as useful (IFH Köln 2021f). Therefore, it is likely that the more customers perceive LSS as useful, the more they stick to LSS. Hence, we hypothesize:

*H<sub>1</sub>: The functional value of LSS positively influences customers stickiness intention of LSS.*

In line with former research, the functional value of LSS comprises the aspects that (1) live-stream retailers should try on the clothes to demonstrate what these items looks like in order to visualize the "real" size of the product (2), that products sold by live-stream retailers tend to be up-to-date (Wongkitrungrueng and Assarut, 2020, p. 554), and that (3) LSS is helpful regarding the purchase decision making (Ma 2021, p. 13). Additionally, two new aspects are added: (4) the fast and comprehensive product information as well as (5) the ability of time-saving compared to the visit of a traditional store in the city centre.

In contrast to the dark side of shopping, humorous jokes and anecdotes provide a pleasant emotional experience. This makes customers to stick to the retailer in the future for perceived pleasure and happiness (Van der Heijden 2004, p. 701). The hedonic value can be characterised as reactional, emotional and experimental benefits of the shopping activity (Babin et al. 1994, p. 646). In the context of s-commerce, previous studies showed that the hedonic value (perceived enjoyment) is an important antecedent for various factors like trust (Wongkitrungrueng and Assarut 2020, p. 552), streamer related factors (Cai et al. 2018, p. 5), loyalty (Hsu et al. 2020, p. 2), stickiness intention (Friedrich et al. 2019, p. 11; Zhang et al. 2017, p. 6; Yang and Lin 2014, p. 26) and the intention to use (Ma 2021, p. 5; Park and Lin 2020, p. 5). Studies in the context of online shopping revealed that the hedonic value results in higher customer attention, which in turn increases the likelihood that the website generates sales transactions (Friedrich et al. 2019, p. 4; Lin et al. 2010, p. 133). We hypothesize:

*H<sub>2</sub>: The hedonic value of LSS positively influences customers stickiness intention of LSS.*

In line with previous research, the hedonic value comprises aspects of entertaining, adventure, relaxing, thrilling and exciting activities (Ma 2021, p. 12; Hsu et al. 2020, p.6; Wongkitrungrueng and Assarut 2020, p. 554).

### **Computer-Mediated Communication Interactivity Model (CMCIM)**

LSS is a new kind of technology mediated communication between retailers and their customers. The Computer-Mediated Communication Interactivity Model (CMCIM) copes with such mediation in communication processes. In brief, it posits that the interactivity capabilities of a communication technology impact the quality of the communication process which in turn influences the communicators' satisfaction with the communication. This relationship is negatively moderated by status effects which are driven by social presence (Lowry et al. 2009, p. 180).

"Social presence is the degree to which a medium facilitates awareness of other people and interpersonal relationships" (Lowry et al. 2009, p. 166). While it is shown to foster negative status effects in group work, social presence also enables people to feel more intimate in terms of human contact, warmth, and sensitivity with another person (Ou et al. 2014, p. 239). In the s-commerce context, it can shorten the psychological distance between customers and retailers and enhance the sense of psychological intimacy, which urges costumers to stick to the retailer (Gao et al. 2018, p. 3; Ou et al. 2014, p. 221). A high degree of social presence makes it easy for the retailer to build a close relationship with the customer (Gao et al. 2018, pp. 2-3). This in turn positively influences the live streaming purchase intention of customers (Ma 2021, p. 8; Sun et al. 2019, p. 8). In line with former studies, we consider the aspects of sense of human contact, personalness, sociability and human warmth by the retailer during the live-stream session (Gao et al. 2018, p. 7). Hence, we hypothesize:

*H<sub>3</sub>: The social presence of the retailer positively influences customers' stickiness intention of LSS.*

Following CMICM, interactivity is crucial for high-quality communication (Cortese and Rubin 2010, p. 94; Ou et al. 2014, p. 215). It is built by the three sub-dimensions: active control, synchronicity and two-way communication (Lowry et al. 2009, p. 180). In the context of LSS, this kind of control is in place as nobody is obliged to interact with the retailer. Hence, we do not incorporate the control construct into the research model. Instead, we address the technological characteristics of computer-mediated communication interactivity: two-way communication and synchronicity. Both dimensions are theoretically grounded in the interpersonal interactivity theory (Lowry et al. 2009, p. 183). "*Two-way communication refers to the ability for reciprocal communication between companies and users and users and users*" (Liu and Shrum 2002, p. 55) while synchronicity is "*the degree to which users' input into a communication and the response they receive from the communication are simultaneous*" (Liu and Shrum 2002, p. 55). Transferred to the LSS, two-way communication enables the retailer to receive instant customer feedback via a chat option. The customers' feedback and the retailer's reaction to the feedback establish a two-way communication between both parties, which help the retailer to gauge the customers' needs effectively (Lin et al. 2010, p. 136; Liu and Shrum

2002, pp. 54-56). In line with the actual operation of LSS, two-way communication is measured as how retailers provide an opportunity to talk to the customer (e.g., via chat); how retailers ask for effective feedback (e.g., whether the product is being held well in the camera) and to what extent the retailer gives customers the feeling that he is listening to them (e.g. answered the questions in the chat) (Ma 2021, p. 12; Kang et al. 2021, p. 4; Liu 2003, p. 210; Wongkitrungrueng and Assarut 2020, p. 554).

Concerning synchronicity, this is reflected by the offered chat and the timely reaction of the retailer to the customer questions. The chat allows customers to initiate a conversation with the retailer on product-related issues (Ou et al. 2014, p. 238), and the retailers need to address these questions/reactions (e.g., emojis) immediately. Otherwise, a too-long delay to those questions could negatively influence customers' evaluation of their experience (Dellart and Kahn 1999, p. 53). Therefore, synchronicity is measured by timely responses to customers' questions by the retailer; signaling of retailers that they noticed the customer's question in the chat and by the immediate provision of all the necessary information (Liu 2003, p. 210; Ou et al. 2014, p. 238).

The importance of interactivity in shopping-related activities has been highlighted in different studies before (e.g., Cortese and Rubin 2010, p. 98). In the live-stream context, a positive impact of the general construct interactivity on engagement (Kang et al. 2021, p. 11) and intention to use (Ma 2021, p. 8) has already been confirmed. The interactivity (i.e., two-way communication and synchronicity) impact the perceived quality of a communication process (Lowry et al. 2009, p. 180). In the LSS-context, the outcome of the communication process usually consists of additional information about the product (facts, different views etc.). This adds to the functional value of the communication and therefore to the function value of LSS (see section 3.1). Hence, we hypothesize:

*H<sub>4</sub>: The interactivity in terms of two-way communication between retailer and customer positively influences the functional value of LSS.*

*H<sub>5</sub>: The interactivity in terms of synchronicity between retailer and customer positively influences the functional value of LSS.*

But the interactivity can also establish a personal communication between retailer and customer during LSS that may be very entertaining (humorous jokes, anecdotes). This affects the hedonic value of the communication and finally the hedonic value of LSS. Therefore, we hypothesize:

*H<sub>6</sub>: The interactivity in terms of two-way communication between retailer and customer positively influences the hedonic value of LSS.*

*H<sub>7</sub>: The interactivity in terms of synchronicity between retailer and customer positively influences the hedonic value of LSS.*

As usual, the perception of the retailer by his customers highly depends on how the retailer will react to their messages, what information s/he provides, which questions are answered, how they are answered and how competent the retailer appears. However, despite the high dependence on the retailer's personal traits, the interactivity only enables the customers to contact the retailer and ask their questions. In particular in the online context, the interactivity can alleviate the sense of physical distance among retailers and customers (Gao et al. 2018, p. 8; Ou et al. 2014, p. 220). Therefore, the interactivity allows the customer to sense the social presence of the retailer and "the consequent appreciation of an interpersonal relationship, despite the fact that they are located in different places, may operate at different times and that all communication is through digital channels" (Lowry et al. 2006, p. 633). That means, the higher the interactivity capabilities are, the better the retailer can also influence their perception of him/her which finally affects his/her social presence. Hence, we hypothesize:

*H<sub>8</sub>: The interactivity in terms of two-way communication between retailer and customer positively influences the social presence of the retailer.*

*H<sub>9</sub>: The interactivity in terms of synchronicity between retailer and customer positively influences the social presence of the retailer.*

The resulting research model is depicted in Figure 9.

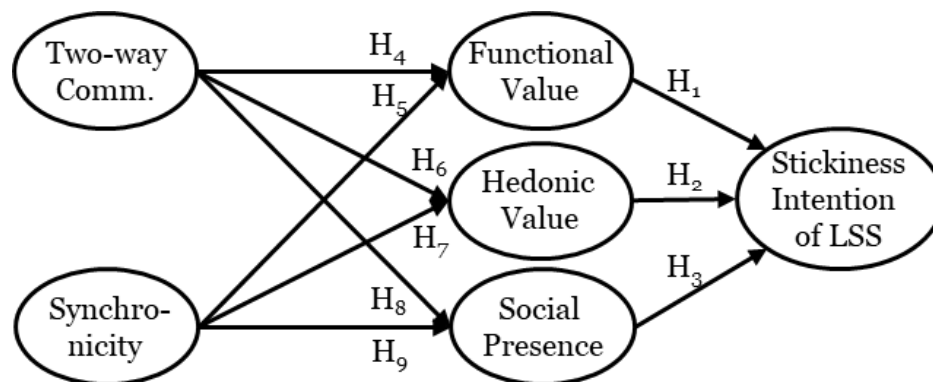


Figure 9: Research Model WI 2022

## Analysis

### Data Collection

Our target population comprised customers in Germany. Despite the low usage of LSS in Germany, German customers have already prior experience in similar LSS activities like teleshopping or watching testing/describing product videos on YouTube before making a purchase decision (Statista 2021d; Statista 2021e). Also, the interactivity with the streamer is not new to them. Particularly customers of younger age (like in our sample) have some prior experience interacting with broadcasters on streaming platforms like YouTube or twitch (Statista 2021f;

Statista 2021g). However, to avoid any misunderstandings of our questionnaire by the participants, the standardised survey started with a detailed introduction. The introduction is based on the actual process of an LSS in Germany and the LSS literature. In cooperation with the retailer MINETTE, we provided pictures of a live-stream show (e.g., a picture of the chat or the retailer's product presentation) and added weblinks (Douglas, MINETTE and Zwillingsherz) so that the participants could re-watch or join an actual LSS before starting the survey (Minette Concept Store 2021; Parfümerie Douglas GmbH 2021; Zwillingsherz GmbH 2021). Each participant answered the questions about the LSS.

The first part of the survey collected data on the exogenous constructs (e.g., hedonic value). The second part of the survey collected demographic data (e.g., preferred online shopping device, age and gender). Using the snowball principle for the distribution of the survey, we collected 348 responses in total (see table 12 for the questions, mean and standard deviation and the Appendix B.15 for the german questionnaire). The data was gathered between June and July 2021 in Germany with "Limesurvey". We also shared the survey link on "SurveyCircle".

Considering the recommendation of Hair et al. (2014, p. 109), 92 responses with more than 15% missing values had to be eliminated. 256 responses could be used for the analysis. Moreover, the model complies with the second rule of minimum sample size: 256 responses compared to the minimum sample size of 40 required cases (Hair et al. 2011, p. 144). The demographic show that 68% are female, 29,6% are male, 0.4% divers and 2% did not provide any information regarding the gender; 37.8% are between 18-24 years old, 43.3% are between 25-34 years old, 17.5% are older than 34 years, and 1.4% did not provide any information regarding the age. We also asked which device the participants used for their e-commerce purchases: 44% of the customer used their smartphone, 48% of the customers used their pc/laptop, and 1.5% of the customers used their tablet. 6.5% did not provide any information regarding the device.

Stickiness Intention: (Scale: Strongly Disagree 1 - Strongly Agree 5)		Mean	Standard Deviation
ST1	I could see myself attending livestream shopping shows more often.	2.39	1.20
ST2	I could imagine being at Livestream Shopping for longer than I would be at a traditional shopping website.	2.16	1.18
ST3	I intend to be present at the livestream shopping for the entire duration of the broadcast (e.g. 45min- 90min).	1.65	0.88
Two-Way Communication: (Scale: Strongly Disagree 1 - Strongly Agree 5)			
TW1	I think it's important for retailers to effectively gather feedback, such as whether the product is held up well to the camera.	4.04	1.01
TW2	I think it's important for retailers to make visitors feel like they're being listened to.	4.06	0.94
TW3	I think it's important for retailer to facilitate two-way communication between customers and themselves.	4.04	0.91
TW4	I think it is important that retailers give customers the opportunity to contact them (via chat).	4.24	0.94

Synchronicity: (Scale: Strongly Disagree 1 - Strongly Agree 5)			
SZ1	I think it's important that retailers quickly signal the receipt of inquiries about the product in the livestream shopping broadcast to asking customers.	3.91	0.97
SZ2	I think it is important that retailers respond quickly to customers' requests.	4.06	0.95
SZ3	I think it is important that retailers provide the information requested by customers without delay.	3.71	1.03
SZ4	I think it is important that customers feel that retailers provide all necessary information immediately (e.g. size, product material, price or delivery).	4.17	0.93
Social Presence: (Scale: Strongly Disagree 1 - Strongly Agree 5)			
SP1	It's important to me that retailers provide a sense of human contact when livestream shopping.	3.77	1.08
SP2	It's important to me that retailers convey a sense of personality when livestream shopping.	3.76	1.02
SP3	It's important to me that retailers provide a sense of conviviality when livestream shopping.	3.51	1.09
SP4	It's important to me that retailers convey a sense of human warmth when livestream shopping.	3.52	1.08
Functional Values: (Scale: Strongly Disagree 1 - Strongly Agree 5)			
FV1	The information provided in the livestream shopping would be helpful in my purchase decision.	3.50	1.04
FV2	Livestream shopping would make it easier for me to visualize products.	3.74	1.07
FV3	Livestream shopping is useful for getting product information faster.	3.13	1.10
FV4	By using livestream shopping, I could save time when buying products (e.g. I don't have to go extra into town or search for information on the website).	2.91	1.17
FV5	Livestream shopping would give me the opportunity to buy hip products.	2.98	1.06
Hedonic Value: (Scale: Strongly Disagree 1 - Strongly Agree 5)			
HV1	I think using livestream shopping should be entertaining.	3.77	1.01
HV2	I think the use of livestream shopping should be adventurous (e.g. to discover new products or fashion trends).	3.25	1.07
HV3	I think using livestream shopping should be relaxing (e.g. to get away from the daily grind).	3.45	1.05
HV4	I think using livestream shopping should be exciting (e.g., participating in lotteries).	2.95	1.12
HV5	I think the use of livestream shopping should be linked to activities (e.g. flash sales, giveaways, discount promotions).	3.28	1.20

Table 12: WI 2022 Survey: Questions, Mean and Standard Deviation

## Measurement Model

Due to the relatively small sample size, not normally distributed data, and the fact that we want to predict key target constructs for a new kind of technology, the partial least square (PLS) approach is the appropriate analysis method (Hair et al. 2011, p. 143; Hair et al. 2014, pp.108-109; Hair et al. 2017, p. 16; Sosik et al. 2009, p. 13). The structural equation approach consists

of an outer and an inner model (Hair et al. 2011, p. 141). The outer measurement model defines the relations between constructs and items. The inner model represents the relations among the constructs (Fornell and Larcker 1981, pp. 45-50). All items were adapted from former studies to improve content validity (Hair et al. 2011, p. 146; Straub et al. 2004, p.424) and were measured using a five-point Likert scale ("strongly disagree" to "strongly agree"). We ran the statistical data analysis with SmartPLS3 software and applied a non-parametric bootstrapping method with 5000 sub-samples.

<b>Constructs</b>	<b>CA</b>	<b>CR</b>	<b>AVE</b>
Synchronicity	0.857	0.901	0.696
Two-Way Communication	0.851	0.900	0.692
Functional Value	0.834	0.882	0.600
Hedonic Value	0.806	0.865	0.561
Social Presence	0.920	0.944	0.807
Stickiness Intention	0.820	0.891	0.732

Table 13: Reliability and Validity of Constructs

To assess the indicator reliability of the reflective constructs, we checked the outer loading of the items and the significance. All items had sufficient outer loadings  $>0.7$  and were significant at the 1% level (Hair et al. 2011, p. 144; Hair et al. 2014, p. 111; Hair et al. 2017, p. 17) (see Appendix B.16 Item Loading WI 2022 and Appendix B.17 for the Correlations WI 2022). The calculated Cronbach's alpha coefficient (CA) exceeds the recommended threshold of 0.7 for all constructs in the model (Nunnally 1978, pp. 97-100). The composite reliability (CR) coefficient exceeds the recommended threshold of 0.7 for all constructs. The convergent validity, AVE, is also higher than 0.5 for all constructs (Bagozzi and Yi 1988, p. 82) (see Table 13). Moreover, all model constructs have positive and significant correlations at the 1% level, where .203 is the lowest and .713 is the highest value. For the assessment of the validity, we consider the cross-loadings of the constructs and the Fornell-Larcker criterion. For this, the loading of an item to its construct must exceed all other loadings to the other constructs, which is the case (Hair et al. 2011, p. 143; Hair et al. 2014, p. 112; Hair et al. 2017, p. 100). For the Fornell-Larcker criterion, the squared AVE of a construct must be greater than its highest correlation with another construct, which is also the case (Hair et al. 2011, p. 143; Hair et al. 2014, p. 112; Hair et al. 2017, p. 100). Recent research shows that the Fornell-Larcker criterion and the assessment of the cross-loading are insufficiently sensitive to detect discriminant validity problems (Campbell and Fiske 1959, p. 82; Henseler et al. 2015, p. 120). Therefore, we used the HTMT to identify discriminant validity. We selected the HTMT<sub>85</sub> and HTMT<sub>90</sub> to assess discriminant value



and confirm discriminant validity with an HTMT<sub>85</sub> and HTMT<sub>90</sub> of all constructs (Henseler et al. 2015, pp. 128-129).

### **Structural Model**

For the evaluation of the structural model, we only consider the research model in stage two. To validate the model, we tested for the VIFs of each item and construct to identify potential multicollinearity. The VIF values of the items ranged from 1.511 to 3.957, and of the constructs ranged from 1.459 to 2.033, suggesting that multicollinearity is not a concern (Hair et al. 2011, p. 145). Additionally, we controlled for a common method bias by checking for overlap in items in different constructs (Conway and Lance 2010, p. 329); running Harman's single-factor test with an unrotated factor analysis (Podsakoff et al. 2003, p. 879); controlling the correlation matrix for correlation greater than  $r > 0.90$  (Bagozzi et al. 1991, pp. 447-449) and considering the approach of Kock (2015, pp. 5-7). All results indicated that common method bias is not a concern.

Next, we assessed the primary evaluation criteria with the  $R^2$  level and the significance of the path coefficient. The structural model shows a weak  $R^2$  level for stickiness ( $R^2$  31.3%), social presence ( $R^2$  31%), functional value ( $R^2$  28.6%) and hedonic value ( $R^2$  28.8%). We also quantified how substantial the significance effects are by assessing their effect size  $f^2$ . For the interpretation of the  $f^2$ , we follow the guidelines by Cohen (1988, p. 79): strong (0.35), moderate (0.15) and weak (0.02).

The bootstrapping analysis of 5000 sub-samples allows for statistical testing of the hypotheses. The relationship between functional value and stickiness is significant at the 1% level, supporting our hypothesis  $H_1$  with a moderate effect size. The hedonic values have a negative significant influence on the stickiness intention at the 5% level with a moderate effect size. However, we cannot confirm Hypothesis  $H_2$  because the hedonic value negatively influences the stickiness intention and is not positive, as we argued. Hypothesis  $H_3$  can be confirmed at the 1% level. Social presence significantly influences stickiness with a moderate effect size. The two-way communication significantly positively influences the functional value, hedonic value and social presence. Therefore, we can confirm the hypotheses  $H_4$ ,  $H_6$  and  $H_8$  at the 1% level with a moderate effect size. The synchronicity does not significantly influence the functional value, hedonic value and social presence. Therefore, we cannot confirm the hypotheses  $H_5$ ,  $H_7$  and  $H_9$  (see Table 14).

Hypothesis	Path Coefficient	T-Statistic	Effect Size
H <sub>1</sub> Functional Value → Stickiness	0.512	9.544**	0.243
H <sub>2</sub> Hedonic Value → Stickiness	-0.137	2.379*	0.016
H <sub>3</sub> Social Presence → Stickiness	0.205	3.390**	0.042
H <sub>4</sub> Two-Way C. → Functional Value	0.505	6.123**	0.176
H <sub>5</sub> Synchron. → Functional Value	0.041	0.525 <sup>ns</sup>	0.001
H <sub>6</sub> Two-Way C. → Hedonic Value	0.499	6.042**	0.172
H <sub>7</sub> Synchron. → Hedonic Value	0.051	0.655 <sup>ns</sup>	0.002
H <sub>8</sub> Two-Way C. → Social Presence	0.596	7.619**	0.253
H <sub>9</sub> Synchron. → Social Presence	-0.057	0.738 <sup>ns</sup>	0.002
1% level **; 5% level*; <sup>ns</sup> non-significant			

Table 14: Estimation Results

In the last step, we ran a nonparametric permutation test with a bootstrapping of 5000 subsamples to assess group-specific differences in our sample (Matthews 2017, p. 219). First, we checked for equal or comparable subgroups. The subgroups of gender (female 175; male 76), devices (pc/laptop 123; smartphone 113) and partly age (18-24: 97; 25-34: 111) can be considered as comparable or fulfil the 80% of the statistical power for a 1% significance level with a minimum 0.25 R<sup>2</sup> (Cohen 1992, pp. 98-99; Matthews 2017, p. 223). Groups with fewer observations (age >35) should not be used due to the lack of statistical power (Liébana-Cabanillas et al. 2014, p. 472).

In the second step, we test for invariance, which has two components with the configural and compositional to avoid misleading results (Matthews 2017, p. 232). The configural invariance is fulfilled. For the compositional invariance, we compare the composite scores of both groups (e.g., female and male) to determine if the correlation, mean, and variance are significantly different for the empirical distribution. The constructs must pass the correlation and need to pass the two confidence (mean and variance) tests for invariance or one for partial invariance (Matthews 2017, p. 234). We can confirm invariance for the subgroups' devices and partial invariance for the subgroups age and gender. For the subgroup gender, we find partially invariance for the constructs hedonic value, social presence and two-way communication. For the subgroup age, we find partially invariance for the constructs social presence, synchronicity and two-way communication.

The results show no significant differences regarding the subgroup device and gender. However, the nonparametric permutation test revealed significant differences for the subgroup age

(18-24 vs. 25-34). We find a positive path coefficient for the retailers' social presence for people between 25-34 years (0.249) compared to those between 18-24 years (-0.043) for hypothesis H<sub>3</sub> at the 5% level.

The results also revealed significant differences for the two-way communication for people between 25-34 years (0.456) compared to the people between 18-24 years (0.08) for hypothesis H<sub>6</sub> at the 5% level.

## Results

### Discussion

To the best of our knowledge, this is the first attempt to empirically explain customer behaviour regarding live-stream shopping in Europe, particularly in Germany. Moreover, this is the first study that employs the Computer-Mediated Communication Interactivity Model (CMCIM) in the live-stream context with the constructs two-way communication and synchronicity. These constructs (partially) explain the communication process between retailer and customer in the live-stream context. As our research shows, the influence of retailers' social presence and the two-way communication differ among younger and older customers.

With regard to RQ1, what are the antecedents of customers' stickiness intention of live-stream shopping. Our study shows the importance of the functional value for customers' stickiness intention which is the main driver for German customers stickiness intention. Apparently, German customers have a work mentality regarding live-stream shopping. This is consistent with studies focusing on the stickiness intention in the websites (Friedrich et al. 2019, p. 11) or social networks context (Zhang et al. 2017, p. 8), in the general live-stream context investigating product-related factors (Cai et al. 2018, p. 5), the intention to use (Ma 2021, p. 8) and intention to buy (Park and Lin 2020, p. 5; Zhang et al. 2021, p. 320) as well as in the LSS context in Europe (Arvato Bertelsmann 2021, p. 13).

In contrast to the functional value, the hedonic value had a weak but significant negative impact on the stickiness intention which contradicts previous studies of the live-stream context (Hsu et al. 2020, p. 4; Ma 2021, p. 8; Park and Lin 2020, p. 5) of the websites context (Friedrich et al. 2019, p. 11) or of the social media context (Zhang et al. 2017, p. 8; Yang and Lin 2014, p. 31). The results support recent reports attesting Germans to have a working mentality even when shopping (YouGov 2021). Perceived pleasure and happiness did not lure German customers into sticking to the retailers live-stream within our study. However, this contradicts older studies (Zaharia and Hackstetter 2017, p. 53) so that further investigations are needed.

In line with previous research (Gao et al. 2018, p. 8; Ma 2021, p. 8; Sun et al. 2019, p. 8), the social presence also plays an important role for LSS. The higher the social presence is, the more the customers will stick to LSS. The reason is that retailers who create a high social presence, can deliver more information to customers, which enhances their perceived transparency and

helps to establish closer relationships (Sun et al. 2019, p. 9; Ström et al. 2014, pp. 6-8). Therefore, social presence is a decisive driver of stickiness intention.

Regarding RQ2, "How do the different dimensions of interactivity affect customers' stickiness intention of live-stream shopping? ", the results generally confirm the significant importance of interactivity in the live stream context (Ma 2021, p. 8; Kang et al. 2021, p. 12). In particular, our study shows that the dimensions of interactivity significantly differ regarding their influence on the functional value, hedonic value and the retailers' social presence.

While the two-way communication exerts a significant impact on all three constructs, the influence of synchronicity could not be confirmed. Obviously, it is important to customers, that they are able to ask questions directly and that these questions are answered by retailers. But retailers do not need to answer immediately to the customers' questions as long as they finally give the answer. However, this may be because customers still need to get used to the interactivity with the retailer.

Regarding RQ3, "How do the customers' devices and other group differentiators affect customers' stickiness intention of live-stream shopping? ", the non-parametric permutation test revealed that customers do not significantly differ concerning user device or gender but with regard to age. The retailer's social presence positively influences older customers but shows no effect for younger customers. This confirms previous studies from the mobile payment field that show that older people require greater involvement from their own social networks to adopt new digital services (Liébana-Cabanillas et al. 2014, p. 473). The same holds for the relation between two-way communication and hedonic value. While the two-way communication with the retailer significantly increases the hedonic value for older customers, there is no effect for younger customers.

### **Managerial Implications**

Several lessons can be learned from this study. First, German retailers should focus on information during live-stream sessions instead of providing an entertaining program. They should be well prepared and know their products so that they can answer their customers' questions precisely. But they do not need to be funny or full of anecdotes. Instead, they need to be very careful with those entertaining aspects as they can easily force customers to leave the session when not enough information is provided. As a result, live-stream retailers should present their products with much information and visualize the products so that customers get a good picture of the products and can imagine what these products look like or what is the real size.

This saves time to customers and releases them from going to the city centre to learn about the products. Live-stream retailers should use this advantage, support the customers' decision making and make the order process as easy as possible. This will increase customers' stickiness, form a positive customer attitude towards the retailer, the presented content and products and will finally affect the intention to purchase.

Second, retailers should pay attention to their real-time interaction with customers. While response time to customer questions is not important, the listening and responding is. Therefore, live-stream retailers should facilitate communication during the live-stream session. For instance, they can provide a chat option so that customers can ask questions. The retailer should then give the customer the feeling that they are important to them and ask for customer feedback (e.g., whether the product is being held well in the camera). This helps to increase the communication quality during the live-stream session and finally generate sales.

As a consequence, retailers should thirdly use an effective communication strategy to increase their social presence. For instance, they can address the customer with her/his name when sending reactions or greetings at the beginning of the session. Especially when replying to customer comments, retailers should use this opportunity and make personalized recommendations to create a warm and personal environment. Moreover, the feeling of sociability due to the communication with the customer helps retailers to reduce the customer's uncertainty and makes it easier to build a close relationship with the customer.

But retailers should fourthly be aware that their social presence only addresses older customers positively. With their responses and the information they provide, they can greatly influence the stickiness intention of customers so that the success of LSS also greatly depends on them. But concerning younger customers, they need to rethink effective strategies to address this generation. Although not part of this study, a possible measure could be the booking of an influencer for a live-stream event. However, retailers need to decide how to use influencers for their product promotions and develop strategies on what influencers are highly effective or what product types the influencers can advertise. Therefore, retailers are well advised to carefully study their live-stream customers' and product characteristics before promoting strategies.

### **Limitation and Future Research**

First of all, the data sample is unbalanced regarding gender. This is a common problem of empirical studies as women are more likely to participate in surveys than men (Singer et al. 2000, p. 180). Also, the low LSS offering for male customers in Germany is a further hindering factor. However, the gender distribution of the study equals the gender distribution of former LSS studies (e.g., Cai et al. 2018, p. 4; Ma 2021, p. 7; Wongkitrungrueng and Assarut 2020, p. 549). Future research should consider this sampling bias and should also investigate LSS in a more neutral context.

Second, the study is biased concerning age. The number of participants older than 35 years is quite limited. Therefore, a more balanced sample should be collected so that the behaviour of older people can also be explained.

Third, our study design provided a set of actions so that all participants could understand the process of LSS. However, our study did not control for the experience level. Hence, future studies should control for the experienced level of participants. Fourth, although considered as being still big enough, a greater sample size could increase the power of the model. Therefore the results of the model should be interpreted with caution.

## 3.5 Conclusion Chapter 3

### 3.5.1 Discussion

The third chapter aimed to shed light on *RQ2: What drives and inhibits the customer's adoption of technologies and services?* The four studies identified drivers and inhibitors of the investigated technologies and services. As a common driver, all studies identified the importance of relative advantages or usefulness (e.g., Bailey et al. 2017, p. 634; Leng and Wee 2017, p. 10; Liébana-Cabanillas et al. 2018, p. 124; Weijters et al. 2007, p. 12). For instance, customers expect a reduced waiting time in the case of SST (Leng and Wee 2017, p. 10; Weijters et al. 2007, p. 12), easier and time saving shopping in the case of LSS (Ma 2021, p. 13; Wongkitrungrueng and Assarut, 2020, p. 554) or increased speed of the payment in the case of MP (Koenig-Lewis et al. 2015, p. 18). In particular, usefulness is also essential when technology competes with established options, like in the case of MP with cash and card payments. Therefore, MP needs some "good" arguments to convince users to switch from a cash or card payment. Both MP studies show that the influence of the relative advantages of MP is more substantial when compared to the card than cash payment. A further nuance of the evaluation of the usefulness is customers' experience level. The results of SST and MP revealed that the usefulness is higher among experienced users, which is in line with various studies in the IS fields (e.g., Karahanna et al. 1999 p. 197).

Besides the usefulness, former studies revealed that the predominant opinions of group members could support or hinder the decision to use an innovation. Therefore, we also integrated social influence in both MP studies. The findings of the studies in chapter three reveal an ambivalent picture of the influence of social influence on the customers in the case of MP. The first study by Bärtsch et al. (2020) show that inexperienced customers rely on their peers who exerts pressure on them to use MP or not, which is in line with former studies (e.g., Liébana-Cabanillas et al. 2015, p. 12; Liébana-Cabanillas et al. 2017, p. 903; Lu et al. 2016, p. 15). The result does not hold for experienced users, which confirms former studies. However, Aguirre Reid et al. (2022) study does not find any significant impact of social influence on the intention to use. In both MP studies, the research models also consider customer characteristics like self-efficacy or compatibility as drivers. In both cases, this is a significant factor for the initial adoption of customers, which is also in line with former studies (e.g., Bailey et al. 2017, p. 634; Bandura 1977, p. 192; Dahlberg and Oorni 2007, p. 8; Schierz et al. 2010, p. 214).

Fun is important for SST. For instance, fun addresses customers' numerous intangibles and emotional aspects related to their shopping trips in the case of SST (Babin et al. 1994, p. 645). The result of the SST study confirms the importance of fun (e.g., Fernandes and Pedroso 2017, p. 84; Marzocchi and Zammit 2006, p. 664). For LSS, fun provides a pleasant emotional experience. According to former studies, fun makes customers stick to the retailer LSS event for perceived pleasure and happiness (Van der Heijden 2004, p. 701).

But the result of the LSS study in chapter three does not confirm former studies (Ma 2021, p. 8; Park and Lin 2020, p. 5; Hsu et al. 2020, p. 4). The result of the LSS study in chapter three indicated that fun or hedonic values decrease the customer stickiness intention of LSS.

For SST, we included trust as a further aspect of customers' acceptance. Otherwise, if the SST technology cannot be trusted to work according to the customers' confident beliefs, there is no reason customers should expect to benefit from using the technology (Pavlou 2003, p. 110). Our findings confirmed former studies and revealed a significant influence of trust on the intention to use for prospective adopters and experienced users (e.g., McKnight et al. 1998, p. 473). Moreover, the result confirmed the initial higher trust level of novice users compared to experienced users (e.g., Lewicki and Bunker 1995, p. 156). In general, the incorporation of trust provided new insights into the field of SST adoption.

For LSS, the retailer's social presence can be considered a decisive driver for customers (Sun et al. 2019, p. 9; Ström et al. 2014, pp. 6-8). Social presence is vital for using LSS because it enhances customers' perceived transparency and helps to establish closer relationships with the retailer (Sun et al. 2019, p. 9; Ström et al. 2014, pp. 6-8). The social presence also reduces customers' uncertainty about a product or service (Sun et al., p. 4). The two-way communication can also be considered a driver of the customer stickiness intention of LSS. The two-way communication significantly impacts social presence, functional and hedonic values (Ma 2021, p. 8; Kang et al. 2021, p. 12).

The four studies also identified inhibitors of the adoption of innovations. In both MP studies, the research models considered risk factors as inhibitors with data threat and perceived threat. The model result of both MP studies revealed that data threat increases the perceived threat of MP, which leads to a higher reduced customers intention to use MP (Abrahão et al. 2016, p. 227; Bailey et al. 2017, p. 634; Hongxia et al. 2011, p. 3). Interestingly, data threat is only a relevant antecedent for the novice user of MP. Both MP studies also showed that customers evaluate the data and perceived threat of MP compared to cash and card payments differently. Customers are more afraid of "giving away too much information" when MP is compared to the card payment regarding data threat. This finding extended former research in the field of MP. Despite the same research objective, both MP studies incorporated further risk aspects like performance, financial and perceived switching costs in their models. All risk antecedents negatively affect the customer intention of MP. For instance, the perceived switching cost increases MP's perceived risk, leading to an increase in the customers' unwillingness to expend their effort to switch to MP (Loh et al. 2021, p. 5). The results also revealed that experienced customers consider the performance risk significant for their continuance usage intention, while financial threat loses somewhat of its scariness. For inexperienced users, this is vice versa.



### 3.5.2 Managerial Implications

Several lessons can be learned from this chapter for retailers and providers to increase customer adoption. First of all, and not surprisingly, practitioners need to distinguish between inexperienced and experienced users when promoting technologies and services (e.g., MP or SST). Therefore, the retailer needs to tailor its marketing measures accordingly. For instance, the retailer should offer a free trial with low entry barriers so that customers can experience the advantages of new technologies and services. This is important, especially for inexperienced customers. For instance, fun is the most influencing driver for the adoption and usage of SSTs. Consequently, practitioners should create simple trial usage opportunities while highlighting the fun aspect of SSTs so that potential users can experience them. Otherwise, inexperienced users use second-hand information and could underestimate the fun aspects or relative advantages of new technologies and services.

Second, retailers also need to consider that the evaluation of a technology depends on existing alternatives. Therefore, the retailer needs to take the advantages of existing options into account and should design the marketing to better point out the advantages of the new technology or service. For instance, the retailer can advertise a better overview of MP compared to the card payment or the fast provided amount of information for customers shopping decisions in an LSS event compared to the store shopping situation.

Third, new technologies also bear risks that customers are well aware of. Therefore, practitioners need to highlight the security of new technologies regarding the customer's personal and financial data. For practitioners, educating users about the likelihood of being attacked is also necessary to increase their security awareness. Moreover, there needs to be solutions for situations when the performance of the new technology is not working as expected. That means making new technologies as reliable as possible is mandatory because a well-functioning technology creates fertile ground for growing the customer's trust in new technologies over time. In contrast, a negative performance experience creates a negative stimulus that negatively affects the trust in new technologies and deters users from using them.

Fourth, it is essential to address the customer characteristics and demographics to increase the usage of new technologies from the retailers' perspective. For instance, the retailer should consider the difference between young and old customers or their preferred system (e.g., iOs vs Android). For instance, providers should intensively address the security issue for Android users in the case of MP to gain trust in the technology. Also, the retailer's behaviour is essential. For instance, the social presence of the retailer in the LSS context addresses only older customers positively. Therefore, retailers should use an effective communication strategy to increase their social presence with older and younger customers.

### 3.5.3 Limitation and Future Research

The studies in chapter two and three were conducted with a SEM. SmartPLS 3.0 (Ringle et al. 2015) was used to analyse the collected data and the SEM. The PLS-SEM relies on a non-parametric bootstrap procedure to estimate the significance of weights, loadings and path coefficients (Davison and Hinkley 1997, p.256; Efron and Tibshirani 1986, p. 80; Hair et al. 2017, p. 17; Henseler et al. 2016, p. 14).

The PLS-SEM method was used for the following reasons. First, PLS does not restrict the sample size and fits to the small sample sizes (<250) (Reinartz et al. 2021, p. 332) in all research models in chapter two and three. Second, the author tested the normal distribution of the collected datasets with the Kolmogorov–Smirnov-Test and Shapiro-Wilk–Test. Especially the Shapiro-Wilk–Test is suitable for small sample sizes (Razali and Wah 2011, p.13). According to both tests, none of the datasets fulfils the normality distribution assumption (see Appendices B18-B26 for the Test of Normal Distribution for all Datasets). Therefore, PLS seems preferable because it does not pretend any distributional assumption (e.g., Cassel et al. 1999, p. 436; Chin et al. 2003, p. 197). In addition, we examined how far the values deviate from the normal distribution. For this purpose, the skewness and kurtosis of all items were considered using established thresholds. No item showed an extreme deviation from the normal distribution (Byrne 2010, p. 367; Hair et al. 2017, p. 53). Third, PLS is suitable for evaluating reflective as well as formative constructs, which met the modelling needs for the research model in chapter two, and it is all about Fun Paper in chapter three (Gefen et al. 2000, p. 10; Weiber and Mühlhaus, 2014, p. 74). Fourth, PLS-SEM works efficiently with small samples and complex models and therefore fits the needs of the conducted studies model. For instance, Reinhardt's study showed that PLS-SEM is a good choice for a complex model with small samples while still achieving high-test power compared to the covariance-based approach (Hair et al. 2017, p. 22; Reinartz et al. 2009, p. 340-342).

However, the use of PLS-SEM does not help to eliminate all limitations in the use of online questionnaire data. The limitations can be distinguished into limitations with regard to the analysis, interpretation of the results and generalisation of the results.

Questionnaire studies are usually characterised by asking individual questions using Likert scales. The subsequent analysis is thus based on the Likert scale. This approach is very popular in various research fields (e.g., health research, educational research, management or IS literature). Despite this popularity, there has been a debate in the research community for almost 50 years about the suitability of Likert data for multivariate analyses (e.g., correlations, t-tests, mean, standard deviation, regression). Some researchers question the suitability of Likert scales for multivariate procedures in various studies (e.g., Barendse et al. 2015, p. 95; Lubke and Muthen 2004, p. 528; Jia and Wu 2019, p. 2346 ; Li 2016, p. 946; Sass et al. 2014, p. 175; Vigderhous 1977, p. 70).

In contrast, some researchers favor this approach and see no restrictions on the results (e.g., Dolan 1994, p. 325; Ferrando 1999, pp. 173-174; Harwell and Gatti 2001, p. 127; Labovitz 1967, p., 159; Labovitz 1975, pp. 33-35; Muthen and Kaplan 1992, pp. 22-24; Marateb et al. 2014, p. 53; Murray 2013, p. 262; Norman 2010, p. 631; Robitzsch 2020, p. 4). Former research results also indicated non-parametric approaches were considered more appropriate for Likert scale analysis (Gardner and Martin 2007, p. 445; Jamieson 2004, p. 1217). Although the present studies used a non-parametric approach to estimate the significance, further measures were taken to increase the validity of the results. First, the development of the questionnaires followed Hair's (et al. 2017) recommendation. The scale was designed in such a symmetry or balanced way that two categories exist between a neutral centre below and above. Moreover, the Likert scale showed a clear linguistic differentiation of all categories. For example, strongly disagree (1), disagree (2), neutral (3), agree (4) and strongly agree (5). In the second step, the data were precoded so that numbers were assigned to the responses of the Likert scales, see example above. The highest category received the highest value of 5, and 1 for the lowest category. Third, almost exclusively established Likert scales were used for the studies. The only exception is the relative advantage constructs in the two mobile payment studies. The questions in each survey were also derived from existing studies but adapted to the research object. Thus, the external validity of the results can be ensured (Straub et al. 2004, p. 424 ). By performing all steps, we can only assume equidistance of the Likert data (Hair et al. 2017, p. 8; Sarstedt and Mooi 2014, p. 70), but Likert data do not replace interval or metric data (Henseler et al. 2016, p. 7). Therefore, future research should focus on validating the results of the studies presented in this dissertation with data from actual customer behaviour.

Concerning the interpretation of the results, no causal conclusions can be drawn, only the attitude of the respondents at the time of the survey. Thus, only correlations rather than causal relationships can be obtained (Hair et al. 2017, p. 15). Despite the focus on correlation rather than causal relationships, all studies provided theoretical and practical results. This was possible because the constructs were derived from existing literature and established theories (e.g., TAM). Furthermore, considering the existing literature served as a support criterion for selecting the appropriate measurement model (formative vs reflective) for the constructs under study. This approach is consistent with the scientific approach and provides nomological validity (e.g., the constructs were tested in a variety of environments, times, and technologies) and external validity of the constructs studied (Straub et al. 2004, p. 417; Sussmann and Robertson 1986, pp. 461-466). However, no general measures of goodness can be applied for further validation of the structural models studied. Although research has proposed some PLS-SEM-based goodness-of-fit measures for evaluating the structural model, these are at an early stage of development (Hair et al. 2017, pp. 176-177).

Therefore, in this dissertation, we adhered to the previously existing core criteria for evaluating a structural model: 1. VIF value for collinearity testing, 2. magnitude and significance of path coefficients, 3.  $R^2$  values, 4.  $f^2$  effect sizes, and 5.  $Q^2$  Predictive relevance with the blindfolding and PLS Predict method.

Criteria 1 to 4 were applied and discussed in the related studies. We also examined the predictive relevance for the endogenous constructs. The predictive relevance can be confirmed in all studies in this dissertation. However, these results were rarely reported in the published paper and can be found in the appendix of this dissertation (see Appendix B.27 Blindfolding and PLS Predict Test for Endogenous Constructs).

Online surveys allowed for quick and inexpensive outreach to a large group of potential participants. In addition, the outbreak of the corona pandemic made surveys in the city centre difficult. Despite the advantages of the chosen data collection method, there are also disadvantages like representativeness (Döring and Bortz 2016, p. 415). By collecting data predominantly via social media (e.g., Facebook, LinkedIn) or SurveyCircle, not all segments of the population are reached equally, as it is predominantly younger generations that use social media compared to older ones (for example, those over 60) (e.g., ARD und ZDF-Onlinestudie 2022; Jechorek 2023). Although, the sample of all four studies in the second chapter comprises only German-speaking people of younger age. Concerning the age bias, young people have been proven to be adequate surrogates for decision-makers so that this sampling hardly distorts the results (Remus 1986, p. 23). Nevertheless, the conducted studies in this dissertation do not represent the entire population of Germany.

With regard to possible differences in the response behaviour of online and offline questionnaire participants, the results of a recent study showed that responses differed, especially on sensitive topics (e.g., policies related to refugees). In this case, respondents might give more "socially desirable" answers when surveyed in the presence of an interviewer in a face-to-face situation. Such sensitive topics were not part of the underlying studies in this dissertation. Hence, the conducted online survey should be able to produce results that represent the opinions of young customers, irrespective of the type of data collection (online or offline) (Grewenig et al. 2023, pp. 2-25). Concerning the research goals of the underlying studies, online surveys were an appropriate tool for the data collection because the studies examined only new technologies mainly used by younger customers (for example, only 12% of the over-60s use mobile payments or only 9% of 484 respondents over 35 use livestream shopping in Germany) (Simon-Kucher & Partners 2022; PWC 2019). Therefore, an online survey seemed to be a suitable method to survey young customers in social networks. Another aspect was the outbreak of the corona pandemic. By using online surveys, data could be collected without the risk of contagion to all participants.

Another area for improvement with online surveys is that understanding questions by the participants is hardly possible. This problem was addressed with standardised questionnaires (Döring and Bortz 2016, p. 407). All questionnaires began with a comprehensive introduction to the subject of the study and an explanation of the most critical terminology. The introduction also included pictures to illustrate the mobile payment or a video of the live-stream shopping process. The questions about the constructs in the survey were short, precise, and distinguishable from each other. Most questions also included examples to make the question even more understandable. In addition, pre-tests were also conducted to increase the clarity of the questions. Despite this approach, it cannot be ruled out that comprehension problems may have arisen when answering the questions. Nevertheless, future research should collect a more representative sample for all investigated technologies and services. Future research also may consider replicating our findings with another research design to provide further insights with an experiment, interviews or actual data. Especially a longitudinal focus would allow for testing the changing customer behaviour and perception of the advantages or disadvantages of new technologies and services. For instance, how long a user has already used MP and its effect on the driver's perception and inhibitors of MP. Furthermore, the designed questionnaires should carry out in other countries to test if there are cultural differences.

A more general limitation is that all studies considered different aspects of theories, but not all theory-related factors. Otherwise, the questionnaires would be too long, and participants would discontinue the survey. For instance, the SST study solely investigated inexperienced and experienced users' intention to use SST, not the continuance intention. Moreover, Bärtsch et al. (2020) study incorporated different threats into its research model, but still, not all threats are considered. Therefore, future studies should consider a more comprehensive approach with additional theory-related factors or risk dimensions. For instance, considering all threats could provide more detailed information about what risks people are afraid of and hence inhibit the adoption and continuance intention in the case of MP. In the case of SST, researchers should incorporate a more comprehensive approach to the different trust aspects and types of trust (e.g., institution-based trust, structural assurance), which could provide more detailed information for the intention and continuance intention to use SST.

# **Chapter 4:**

# **Local Shopping Platforms**

## 4 Local Shopping Platforms<sup>5</sup>

With the advent of LSPs, we see a counter-development of platforms that implement location-dependent self-restrictions into their business models. It is either a limitation to the cooperation with retailers from a certain area, the limitation of just doing business with customers from a certain area, or both. LSPs use these location-dependent self-restrictions as their unique selling proposition. LSPs use this criterion as their unique selling proposition and try to utilise the locational advantages of LOOROs by offering location-dependent services to navigate the customer to the store or to reach time advantages in delivery and service by using the connected local shops as decentralized storages in direct neighbourhood to the households of the local customers (Bärsch et al. 2019, p. 606; Reinmann 2016).

From the LOOROs perspective, LSPs attract customers to their premises and promote their location as an advantage for providing services. Moreover, LSPs help LOOROs to increase their online local visibility and to extend their digital service offering. In addition, LOOROs are usually not interested in targeting people from far away and consider this a waste of their advertising budget (Berendes et al. 2020, p. 7).

The three studies in the fourth chapter characterised LSPs based on the typical e-marketplace functionalities plus a local focus (e.g., Bärsch et al. 2019, p. 604; Bärsch et al. 2021, p. 4). Accordingly, an LSP must fulfil at least one of the following main functions of e-marketplaces: 1) They match buyers and sellers; 2) They facilitate the exchange of information; 3) They facilitate transaction and fulfilment services (Bakos 1998, p. 36; Standing et al. 2010, p. 306). Additionally, their local focus is the main characteristic of LSPs that distinguishes them from traditional e-marketplaces like Amazon or Rakuten. Accordingly, LSPs are geographically restricted, and they target customers living in a defined region or city (Berendes et al. 2020, p.3).

Despite these characteristic objectives of LOOROs, the study of Bärsch et al. (2019) indicated that most LSPs adhere to the self-restriction criterion and strictly address only the local market, although some LSPs have started experimenting with addressing a national or even global market. Accordingly, the self-restriction criterion can be extended by a business model view (see the second study in this chapter Bärsch et al. 2021), differentiating between a "Strictly Local Approach" and a "Scaling Local Approach", with the latter platforms still focusing on local retailers and local customers while at the same time trying to scale to non-local customers (Bärsch et al. 2021, p. 4).

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<sup>5</sup> This Chapter and the following subchapter 4.1 and 4-2 are based on Bärsch et al. (2019, pp. 602-618), Bärsch et al. (2021, pp. 123-139) and Aguirre Reid et al. (2022, pp. 126-140).

Chapter four is structured as follows. First, each paper motivated the assigned research questions in the paper. Then, the research procedure is presented. Subsequently, the applied methodology and the evaluation procedure are explained. For each study, a separate evaluation takes place. Each paper concludes with a discussion of the results in light of the existing research.

Chapter four concludes with an interim conclusion to answer the research question *RQ3.1*, *RQ3.2* and *RQ3.3*. The interim conclusion provides the managerial implications, limitations, and future research (see subchapter 4.4).

#### **4.1 Functionality and Categories of Local Shopping Platforms**

As with e-marketplaces, also the services provided by local shopping platforms are not standardised and strongly differ (Zheng and Wang 2008, p. 328). The service landscapes provided range from simple externalized management of the online front-end (e.g., online shop, marketplace) to the outsourced management of complex sales and marketing processes, including pricing, invoicing, data processing, and logistics (Wieland 2011; Zheng and Wang 2008, p. 337). According to Peterson et al. (2007, p. 5), this diverse service landscape enables a typological differentiation (categorization) of LSPs based on the typical e-marketplace functionalities (see Table 15).

Following this approach, we derived five types of local shopping platforms: The first e-marketplace function (match of buyers and sellers) allows for the differentiation of two categories of local shopping platforms, *Store Locator Platforms* and *Product Catalog Platforms*. *Store Locator Platforms* (e.g., "www.like-lippstadt.de") offer only contact and store location information. They do not provide any information on products or any online shop functionalities to enable the core buying process. In addition to this contact and store location information, *Product Catalog Platforms* (e.g., "www.bummelbu.de") as the second category of LSPs provide an overview of the products available in the connected stores. As *Store Locator Platforms*, also *Product Catalog Platforms* do not provide any online shop functionalities. Considering the e-marketplace function (exchange of information), we derived an additional platform category named *Product Enquiry Platforms* (e.g., "www.dein-hsk.de"). These platforms enable customers to request product availability information, while still not providing online shop functionality. Regarding the e-marketplace function (transaction and fulfilment), two more types can be differentiated. *Affiliate Transaction Platforms* (e.g., "www.koomio.com") allow the purchase of products, but customers complete the transaction process on an external website with the help of an affiliate shop. Finally, *Full Transaction Platforms* (e.g., "www.lozuka.com") offer the full e-marketplace service range, including payment and logistics.



	Information	Communication	Transaction & Fulfilment
Platform Categories	Store Locator Platforms	Product Enquiry Platforms	Affiliate Transaction Platforms
	Product Catalog Platforms		Full Transaction Platforms

Table 15: LSPs categories with regards to the e-marketplace functionalities

## 4.2 Location Theory & Location-Dependent Services

"Location! Location! Location!" has long been a mantra for the stationary retail sector and its service providers. In the pre-e-commerce era, it was widely believed that the choice of a location is the single most important decision for retailers (Craig et al. 1984, p. 5). In fact it has been even argued that poor location may be an insurmountable obstacle for even the best retailers (Achabal 1982, p. 5). In the advent of e-commerce, location seemed to have lost its importance (Iyer et al. 2004, p. 4). Many pure players built big warehouses outside the cities to enable the efficient implementation of the fulfilment promises they made to their customers (Weltevreden 2008, p. 655). However, with the rising service competition between pure e-commerce players and stationary retailers (Big Box Retail Outlets and LOOROs), including services like e.g. same day delivery or even same hour delivery, the importance of location for the retail sector and the interest in location theory is increasing again (Allen et al. 2018, p. 5). For example, Kim et al. (2017, p. 186) point out that the impact of distance in the e-commerce age "is not dead", and in their study they highlight the negative effects of growing transportation costs on online sales prices and customer demand. Furthermore, in their study they show that location-dependent services, like logistics services and especially express delivery services are positively correlated with repurchases and the loyalty of customers. Further, research showed that even in an environment with near zero trade cost, physical distance matters (Blum and Goldfarb 2006, p. 385) and that especially location-dependent service are essential to attract and retain customers in multi-channel retail environments (Lin et al. 2018, p. 20; Massad et al. 2006, p. 73; Saeed et al. 2005, p. 248). Empirical research provides evidence for the importance of location-dependent services for the customers' intention to purchase, and also show that customers enjoy using location-dependent services (e.g., same-day delivery) (Bollweg et al. 2019, p. 4; Ho 2012, p. 810).

Location-dependent services can be distinguished into location-enabled and location-based services (see Table 16). Location-enabled services are "*services that are feasible if the location of the retailer is close to the households of the customers*" (Bärsch et al. 2019, p. 606). This closeness enables information services (e.g., map with store locations, information about store opening hours or contact data), communication & support services (e.g., loyalty card, customer integration) and fulfilment services with low transportation costs (e.g., same hour, day delivery, click & return) (Jones et al. 2003, p. 701; Jensen 2002, p. 2). Location-based services on

the other hand are "*services that are feasible if the customers are close to the store location*" (Bärsch et al. 2019, p. 606). These services aim to utilise foot-traffic at popular places like main streets, parks, etc. using location-awareness information systems and devices, like smartphones and wearable (Cabri et al. 2003, p. 6; Mennecke and Strader 2001, p. 454; Pura 2005, p. 526; Sahai and Machiraju 2001, p. 16).

Examples again range from information services (e.g., barcode scanner or map with store location), to communication & support services (e.g., price-draws, discounts or support), to navigation services (e.g., in-store navigation, shopping tours or outdoor navigation) and to payment & billing services (e.g., self-checkout).

Location-independent services on the other hand include standard web services, like online recommendations (e.g., further products of the retailer), online communication & support (e.g., service hotline or Facebook communication), online payment & billing services (e.g., credit card payment) and marketing channels (e.g., Instagram, TikTok). These services are not bound to a specific location of the customer and accordingly, they are rampant on all national and global e-marketplaces.

<b>Location-independent Services</b>	<b>Location-dependent Services</b>	
Standard Web-Services	Location-enabled Services	Location-based Services
All Services provided on e-marketplaces and not related to location.	Services that are feasible if the location of the retailer is close to the households of the customers.	Services that are feasible if the customers are close to the store location.

Table 16: Location-independent and Location-dependent Services

## 4.3 Three Empirical Studies on Local Shopping Platforms

### 4.3.1 Local Shopping Platforms – Harnessing Locational Advantages for the Digital Transformation of Local Retail Outlets: A Content Analysis<sup>6</sup>

Against this background, LSPs seem to be a premature approach, but the integration of locational advantages and physical infrastructures into their service strategy could lead to competitive advantages for LOOROs. It could help them win back market shares and revenue from the big online and offline competitors and to catch up in the ongoing digital transformation of the retail sector. Therefore, the stakes are high and LOOROs are facing tough competition. As LSPs are a rather new approach, we still do not know enough about their service offers and about how they facilitate the locational advantages of LOOROs in the digital realm. It is not yet to say, if LSPs will actually be able to help LOOROs transform their business models and survive in the highly competitive digital future (Valenduc and Vendramin 2017). Therefore, the first study of LSP answer the following research questions:

*RQ1) What kind of local shopping platform approaches exist?*

*RQ2) Which local services do these local shopping platforms offer in order to utilise the locational advantages of LOOROs?*

#### **Analysis**

#### **Methodology**

To analyse the different types of existing LSPs and their offered services, we conducted an extensive content analysis (e.g., Kolbe and Burnett 1991; Malhotra et al. 1996; Weber 1990) and followed the procedure suggested by Krippendorff (1980, pp. 72-75; 2004, pp. 81-87) and Mayring (2010, pp. 601-613). Accordingly, after defining the research scope and questions, in a first step we identified the existing LSPs through an explorative web search. In the second step, we conducted a pre-test, categorizing 30% of the identified LSPs and their services. This pre-test was followed by a revision procedure to improve the categorization and to streamline the coding agenda.

Subsequently, in a fourth step, three individual coders conducted the full content analysis (100%). Finally, in the last step, an expert panel of senior researchers discussed and resolved discrepancies in the coding results (see Figure 10). All mentioned research steps will be discussed in detail in the following.

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<sup>6</sup> This subchapter ist based on Bärtsch et al. (2019, pp. 602-618).

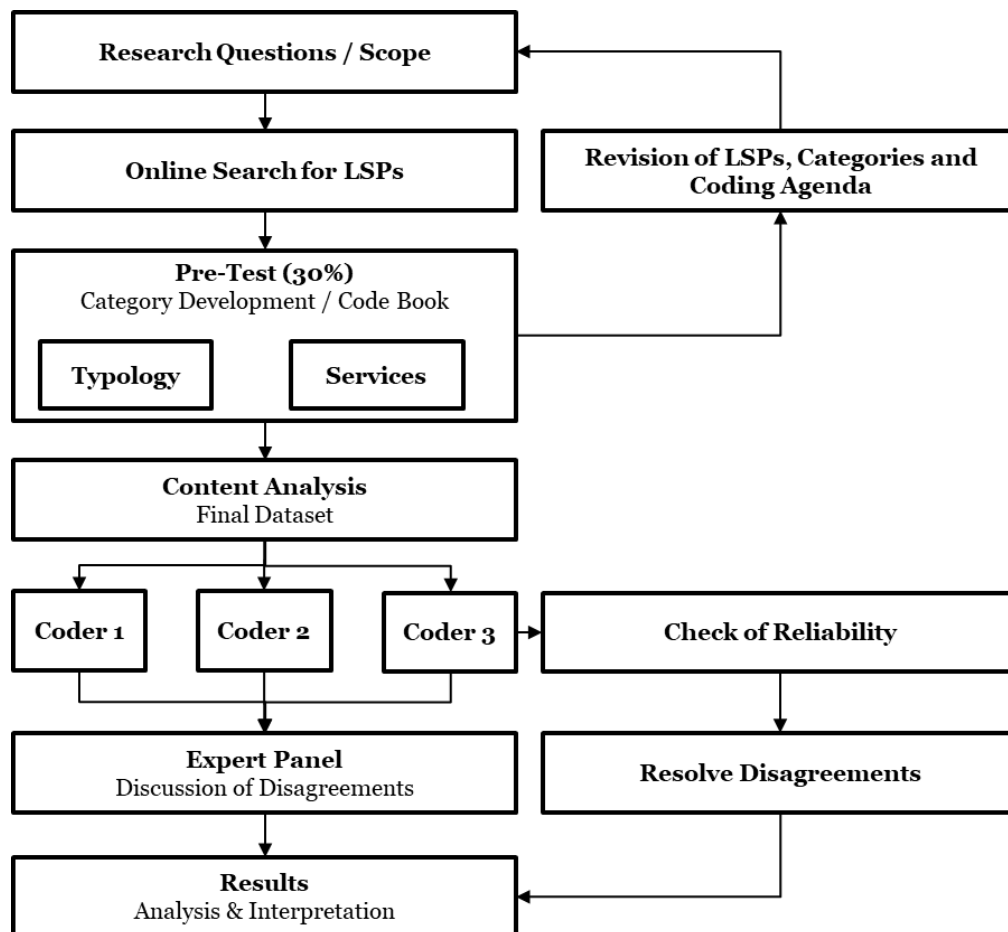


Figure 10: Research Procedure WI 2019

## Sample

For the identification of the LSPs we conducted an online search process in June and July 2016, using the following keyword combinations in English and in German: "Local" + ("E-Marketplace", "Shopping Platforms", "Shops Online", "Vendors Online", "Marketplace", "Products Online", "Retail", "Online shop"). The online search process was limited to the first ten result pages on Google per search iteration (first 100 results). To get as unbiased results as possible, the search engine settings were switched to "Do not use private results".

The search process resulted in a first set of 52 candidates for local shopping platforms. A second level selection and screening process to improve the quality of the findings reduced this set to 27 LSPs (selection criterion: local self-restriction to either cooperation with retailers from a certain area, the limitation of just doing business with customers from a certain area, or both) from three countries. 21 platforms were from Germany, four platforms from the U.S. and two platforms from Switzerland. Despite the bilingual keyword combinations and the disabled private results setting, there were distortions in favour of German platforms. The reason for this bias could be default settings of the Google.de search engine.

### Pre-Test, Coding, and Full Content Analysis

After the pre-test (30%) and the revision procedure, the coders together categorized the identified local shopping platforms and their services (100%) in a joint effort to achieve a consistent coding. They screened each platform for 74 possible items: 5 typological items and 69 service items (see Table 17 and 18). Each item was considered with 1 point in the Code Book (Yes / Available = 1, No / Not Available = 0), resulting in two scores: (1) a Typological Score, ranging from 0 to 5, and (2) a Service Score, ranging from 0 to 69 (see Table 12 and 13) (see Appendix C.1 Code Book Wi 2019).

Items / Functions	Definition	Coding Rule
Store location	Shows locations and contact information of local retail stores	Available = 1 Not available = 0
Product Description and Pictures	Shows products and descriptions of products of local retail stores	Available = 1 Not available = 0
Product enquiry	Offers the functionality to write a product enquiry to a local retail store	Available = 1 Not available = 0
Affiliate links	Shows products and prices from local with affiliate link to an external online shop	Available = 1 Not available = 0
Full transaction handling	Offers full transaction handling for local retail stores on the platform	Available = 1 Not available = 0

Table 17: Code Book: Platform Typologies

Type	Categories	Definition	Items	Coding Rule
Location-Dependent Services	Location-Enabled Services	Services based on the proximity to the customers	16	Available = 1 Not available = 0
	Location-Based Services	Services based on the location of the customer	13	Available = 1 Not available = 0
Location-Independent Services	Information & Recommendation Services	Services offering basic information and / or recommendations	12	Available = 1 Not available = 0
	Communication & Support Services	Services offering a communication channel	14	Available = 1 Not available = 0
	Payment & Billing Services	Services enabling the payment process	8	Available = 1 Not available = 0
	Fulfilment Services	Services for delivery and / or pick-up	6	Available = 1 Not available = 0

Table 18: Code Book: Services

### Intercoder Reliability

The verification of the Intercoder Reliability followed the guidelines of Raupp and Vogelsang (2009, pp. 151-175) and Tinsley & Weiss (1975, p. 373, 2000, pp. 95-124). For this, the Holsti's Coefficient of Reliability  $r_H$ , and Krippendorff's  $\alpha$  were calculated. Concerning the platform typologies, there were 5 items and 27 platforms, so that each coder had to judge 135 different items in total. In sum, complete agreement was achieved ( $r_H=1$ ; see Table 19).

<b>Coder Pair</b>	<b>C1 + C2</b>	<b>C1+C3</b>	<b>C2+C3</b>
coder's consensus	135	135	135
percentage agreement	1.00	1.00	1.00
$r_H$	1.00		

Table 19: Holsti's Coefficient of the typological items

Regarding the services, each coder had to examine 27 platforms for 69 services (1,863 items). The Holsti's reliability coefficient of  $r_H = 0.916$  shows an almost complete agreement (Holsti 1969, pp. 138-141). The Krippendorff's  $\alpha$  coefficient marginally missed the threshold for very good (0.9) but is still good with  $\alpha = 0.895$  (Holsti 1969, pp. 138-141; Neuendorf 2002, p. 143) (see Table 20).

<b>Coder Pair</b>	<b>C1 + C2</b>	<b>C1+C3</b>	<b>C2+C3</b>
Agreement / Coder Pair	1719	1698	1705
Correlation Coefficient / Coder Pair	0.923	0.911	0.915
Holsti's Coefficient of Reliability $r_H$	0.916		
Krippendorff's $\alpha$	0.895		

Table 20: Krippendorff's  $\alpha$  and Holsti's Coefficient of Reliability  $r_H$ 

## Expert Panel

To overcome and harmonize uncertainties (the coders agreed on 1668 out of 1863 items), an expert panel of four senior researchers with high expertise in the field of e-marketplaces and e-commerce discussed all remaining discrepancies (195 items) and made final decisions. Furthermore, the expert panel reviewed and discussed all platforms and confirmed the coding results.

## Results

The platform types derived from literature in section 2 could be confirmed in practice. Of the 27 platforms identified, 21 are located in Germany, two in Switzerland, and four in the U.S. Only two platforms represent Store Locator Platforms and two others Product Catalog Platforms. Six platforms provide the functionalities of Product Enquiry Platforms. Four platforms can be considered Affiliate Transaction Platforms, and thirteen platforms offer the full range of online shopping transaction and fulfilment services as Full Transaction Platforms (see Figure 11). These results clearly indicate that the majority of the platform providers strive to offer complete shopping experiences on their platforms.

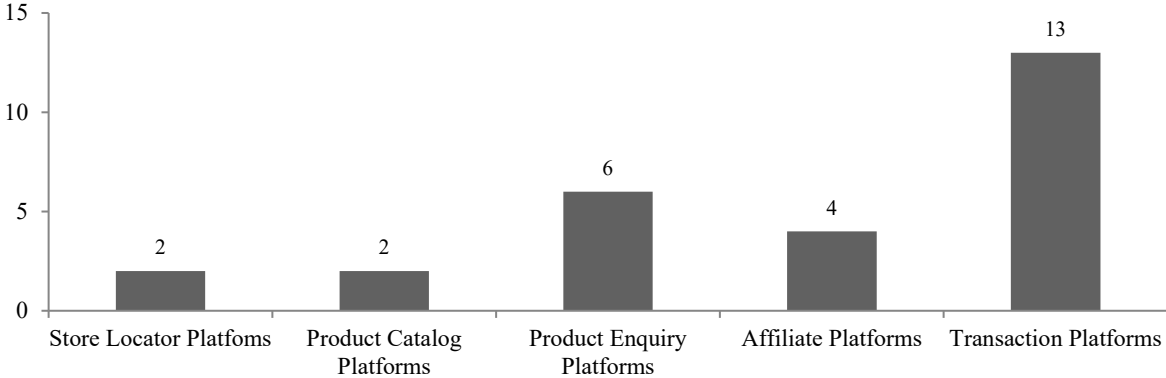


Figure 11: Distribution of Types of LSPs in the Data Sample

No.	Location-Enabled Services	#	No.	Location-Based Services	#
	<b>Information Services</b>			<b>Information Services</b>	
1.	Map with store locations	16	1.	Location-based product consultation	0
2.	Information about local news	1	2.	Barcode scanner	2
3.	Information about local events	3	3.	Location-based map with store locations	8
4.	Information about product availability (In-Store)	12	4.	Location-based map with closest product location	3
5.	Information about store opening hours	19		<b>Communication &amp; Support Services</b>	
6.	Information about store contact data	22	5.	Location-based support	0
	<b>Communication &amp; Support Services</b>		6.	Location-based advertisement	1
7.	Support at home	9	7.	Location-based loyalty program	0
8.	Face to face support	1	8.	Location-based price-draws	0
9.	Local loyalty card	7	9.	Location-based discounts	0
10.	Customer integration (Customer feedback on store services)	13	10.	In-Store navigation	0
11.	Community integration	10			
	<b>Navigation Services</b>		11.	Outdoor navigation	0
	-		12.	Location-based shopping tour	0
	<b>Payment and Billing Services</b>			<b>Payment and Billing Services</b>	
	-		13.	Self-Checkout	0
	<b>Fulfilment Services</b>			<b>Fulfilment Services</b>	
12.	Same day delivery	2	-		
13.	Same hour delivery	6			
14.	Click & Return	3			
15.	Click & Collect	0			
16.	Reserve & Collect	6			

Table 21: Identified Location-Dependent Services on LSPs 2019

Altogether, the 27 platforms provide a range of 67 different services. These services support the different functions of e-marketplaces and can therefore be categorized as follows (Bakos 1988, p. 35; Standing et al. 2010, p. 44):

1. Information & Recommendation Services
2. Communication & Support Services
3. Payment & Fulfilment Services



Local Shopping Platform	Typology	Total	Location-Dependent Services									Location-Independent Services			
			Location-Enabled Services				Location-Based Services					Information & Recommendation	Communication & Support	Payment & Billing	Fulfillment
			Total LES	Information	Communication & Support	Fulfillment	Total LBS	Information	Communication & Support	Navigation	Payment & Billing				
No. / category		<b>69</b>	<b>16</b>	6	5	5	<b>13</b>	4	5	3	1	12	14	8	6
Average no. / LSP		<b>16</b>	<b>4,8</b>	2,7	0,6	1,5	<b>0,7</b>	0,5	0	0,2	0	2	6	2	1
Share / LSP		<b>23%</b>	<b>30%</b>	45%	13%	30%	<b>5%</b>	12%	0%	6%	0%	20%	41%	28%	15%
1	Klickando	5	28	8	4	0	4	0	0	0	0	3	9	5	3
2	Stylerella	5	26	9	5	3	1	2	1	0	1	3	9	2	1
3	hierbeidir	5	24	6	3	0	3	0	0	0	0	2	8	6	2
4	Loca Fox	4	24	6	4	0	2	3	3	0	0	6	8	0	1
5	Atalanda	5	22	6	3	0	3	0	0	0	0	3	7	3	3
6	farmy.ch	5	22	5	1	2	2	0	0	0	0	3	9	4	1
7	Kaloka	5	22	6	3	0	3	0	0	0	0	3	7	3	3
8	buchhandel.de	5	21	6	3	1	2	3	2	0	1	2	4	5	1
9	Locamo BETA	5	21	8	5	1	2	1	1	0	0	2	6	2	2
10	Koomio	4	21	7	4	0	3	2	2	0	0	3	8	0	1
11	Shopcity (Shoplocally)	5	19	8	4	4	0	0	0	0	0	3	5	2	1
12	findeling	1	17	4	4	0	0	4	2	0	2	0	9	0	0
13	Digitale City	3	15	4	0	1	3	0	0	0	0	0	8	1	2
14	locally	3	15	4	4	0	0	0	0	0	0	5	5	0	1
15	beiuns.kaufen	5	14	3	1	0	2	0	0	0	0	3	5	3	0
16	Kietzkaufhaus	5	14	2	1	0	1	0	0	0	0	2	5	2	3
17	localharvestmarket	5	14	3	2	0	1	0	0	0	0	5	3	1	2
18	Mein Jülich	4	14	4	2	1	1	0	0	0	0	2	8	0	0
19	Arranja	3	14	2	0	1	1	0	0	0	0	1	8	1	2
20	RN-Shopping	2	13	5	3	1	1	2	1	0	1	3	3	0	0
21	Postmates	5	12	2	0	0	2	0	0	0	0	1	5	2	2
22	snipda	4	12	5	4	0	1	1	1	0	0	2	3	0	1
23	Lieblingsladen.de	2	12	4	3	0	1	0	0	0	0	3	4	0	1
24	Marktplatz Bruchköbel	3	11	7	4	2	1	0	0	0	0	2	2	0	0
25	take-it-lokal.de	3	9	3	3	0	0	0	0	0	0	1	1	4	0
26	Yategolocal	1	7	3	3	0	0	0	0	0	0	2	2	0	0
27	Kaufnah BETA	3	3	0	0	0	0	0	0	0	0	0	3	0	0

Table 22: Offered Services on LSPs WI 2019

From the 69 different services, 40 services are location-independent and 29 are location-dependent services. Thirteen services of the latter group are Location-Based Services, while 16 are Location-Enabled Services (see Table 21 and 22).

Among the location-dependent services, information services are dominating, while among the location-independent services communication services are in the majority.

The extent to which LSPs provide location-dependent services differs quite strongly. On average, LSPs offer 23% of all identified services, ranging from a min. of 4% to a max. of 41% of the services. Between 0% and 56% of the identified Location-Enabled Services (average 30%) and between 0% and 31% of the identified Location-Based Services (average 5%) are provided by the platforms. For comparison, concerning location-independent services, 0%-50% of the information & recommendation services (average 20%), 7%-64% of the communication & support services (average 41%), 0%-75% of the payment & billing services (average 28%), and 0%-50% of the logistics services (average 15%) are provided by the LSPs (see Table 17).

A deeper look on location-enabled services shows that local shopping platforms provide between 0%-83% of the identified information services (average 45%) and 0%-80% of the identified communication & support services (average 13%) as well as of the logistics services (average 30%). As location-based services, only two categories are used: information (0%-75%, average 12%) and navigation services (0%-67%, average 6%).

Logistics services are one of the major advantages that LSPs can offer to customers. Regarding Affiliate and Full Transaction Platforms, which both support the complete shopping process, further interesting findings are that: (1) only seven full transaction platforms offer same day delivery, (2) ten full and two affiliate transaction platforms offer click and collect, (3) five full and one affiliate transaction platform offer click and return, (4) and three full and four affiliate transaction platforms offer reserve and collect.

Regarding the typology, platforms of higher categories tend to use more services than platforms of lower categories. However, this cannot be generalized, as some platforms of category 1 are ranging in the midfield while categories of 5 and 4 can also be found in the lower field.

## **Conclusion**

## **Discussion**

In total, 27 shopping platforms that focus on local retailers and local customers were identified, out of which four are from the U.S. and 23 are from German and / or Switzerland.

Concerning the services provided, there is much room for improvement on local shopping platforms. On average, the examined platforms offer only 16 of the identified 69 services, including only eleven out of 40 location-independent services (27.5%), 4.8 out of 16 location-enabled services (30%), and 0.7 out of 13 location-based services (5%).

Thus, although local shopping platforms strive to make use of the locational proximity between shops and customers, they fall short in providing appropriate services.

A closer look at location-dependent services reveals that mostly general information regarding shop addresses, contact details, opening hours, and product availability are provided. Most platforms do not offer advanced services that really make use of the position of the customers around or in the local stores connected to the platforms, neglecting the local stores as a PoS. The very few location-based services offered underpin this finding. It almost seems that LSPs are not interested in strengthening the locational position of the connected LOOROs, but only try to benefit from them by focusing on services that foster online sales, like support or payment and billing services.

### 4.3.2 Local Retail Under Fire: Local Shopping Platforms Revisited Pre and During the Corona Crisis<sup>7</sup>

The second study of LSPs assess how LSPs and their service offers have developed over the last years and if LSPs have started to introduce more services that utilise the locational advantages of LOOROs. For instance, LSPs offer services which utilise the locational proximity between LOOROs and their customers with location-enabled services (e.g., click & collect, same-day delivery) or location-based services (e.g., location-based discounts). Furthermore, it is not yet to say, how the corona crisis has affected the development of LSPs with regard to their service offers and their role in the digital transformation process of local retail. Moreover, in general, LSPs have been neglected by research so far. Therefore, the second study of LSP aims to answer the following research question:

*Main RQ) What is the current state of service & platform type development of LSPs in Germany?*

To answer the stated research question, we have derived three sub questions, which will examine the development of LSPs from different viewpoints.

*RQ1) How did the types of German LSPs develop between 2016 and 2019?*

*RQ2) How did the digital services offered by German LSPs develop between 2016 and 2019?*

*RQ3) How has the corona crisis affected the development of LSPs?*

To answer RQ1 and RQ2, this paper follows up on a sample from 2016 of a preliminary study using a structured content analysis (Bärsch et al. 2019). RQ3 will be answered using answers from structured telephone interviews.

#### **Analysis**

The stated research questions with respect to the development of the LSP market and their services were analysed in two steps. First, we conducted a content analysis to assess the development of the market and the service offers of LSPs. Second, we assessed the potential impact of the corona crisis on LSPs in an explorative manner, conducting 26 semi-structured telephone interviews with executive managers of selected LSPs (see subchapter 3.5).

#### **Development of LSPs: Methodology**

In line with previous research, we conducted an extensive content analysis to examine the development of the market and the service offers of LSPs (Bärsch et al. 2019). In order to achieve comparable results to the preliminary study of Bärsch et al. (2019), we followed the guidelines

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<sup>7</sup> This subchapter is based on Bärsch et al. (2021, pp. 123-139).

by Krippendorff (1980, pp. 72-75; 2004, pp. 81-87) and Mayring (2010, pp. 601-613). Accordingly, after defining the research scope and questions, in a first step, we have identified the existing LSPs through an explorative web search.

In the second step, we have conducted a pre-test in order to achieve coding consistency. This pre-test was followed by a revision procedure to improve the categorization and to streamline the coding agenda. In the fourth step, three individual coders have conducted a full content analysis. In the fifth step, the verification for the intercoder reliability of the coding results followed. Finally, an expert panel of senior researchers resolved inconsistencies within the coding results (see Figure 12).

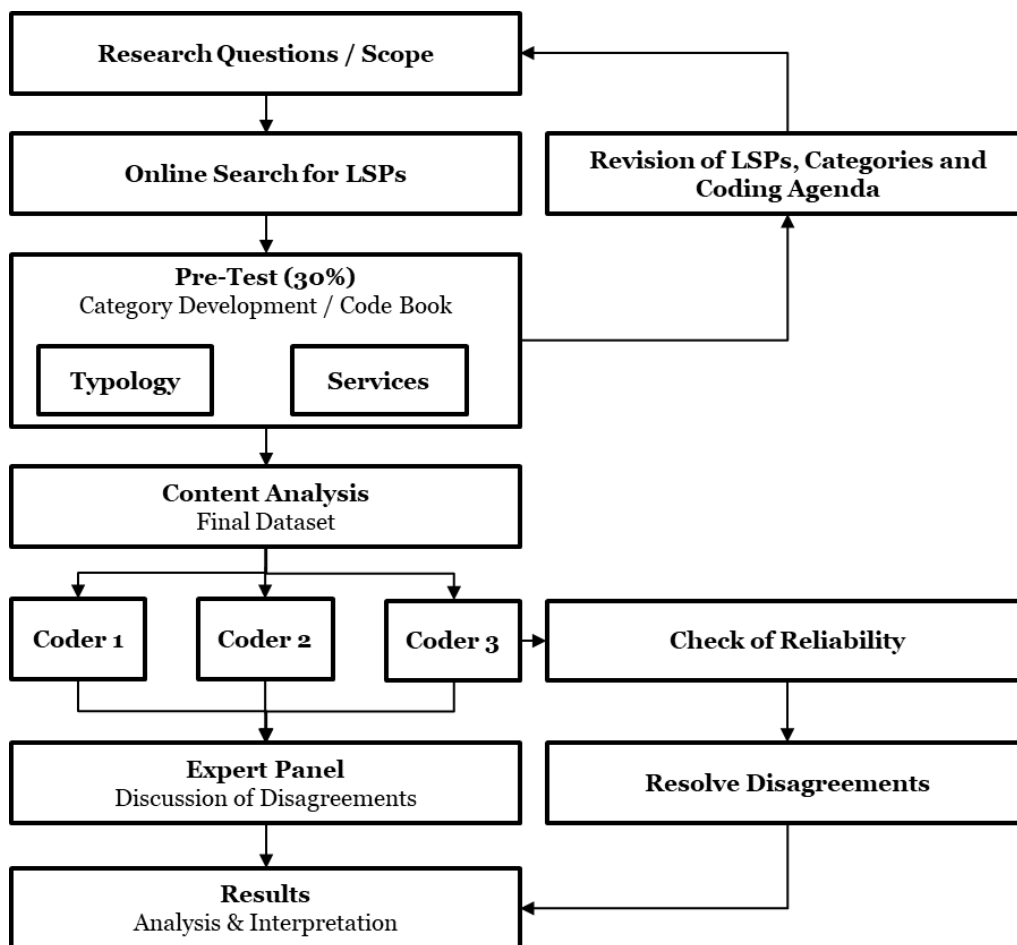


Figure 12: Research Procedure WI 2021

### Development of LSPs: Sample of the Content Analysis

For the identification of LSPs in Germany, we used the following keyword combinations for the explorative web search in German: "Local + (E-Marketplace, Shopping Platforms, Shops Online, Vendors Online, Marketplace, Products Online, Retail Online, Online Shop, Retailer Archive, Product Archive, Product Enquiry), Buy Local + City Name". The online search process was conducted via the search engine Google in October 2019. The search process resulted

in a first set of 179 candidates for Local Shopping Platforms. However, 77 platforms were excluded for several reasons, e.g., because they were inactive, or addressed business customers rather than customers. This selection and screening process resulted in a final set of 102 LSPs for the content analysis.

### Development of LSPs: Pre-Test & Coding of the Content Analysis

A pre-test (30%) for the categories and the services of LSPs has been conducted to ensure consistent coding. Based on the results of the pre-test, we identified 74 possible items: 5 typological items and 69 service items. Contrary to Bärsh et al. (2019, p. 608), we changed the location-independent service offerings of two service items due to the pre-test findings. We deleted Google + (the site is down) as a service item for the category communication & support and added "Klarna" (new finding) as a service item for the category payment. For the coding procedure, we created a codebook with a description of each item. Three coders that were different from the ones in the previous study performed the coding and the content analysis between November 1, 2019 and December 22, 2019. The three coders screened each platform for all 74 possible items, with each item being rated "1" if Yes / Available and "0" if No / Not Available (see Appendix C.2 Code Book Wi 2021).

### Development of LSPs: Intercoder Reliability of the Content Analysis

The intercoder reliability was verified according to the guidelines of Raupp and Vogelsang (2009, pp. 151-175) and Tinsley and Weiss (1975, p. 373, 2000, pp. 95-124). Therefore, the Holsti's Coefficient of Reliability  $r_H$ , and Krippendorff's  $\alpha$  were calculated to verify the results for the typological items and the service items (Krippendorff 2004, pp. 81-87). With 5 typology items and 102 platforms to screen, each coder judged 510 typology items in total. The three coders achieved a very good intercoder reliability for the Holsti's Coefficient (Holsti 1969, pp. 138-141) and an acceptable Krippendorff's  $\alpha$  (Krippendorff 2004, p. 242).

Coder Pair	Typology Items			Service Items		
	C1+C2	C1+C3	C2+C3	C1+C2	C1+C3	C2+C3
Coder consensus	948	928	944	13430	13482	13354
Coder differences	72	92	76	646	594	722
$r_H$ Coefficient	0.93	0.91	0.93	0.95	0.96	0.95
Average $r_H$	0.92			0.95		
Krippendorff's $\alpha$	0.85			0.80		

Table 23: Intercoder Reliability for Typology and Service Items

Regarding the services in total, each coder had to judge 7038 items. The three coders achieved a very good reliability for Holsti's Coefficient (Holsti 1969, pp. 138-141) and an acceptable degree of reliability for the Krippendorff's  $\alpha$  (Krippendorff 2004, p. 242) (see Table 23). Finally, an expert panel of senior researchers with high expertise in the field of e-marketplaces discussed all remaining discrepancies (2202 items) and made the final decisions to harmonize coder inconsistencies.

### **Corona-Effects: Methodology & Questionnaire of the Telephone Interviews**

The dynamic and complex development since the outbreak of the coronavirus was analysed with an additional explorative study using semi-structured telephone interviews (Frey 1989, p. 29). We chose this method because of its efficiency (time and personnel expenditures) (Döring and Bortz 2016, p. 374) and its accordance with the social distancing requirements (Die Landesregierung Nordrhein-Westfalen 2020). The interview guideline contained 11 standard questions to address three main topics: 1) the reasons for the chosen LSP type and the implemented services, 2) the experiences and new developments of the LSP during the corona crisis, and 3) strategies to sustain the LSPs business model after the corona crisis (see Appendix C.3 Telephone Interview Survey WI 2021).

To address the dynamics in the development and the potential impact of the lockdown, we added two customized extensions, the first including three questions for LSPs created as a response to the lockdown, and the second including seven questions for LSPs that had been established already before the corona crisis. The questionnaire used two types of questions, one with a dichotomous 5-point Likert scale to capture the intensity of the answers, the other for open questions. We explained both types to the interview partners in order to avoid any biases like the "Response-Order-Effect" (Schumann and Presser 1981, p. 222).

### **Corona-Effects: Sample & Documentation of the Telephone Interviews**

To examine the current impact of the corona crisis on LSPs, we used the LSP collection provided by the EU-funded research project "*City Lab Südwestfalen*". The "*City Lab Südwestfalen*" collected the data to offer an overview of existing and new LSPs since the corona crisis from partner municipalities in the region of South Westphalia in Germany (City Lab Südwestfalen 2020). In total, we interviewed 26 LSP providers (9 established LSPs; 17 new LSPs) in June 2020. The average interview lasted for 30 minutes. We used the "Foot-in-the-Door-Technique", calling two times: In the first call, we introduced the topic, and made an appointment for the actual interview (second call) (Döring and Bortz 2016, p. 417). We used this approach to decrease the refusal rate and to increase the quality of the data (Dillman et al. 1976, p. 70). The responses were collected in an excel sheet during the interviews.

From the interviewed platforms, 21 out of the 26 LSPs represents Store Locator Platform (81%), one a Product Catalog Platform (4%), and four a Full Transaction Platform (15%).

## Results

### Results Content Analysis: Development of LSPs since 2016

No.	Location-Enabled Services	#	No.	Location-Based Services	#
	<b>Information Services</b>			<b>Information Services</b>	
1.	Map with store locations	48	1.	Location-based product consultation	0
2.	Information about local news	18	2.	Barcode scanner	1
3.	Information about local events	41	3.	Location-based map with store locations	6
4.	Information about product availability (In-Store)	10	4.	Location-based map with closest product location	1
5.	Information about store opening hours	88		<b>Communication &amp; Support Services</b>	
6.	Information about store contact data	94	5.	Location-based support	0
	<b>Communication &amp; Support Services</b>		6.	Location-based advertisement	1
7.	Support at home	0	7.	Location-based loyalty program	0
8.	Face to face support	0	8.	Location-based price-draws	0
9.	Local loyalty card	7	9.	Location-based discounts	2
10.	Customer integration (Customer feedback on store services)	5	10.	In-Store navigation	0
11.	Community integration	2			
	<b>Navigation Services</b>		11.	Outdoor navigation	35
	-		12.	Location-based shopping tour	2
	<b>Payment and Billing Services</b>			<b>Payment and Billing Services</b>	
	-		13.	Self-Checkout	0
	<b>Fulfilment Services</b>			<b>Fulfilment Services</b>	
12.	Same day delivery	11		-	
13.	Same hour delivery	1			
14.	Click & Return	1			
15.	Click & Collect	9			
16.	Reserve & Collect	12			

Table 24: Identified Location-Dependent Services on LSPs 2021



To address our first and second sub research question, we discuss our findings of the content analysis and compare them with the findings from 2016 for 21 German platforms (Bärsch et al. 2019). The findings confirm the derived platform types from 2016 (Bärsch et al. 2019), now identifying 65 Store Locator Platforms, 3 Product Catalog Platforms, 10 Product Enquiry Platforms, 2 Affiliate Transaction Platforms, and 22 Full Transaction Platforms. The current study reveals that the majority of platforms follows the "Strictly Local Approach" (89 out of 102) and represents Store Locator Platforms, focusing mostly on information and communication functionality. In contrast to this, the 2016 study identified the majority of LSPs as Full Transaction Platforms (Bärsch et al. 2019, p. 610). Furthermore, platforms which follow a "Scaling Local Approach" (12 Full Transaction and one Affiliate Transaction Platform) mainly focus on transaction and fulfilment functionality, while neglecting to utilise the locational advantages of LOOROs.

The 102 analysed platforms still provide most of the same 69 digital services that were identified in the preliminary study from 2016 (Bärsch et al. 2019, p. 610) (see Table 24 and Appendix C.4 for the Results of LSP Location-Enabled Services WI 2021, C.5 for the Results of LSP Location-Based Services WI 2021, and C.6 for the Results of LSP Location-Independent Services WI 2021). Concerning the use of location in the service landscape, of the 69 digital services, 40 are location-independent and 29 are location-dependent services. The 69 services support the different functions of e-marketplaces (Bakos 1998, p. 36; Standing et al. 2010, p. 306): Information & recommendation services, communication & support, and payment & fulfilment services. The following tables (see Table 25-29) show the number of offered services by each LSP type for the examination in 2016 and 2019. Reading example: 1) From the sample of 2016, Store Locator Platforms have offered 21.88% of the identified location-enabled services. 2) From the sample of 2019, Store Locator Platforms have offered on average of 9.88% of the identified services. Calculation example for the services: 65 LSPs \*16 location-enabled services = 1040 (see Table 25).

<b>Sample</b>	<b>2016</b>	<b>2019</b>		
<b>Store Locator Platforms</b>	<b>Total</b>	<b>Total</b>	<b>Strictly Local</b>	<b>Scaling Local</b>
Number of Platforms	2	65		--
Location-Enabled Services	21.88% (7 of 32)	19.04% (198 of 1040)	19.04% (198 of 1040)	--
Location-Based Services	15.38% (4 of 26)	3.67% (31 of 845)	3.67% (31 of 845)	--
Location-Independent Services	16.25% (13 of 80)	8.23% (214 of 2600)	8.23% (214 of 2600)	--
Average No. of Total Services	17.39% (24 of 138 )	9.88% (443 of 4485)	9.88% (443 of 4485)	--

Table 25: Service Landscape Offered by Store Locator Platforms

For Store Locator Platforms, we found a striking increase for location-enabled services, like information (e.g., contact data or the address of LOOROs) or communication & support services (e.g., loyalty cards), location-based services (e.g., outdoor navigation as a navigation service), and location-independent services (e.g., support via E-Mail as a communication & support service) in absolute values. Concerning Product Catalog Platforms, we also found a higher offering of location-enabled services (e.g., information) compared to 2016. This also holds for location-based (e.g., advertisement or discounts) and location-independent services in absolute values (see Table 26). Product Enquiry Platforms provided, in general, a higher level of location-dependent services, especially reserve & collect. Moreover, we found a strong increase in numbers of recommendation services (e.g., product recommendations, further products of the retailers) as location-independent services (see Table 27).

<b>Sample</b>	<b>2016</b>	<b>2019</b>		
<b>Product Catalog Platforms</b>	<b>Total</b>	<b>Total</b>	<b>Strictly Local</b>	<b>Scaling Local</b>
Number of Platforms	2	3		--
Location-Enabled Services	28.13% (9 of 32)	22.92% (11 of 48)	22.92% (11 of 48)	--
Location-Based Services	7.69% (2 of 26)	20.51% (8 of 39)	20.51% (8 of 39)	--
Location-Independent Services	17.50% (14 of 80)	15.00% (18 of 120)	15.00% (18 of 120)	--
Average No. of Total Services	18.12% (25 of 138 )	17.87% (37 of 207)	17.87% (37 of 207)	--

Table 26: Service Landscape Offered by Product Catalog Platforms

<b>Sample</b>	<b>2016</b>		<b>2019</b>	
	<b>Total</b>	<b>Total</b>	<b>Strictly Local</b>	<b>Scaling Local</b>
Number of Platforms	5	10		--
Location-Enabled Services	20.00% (16 of 80)	23.75% (38 of 160)	23.75% (38 of 160)	--
Location-Based Services	--	2.31% (3 of 130)	2.31% (3 of 130)	--
Location-Independent Services	17.50% (35 of 200)	13.50% (54 of 400)	13.50% (54 of 400)	--
Average No. of Total Services	14.48% (51 of 345)	13.77% (95 of 690)	13.77% (95 of 690)	--

Table 27: Service Landscape Offered by Product Enquiry Platforms

In general, we found a decrease of location-dependent and location-independent services for affiliate platforms (see Table 28). Regarding location-independent services, platforms with a "Scaling Local Approach" offer more payment & billing options than platforms with a "Strictly Local Approach". This also holds true for Full Transaction Platforms that the location-enabled services and location-based services decrease in comparison to 2016 for Full Transaction Platforms (see Table 29). In general, the results also confirm that platforms with transaction and fulfilment functionality, e.g., Affiliate Transaction Platforms and Full Transaction Platforms, offer more services than information and communication focused platforms, like e.g., Store Locator Platforms. Concerning the different platform types, the typical platform with a "Strictly Local Approach" is a Store Locator or Product Catalog Platform, while platforms with a "Scaling Local Approach" tend to be Full Transaction Platforms.

<b>Sample</b>	<b>2016</b>		<b>2019</b>	
	<b>Total</b>	<b>Total</b>	<b>Strictly Local</b>	<b>Scaling Local</b>
Number of Platforms	4	2	1	1
Location-Enabled Services	34.44% (22 of 64)	40.63% (13 of 32)	43.75% (7 of 16)	37.50% (6 of 16)
Location-Based Services	11.54% (6 of 52)	11.54% (3 of 26)	15.38% (2 of 13)	7.69% (1 of 13)
Location-Independent Services	24.38% (39 of 160)	21.25% (17 of 80)	17.50% (7 of 40)	25.00% (10 of 40)
Average No. of Total Services	24.28% (67 of 276)	23.91% (33 of 138)	23.19% (16 of 69)	24.64% (17 of 69)

Table 28: Service Landscape Offered by Affiliation Platforms

Sample	2016	2019		
	Total	Total	Strictly Local	Scaling Local
Number of Platforms	8	22	10	12
Location-Enabled Services	37.50% (48 of 128)	24.72% (87 of 352)	25.00% (40 of 160)	24.48% (47 of 192)
Location-Based Services	5.77% (6 of 104)	1.05% (3 of 286)	1.54% (2 of 130)	0.64% (1 of 156)
Location-Independent Services	34.38% (110 of 320)	32.05% (282 of 880)	29.75% (119 of 400)	33.96% (163 of 480)
Average No. of Total Services	29.71% (164 of 552)	24.51% (372 of 1518)	23.33% (161 of 690)	25.48% (211 of 828)

Table 29: Service Landscape Offered by Full Transaction Platforms

### Results of the Telephone Interviews: Corona-Effects

The results of the telephone interviews will be discussed along the three defined guiding topics: 1) reasons for the chosen LSP type and the implemented services, 2) experiences and new developments during the corona crisis, and 3) strategies to sustain the LSPs after the corona crisis.

#### 1) Reasons for the Chosen LSP Type and the Implemented Services

It turned out that the idea and the implementation of a LSP as a response to the lockdown was spontaneously driven by various actors, mostly city marketing / administration, or also regional business development units. Just five of the contacted LSP providers explained that they had planned the LSP implementation already before the crisis and that the coronavirus only accelerated the process. Contrary, nine interviewees reported that no LSP was in preparation before the lockdown, while six confirmed that they had some basic ideas before. The institutional background of the platform providers itself also seems to influence the chosen LSP type and the choice of implemented services. For example, city-related actors, like city marketing, apparently focus on supporting their local stationary retailers by providing only rudimentary information on Store Locator Platforms. In order to shed more light on their objectives, we asked the interviewees to rate statements on their intentions using a five-point Likert scale (from strongly disagree to strongly agree). Five out of nine providers of the already established platforms, and six out of 17 providers of the newly created LSPs, agreed to the statement "*It is intended to prevent customers from migrating to large online retailers in general*". Surprisingly, the majority of the providers of the newly created platforms rated this item neutral (eight out of 17). The statement "*It is intended to generate sales (parallel to stationary retailing)*" was only raised towards providers of Full Transaction Platforms.

Two providers of existing platforms agreed with the statement, while one provider of a new platform rather disagreed, stating that "*revenue via the platform should be understood as a bonus, which exceeds the monthly fee but not as a second income source*". Other interviewees summarized their intentions as "*improving the digital visibility of their city with its local retailers as a shopping [...] location*" or as "*[...] supporting local retailers so that customers don't buy on Amazon*".

The timeframe for implementing the new LSPs ranged from overnight (5 LSPs out of 17) to within two weeks (11 out of 17), except for one Full Transaction Platform that was developed in three weeks. In comparison, the already established platforms needed six months up to two years for Store Locator Platforms (six out of nine) and two months up to one year for Full Transaction Platforms. Regarding problems that occurred during the implementation of the platforms and the digital services, the interviewees reported challenges setting up the payment infrastructure or also missing inventory management systems as a necessary backbone for additional digital services.

## *2) Experiences and new developments during the corona crisis*

One major finding is that all existing LSPs extended their services during the corona crisis, e.g., with coupons, more detailed information on delivery options or general information about shopping with corona restrictions in place. During the lockdown, four existing LSPs reported a dynamic increase in numbers of connected retailers, while four existing LSPs reported a regular growth. One platform has extended its area of operation from three to ten regions. Furthermore, it seems that the corona crisis has boosted the attractiveness of LSPs for LOOROs. We asked the participants to evaluate the willingness of LOOROs to join and to actively use the platform or cooperate with the platform providers, e.g., regarding content creation (store and product information) (five-point Likert scale from very easy to very difficult). All interviewees reported that it became easier for them to win new LOOROs for their platforms compared to the pre-coronavirus situation. They further stated that also content creation by the LOOROs themselves and on behalf of them (by the LSP provider) became easier. 15 out of 17 new LSPs (3 out of 9 existing LSPs) rated the content creation by LOOROs as easy, and 14 out of 17 new LSPs (3 out of 9 existing LSPs) rated the content creation on behalf of their LOOROs as easy. According to the providers of Store Locator Platforms, one primary reason for the high willingness of LOOROs to participate and for the perceived ease regarding content creation was the collection of necessary retailer information with a survey or an online document.

### 3) Strategies to Sustain the LSPs After the Corona Crisis

All LSPs reported decreasing interest and decreasing participation of LOOROs since the easing of the coronavirus restrictions. Accordingly, LSP providers now focus on incentivizing active participation on their platforms. As financial incentives to participate, 21 out of 27 interviewed LSP providers do not charge any membership fees from LOOROs. One of the already established LSPs paused the monthly fee until June 2020. Another existing LSP decided to offer free online visibility for new LOOROs, while already participating LOOROs need to pay a fee. Only two existing LSPs did not change their pricing model, and two of the new LSPs offer free participation for a specific period from six months to one year. 15 out of 17 new LSPs agreed to the statement (five-point Likert scale from strongly disagree to strongly agree) that *the platform is designed to ensure the short-term survival of LOOROs during the corona crisis*. 14 out of 17 agreed to the statement that *the LSPs aim to strengthen the online visibility of LOOROs also after the corona crisis*. The majority of the already established platforms (seven out of nine), and also the majority of the new platforms (13 out of 17) intends to improve resp. extend their platform content and also their digital service landscape, e.g., by adding more and better pictures in product and retailer descriptions, or by implementing click & collect functionality.

## Conclusion

### Discussion

Regarding the first sub research question "How did the types of German LSPs develop between 2016 and 2019?", our results show that the LSP market changed from a majority of Full Transaction Platforms to a majority of Store Locator Platforms. The majority of LSPs follows a "Strictly Local Approach". This matches other findings from research that state that LOOROs prefer LSPs with a clear focus on local customers over global online platforms with intense price competition (Schade et al. 2018, p. 153). Nevertheless, we found 13 LSPs that have loosened their local self-restrictions to address also non-local customers, now following a "Scaling Local Approach". While this opens new market segments, it also makes the platform less distinguishable from other shopping sites. In contrast to former findings, our results show that LSPs with a "Scaling Local Approach" are perceived to act contrarily to the objectives and wishes of their LOORO target group (Berendes 2020, p. 7). Furthermore, from the 2016 sample, only eight platforms still exist. Notably, the high number of closedowns of Full Transaction Platforms stands out, confirming other studies (Schade et al. 2018, p. 152). Apparently, the business model of a Local Shopping Platform still lacks proof of concept.

Concerning the second sub research question: "How did the digital services offered by German LSPs develop between 2016 and 2019?", we found that LSPs still fall short in providing services that utilise the locational proximity between shops and customers. It seems that LSPs are still not interested in strengthening their locational position and do not support LOOROs to make or sustain profit by attracting customers to their stores (Berendes 2020, p. 7). This result indicates that there is no fundamental change in the service landscape compared to 2016 (Bärsch et al. 2019, p. 610). The implemented services can be considered as one-way communication, providing only general information (e.g., opening hours), instead of facilitating interaction between LOOROs and customers (Schade et al. 2018, p. 153).

Finally, with regard to the third sub research question: "How has the corona crisis affected the development of LSPs?", we found that the corona crisis clearly pushed the implementation of LSPs and also reduced the implementation periods drastically. This result shows that the coronavirus is a game changer and that the pandemic is fostering the willingness of LOOROs to follow e-commerce trends. Accordingly, the issue of convincing LOOROs to join the platforms has become much easier. With LOOROs focusing on the information-centric platform types, the new platforms provided a quick and easy measure in face of the corona restrictions to stay in business.

Former studies confirm the importance of low entry barriers for LOOROs (Delgado-de Miguel et al. 2019, p. 2). On the other hand, as LSPs have not substantially further developed their service offers, it needs to be doubted that they will effectively support LOOROs in their digital transformation and help them sustain or even grow their businesses. This is supported by the visibly decreasing interest in the newly created LSPs since the easing of the corona restrictions. LOOROs still seem hesitant and not fully convinced of the positive impact of LSPs.

### 4.3.3 Are We Speaking the same Language? An Analysis of German and Chinese Local Shopping Platforms<sup>8</sup>

China has had a turbulent history over the past 40 years in the retail industry. The retail industry in China has dramatically changed since the abolition of the "*simply yet rigid distribution system*" (Wang and Zhang 2005, p. 42), with the deregulation in 1979 (Zhuang 2013, p. 295). A further significant impact was the opening to foreign retailers in 1992, which led to a massive increase of new retail concepts, technologies and techniques in the Chinese retail industry (Sternquist et al. 2010, p. 362). As in the case of German retailers, the new digital competition also put pressure on local retailers in Chinese city centres, leading to changes in customer behaviour and a rapid increase in online sales. As a result of these developments, Chinese retailers also faced a downward spiral (Deloitte 2017, p. 3). However, studies reported a comeback of the city centre, especially LOOROs. The Covid-19 pandemic did not change this trend (Fung Business Intelligence 2018, p. 111; Fung Business Intelligence 2021, p. 43; McKinsey 2021, p. 143; Melchers 2022). One of the main drivers behind this comeback of Chinese LOOROs in the city centre is the integrated online and offline service offerings by Chinese LSPs that increase the customer in-store experience (McKinsey 2021). These digital services address Chinese customers' shopping behaviour and positively influence purchasing decisions (McKinsey 2020, p. 38; Lin et al. 2018, p. 19). The development in China highlights that the location of LOOROs has become essential in the rising service competition between pure e-commerce players and LOOROs (Kim et al. 2017, p. 186). The shift back from pure e-commerce to physical store with digital services among young customers in China demonstrates a turning point for LOOROs, and Chinese LSPs made a considerable contribution to this. Hence, the first and second research questions analyse the existing LSPs approaches and offer location-dependent services in both countries.

*RQ1: How do existing Local Shopping Platform approaches differ among German and Chinese platforms?*

*RQ2: How do existing Local Shopping Platforms offer location-dependent services differ among German and Chinese Local Shopping Platforms?*

However, it is not enough to descriptively analyse the offered services of LSPs in both countries. Since China has become the pioneer in setting the standards for the present and future of retail, foreign marketplaces (e.g., Germany, USA) tend to directly copy ideas from those marketplaces without considering the cultural differences. However, it has been proven that the ignorance of cultural differences will cause the failure of those services or systems (Fang et

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<sup>8</sup> This subchapter is based on Aguirre Reid et al. (2022, pp. 126-140).



al. 2013, p. 208). Because the culture impacts the ways local customers evaluate and use services (Zeithaml et al. 2018, p. 41). Hence, this study aims to shed some light on how the underlying culture shapes the service provision of LSPs.

Despite the importance of culture for the service provision, none of the former studies investigated how culture affects the service provision of platforms in different geographical areas in general (Reuver et al. 2018, p. 131; Zeithaml et al. 2018, p.41). For the analysis, the current study uses Hofstede's cultural dimensions (Hofstede 1980; Hofstede et al. 2010) as a theoretical lens to explain the offered location-dependent service by Chinese and German LSPs (see RQ3). The Hofstede's cultural dimensions (1980, 2010) is the most used approach for culture comparisons (Annamoradnejad et al. 2019, p. 1). Moreover, studies from various contexts use Hofstede to explain cultural differences regarding the use of services or apps like mobile banking/shopping (e.g., Chopdar et al. 2018; Mortimer et al. 2015; Picoto and Pinto 2021).

*RQ3: Can Hofstede's cultural dimensions explain the offer of location-dependent services among German and Chinese Local Shopping Platforms?*

Research on LSPs has many ties to research on e-marketplaces and e-intermediaries. First, this study contributes new theoretical and practical insights to e-marketplace research in general. It contributes to the little-explored area of LSPs, a subset of e-marketplaces. Second, none of the former studies investigated how culture affects the service provision of platforms in different geographical areas in the field of LSPs. Former studies have investigated LSPs in general (Schade et al. 2018, p. 148), focusing on participating LOOROs (Berendes 2020, p. 2; Delgado-de Miguel et al. 2019, p. 2;) or the LSP customers (Bollweg et al. 2019, p. 2; Berendes et al. 2020, p. 2), and analyzing the existing types and services offered by LSPs (Bärsch et al. 2019, p. 604, Bärsch et al. 2021, p. 2).

Third, former research regarding the cultural context only investigated the customer perspective and not the service provider perspective (Chopdar et al. 2018, p. 110; Mortimer et al. 2015, p. 545; Picoto and Pinto 2021, p. 2).

The third study follows a 2019 sample of a preliminary study using content analysis (Bärsch et al. 2021). To compare the results of both countries, we collected the data for the Chinese LSPs with a content analysis and compare the results with the preliminary study (Bärsch et al. 2021).

### **Hofstede's Cultural Dimensions**

Hofstede classified countries along four dimensions: power distance (PDI), uncertainty avoidance (UAI), individualism-collectivism (IDV), and masculinity-femininity (MAS). Later on, a fifth and sixth dimension were added: the long/short-term orientation and indulgence. However, the scope of Hofstede's cultural dimensions is not without limitations and cannot fully explain the national culture of Germany or China. Therefore, we solely focus on LSPs service provision and neglect the existing types and customer perspective, which is a limitation of this

study. For the existing types, we only knew the current LSP type of a provider but do not the reason for the decision (e.g., legal system, taxation and so).

For further analysis, we do not consider the cultural dimensions of masculinity versus femininity (MAS) (which "[...] indicates that the society will be driven by competition, achievement and success, [...] the dominant values in society are caring for others and quality of life" (Hofstede-Insights 2022a)), long term orientation versus short term normative orientation (LTO) (indicating "[...] how every society has to maintain some links with its own past while dealing with the challenges of the present and future [...]") (Hofstede-Insights 2022a) and indulgence versus restraint (IVR) (depicting "[...] the extent to which people try to control their desires and impulses[...]") (Hofstede-Insights 2022a) because the Chinese and German culture do not vary along those dimensions. Based on the estimation values of the cultural dimensions by Hofstede, the Chinese and German culture can be characterised along the three dimensions as follow (see Table 30): Germany has a low PDI value, indicating that inequality amongst people is not acceptable. Moreover, direct and participative communication is expected. Authorities' control is disliked. According to Hofstede's estimated values, the PDI in China is high. The high value in China reflects that inequalities amongst people are acceptable, and individuals are influenced by formal authority (Hofstede-Insights 2022a; Hofstede 2022). The value of PDI in China fits together with the individuals' role in a group and reinforces collectivism (Moser et al. 2011, p. 107). In contrast to Germanies' direct and participative communication, Chinese people avoid direct confrontation and circle around problems. Otherwise, a direct confrontation would stress harmony and the need to consider the interests and understanding of the other party (Brett and Gelfand 2005). The value of IDV shows that China is a highly collectivist culture where people act in the group's interests and not necessarily of themselves (Hofstede et al. 2010, p. 90; Hofstede-Insights 2022). For instance, in China, requests to one person are passed on to other persons who are entitled to take the decision (Moser et al. 2011, p. 107). Another example, social interaction is perceived in terms of collectivism and social usefulness. In contrast, western countries like Germany consider social interaction in light of competitiveness, self-confidence, and freedom (Reisinger and Turner 1998, p. 176-177; Tsang 2011, p. 671). This is in line with the strong belief in the ideal of self-actualization for individualist cultures like Germany (Hofstede et al. 2010, p. 93; Hofstede-Insights 2022). The score for UAI reveals that the Chinese culture can be characterised as comfortable with ambiguity (e.g., the Chinese language is full of ambiguous meanings) (Hofstede et al. 2010, p. 188; Hofstede-Insights 2022; Hofstede 2022). Moreover, the Chinese are adaptable and entrepreneurial, which is a clear advantage concerning the digital transformation. Therefore, it is not surprising that Chinese companies are playing a pioneering role in providing digital services, and customers have a higher willingness to embrace new technology services (Hardaker and Zhang 2021, p. 1). In contrast, there is a slight preference for uncertainty avoidance in Germany. For instance, this

is reflected by the law system or the strong preference for planning and well-thought-out projects in Germany (Bollweg et al. 2020, p. 12; Hofstede et al. 2010, p. 197; Hofstede-Insights 2022). But also German customers feel threatened by uncertain or ambiguous situations like new technology services (IFH Köln 2021f).

Cultural Dimension	Definition Cultural Dimensions	Values*	
		DE	CN
PDI	[...] "the extent to which the less powerful members of institutions and organisations within a country expect and accept that power is distributed unequally" (Hofstede-Insights 2022).	35	80
IDV	[...] "the degree of interdependence a society maintains among its members" (Hofstede-Insights 2022).	67	20
UAI	"The extent to which the members of a culture feel threatened by ambiguous or unknown situations and have created beliefs and institutions that try to avoid these" [...] (Hofstede-Insights 2022).	65	30
*Estimated values of the cultural dimension based on Hofstede (Hofstede-Insights 2022)			

Table 30: Country Comparison Germany (DE) & China (CN)

## Methodology

LSPs have an unstandardised, multiple-media-mixed website structure (e.g., graphics or different names for their services). In order to address this issue, we will follow former studies with similar challenges and conduct a content analysis (e.g., Bärsch et al. 2019; Bartikowski et al. 2019; Jiang et al. 2020). We will undertake the content analysis in line with the guidelines set by Krippendorff (2004, pp. 81-87). After defining the research scope and questions, we identified the existing LSPs through an explorative web search. In the second step, we then conducted a pre-test with the codebook and 30% of the identified LSPs in China. A revision procedure followed this pre-test to improve the categorization and streamline the coding. Subsequently, in a third step, three Chinese individual coders conducted the content analysis. In the fourth step, we calculated the intercoder reliability with two reliability measures used frequently in existing research (Hayes and Krippendorff 2007, pp. 80-82). Finally, an expert panel of senior researchers discussed discrepancies in the coding results and resolved them. The complete research steps will be discussed in detail in the following (Figure 13).

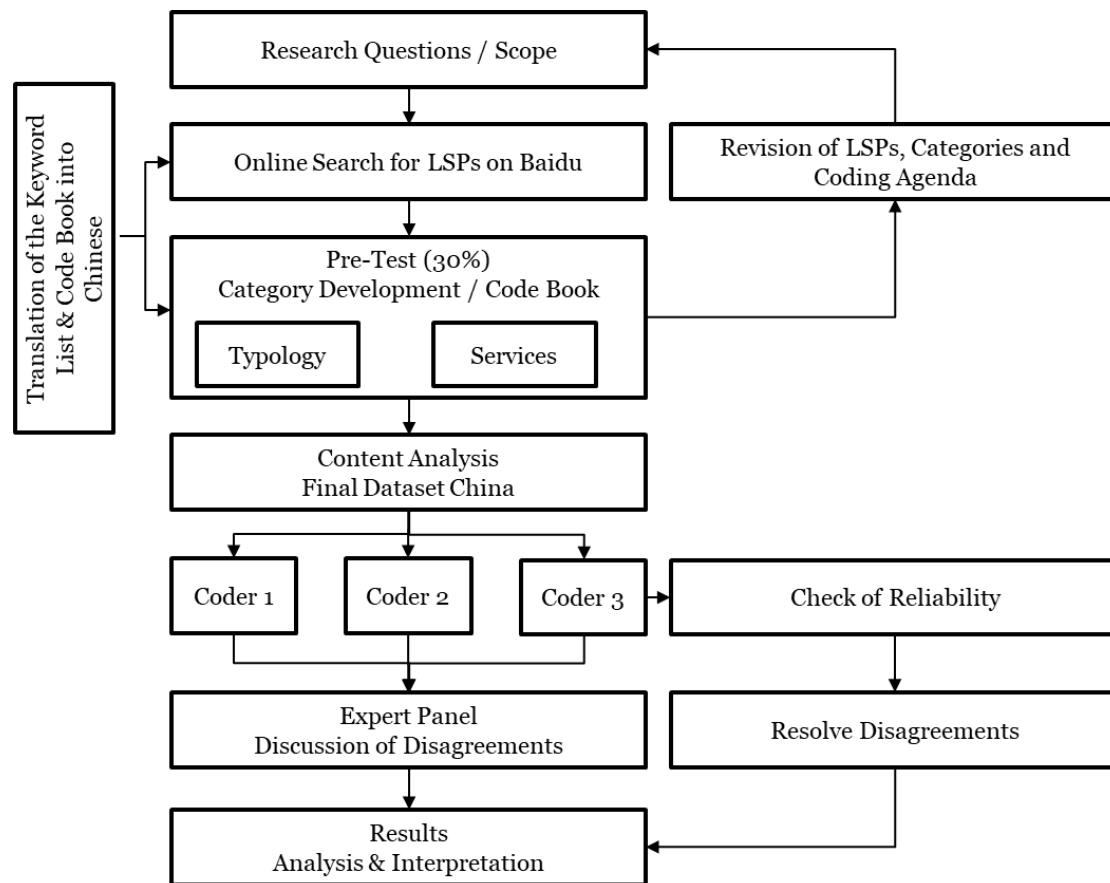


Figure 13: Research Procedure LSP BIR 2022

### Sample, Pre-Test and Coding of the Content Analysis

To get the LSPs, we will use a multiple-stage process with the relevant sampling approach and self-restriction criterion (Krippendorff 2004, pp. 81-87). For the development of the keyword list, we will consider previous studies in the field and narrow the keyword list with the local city name because some LSPs name themselves after their city (Schade et al. 2018, p. 151). For the web search, we will use keyword list of the primarily study (Bärsch et al. 2021, p. 7). Admittedly, we translated the keyword list to Chinese and then back to German to ensure translation equivalence. The translation was conducted independently by two Chinese-speaking research assistants (Brislin 1970, p. 187). The online search process took place in June 2020 and was conducted on the Chinese website Baidu with the same keyword list from the preliminary study in Chinese (Bärsch et al. 2021, p. 7): LOORO+ Local + (E-Marketplace, Shopping Platforms, Shops Online, Vendors Online, Marketplace, Products Online, Retail Online, Online Shop, Retailer Archive, Product Archive, Product Enquiry), Buy Local and City Name. To address the superficiality of the keyword list, we used the self-restriction criterion to improve the quality of the findings with a selection and screening process. We found 66 LSPs and we excluded 46 platforms for several reasons, e.g., the website was inactive, because it was a business to business platform, or because it did not fit the selection criterion. We reduced the first set to a final set of 20 Chinese LSPs. Our preliminary study identified 102 LSPs in Germany (Bärsch et al. 2021, p. 8).

In the second step, we adapted the codebook of extant literature with a focus on LSPs to improve the reproducibility of the content analysis (Bärsch et al. 2019, p. 608; Krippendorff 2004, p. 84). Based on the codebook, we defined coding units to distinguish between the separate descriptions assigned to the categories (location-based, location-enabled or location-independent services) (Krippendorff 2004, p. 85). We then conducted a pre-test, categorizing 30% of the newly-identified LSPs and their services for China. The pre-test is necessary for ensuring consistent coding. The pre-test revealed 71 possible items (coding units): 5 typological items and 66 service items for the Chinese LSPs codebook. Based on the pre-test in China, we adjusted the payment options and marketing channels for China (e.g. added WeChat Pay). In the fourth step, each of the coders received a written introduction in Chinese to the general coding process (content analysis) which explained each typology and service item with an example to address any uncertainties (Hayes and Krippendorff 2007, p. 78; Krippendorff 2004a, p. 13). Each typological and service item was considered with the following rule for the codebook: "1" if Yes/Available on the website/mobile-app, and "0" if No/Not Available. The typological score ranged from 0 to 5, and the service score ranged from 0 to 66 (See Table 31). Concerning the typological score, the highest function defines the platform type. For instance, the Mei Tuan (美团) LSP fulfil the first and second functions and the third function. Therefore, we consider this LSP as a full transaction platform (see Table 32) (see Appendix C.7 Code Book BIR 2022).

<b>Items / Functions</b>	<b>Definition</b>	<b>Coding Rule</b>
Store location	Shows locations and contact information of local retail stores	Available = 1 Not available = 0
Product Description and Pictures	Shows products and descriptions of products of local retail stores	Available = 1 Not available = 0
Product enquiry	Offers the functionality to write a product enquiry to a local retail store	Available = 1 Not available = 0
Affiliate links	Shows products and prices from local with affiliate link to an external online shop	Available = 1 Not available = 0
Full transaction handling	Offers full transaction handling for local retail stores on the platform	Available = 1 Not available = 0

Table 31: Code Book: Platform Typologies

Type	Categories	Definition	Items DE	Items CN	Coding Rule
Location-Dependent Services	Location-Enabled Services	Services based on the proximity to the customers	16	16	Available = 1 Not available = 0
	Location-Based Services	Services based on the location of the customer	13	13	Available = 1 Not available = 0
Location-Independent Services	Information & Recommendation Services	Services offering basic information and / or recommendations	12	12	Available = 1 Not available = 0
	Communication & Support Services	Services offering a communication channel	13	10	Available = 1 Not available = 0
	Payment & Billing Services	Services enabling the payment process	9	9	Available = 1 Not available = 0
	Fulfilment Services	Services for delivery and / or pick-up	6	6	Available = 1 Not available = 0

Table 32: Code Book: Country Comparison Coding Items

### Intercoder Reliability of the Content Analysis

In the fourth step of the procedure, we calculated the level of agreement between the coders' decision with two different intercoder reliabilities (Neuendorf 2016). The Holsti coefficient take values of .00 (no agreement) to 1.00 (perfect agreement). However, this approach tends to overinflate the result of the agreement. This is why we also consider Krippendorff's  $\alpha$  as a measurement for intercoder reliability (Krippendorff 2004a, p. 3). Krippendorff's  $\alpha$  defines two reliability scale points as 1.000 for perfect reliability and 0.000 for the absence of reliability (Hayes and Krippendorff 2007, p. 82). In line with Hayes and Krippendorff (2007), we use a macro to compute the Krippendorff's  $\alpha$ . Regarding the five typological items, each coder had to judge 100 typology items for China (20 LSPs\*5 typological items). For the typological items, the coders for China (Holsti: 0.98) achieved a very good intercoder reliability (Holsti 1969, pp. 138-141). Concerning Krippendorff's  $\alpha$ , the Chinese coder ( $\alpha$ : 0.95) achieved a very good level (Krippendorff 2004, p. 13; Hayes and Krippendorff 2007, p. 87). Regarding the service items, each coder had to judge 1320 service items for China (20 LSPs\* 66 service items). For the service items, the Chinese coders (Holsti: 0.92) achieved a very good level of intercoder reliability (Holsti 1969, pp. 138-141). Concerning Krippendorff's  $\alpha$ , the Chinese coders ( $\alpha$ : 0.833) achieved an acceptable degree of reliability (Krippendorff 2004, p. 13; Hayes and Krippendorff 2007, p. 87). For the final step, an expert panel of four senior researchers with high expertise in the field of e-marketplaces (particularly LSPs) discussed the coder inconsistencies for each platform and harmonized all remaining discrepancies (638 items for China) for the final sample. In the next chapter, we compare the results of the primarily study (Bärsch et al. 2021) with the results for the Chinese LSPs.

## **Results**

### **Local Shopping Platforms Approaches in Germany and China**

The primary study revealed 65 Store Locator Platforms, three Product Catalogue Platforms, ten Product Enquiry Platforms, two Affiliate Transaction Platforms, and 22 Full Transaction Platforms in Germany (Bärsch et al. 2021, p. 10). For China, the content analysis revealed 20 Full Transaction Platforms. Unlike China, most LSPs in Germany offered only contact and store location information, and did not provide the full e-marketplace service.

### **Local Shopping Platform Services in Germany and China**

The platforms in both countries provide 29 location-dependent services (16 location-enabled and 13 location-based services) and 40 location-independent services in Germany and 37 in China (see Table 33 and Table 34). We can only compare platforms in both countries that fulfilled the third function (transaction and fulfilment), because platforms that fulfil the first and second functions of e-marketplaces do not exist in China (see Table 35).

No.	Location-Enabled Services	#	No.	Location-Based Services	#
	<b>Information Services</b>			<b>Information Services</b>	
1.	Map with store locations	5	1.	Location-based product consultation	0
2.	Information about local news	6	2.	Barcode scanner	15
3.	Information about local events	1	3.	Location-based map with store locations	12
4.	Information about product availability (In-Store)	1	4.	Location-based map with closest product location	4
5.	Information about store opening hours	4		<b>Communication &amp; Support Services</b>	
6.	Information about store contact data	16	5.	Location-based support	0
	<b>Communication &amp; Support Services</b>		6.	Location-based advertisement	0
7.	Support at home	1	7.	Location-based loyalty program	0
8.	Face to face support	0	8.	Location-based price-draws	0
9.	Local loyalty card	11	9.	Location-based discounts	0
10.	Customer integration (Customer feedback on store services)	18	10.	In-Store navigation	0
11.	Community integration	9			
	<b>Navigation Services</b>		11.	Outdoor navigation	14
	-		12.	Location-based shopping tour	11
	<b>Payment and Billing Services</b>			<b>Payment and Billing Services</b>	
	-		13.	Self-Checkout	2
	<b>Fulfilment Services</b>			<b>Fulfilment Services</b>	
12.	Same day delivery	19		-	
13.	Same hour delivery	9			
14.	Click & Return	14			
15.	Click & Collect	15			
16.	Reserve & Collect	1			

Table 33: Identified Location-Dependent Services on LSPs China



Local Shopping Platforms		Typology	Total	Location-Dependent Services							Location-Independent Services					
				Location-Enabled Services				Location-Based Services			Recommendation Services	Communication & Support	Fulfillment	Payment & Billing		
				Total LES	Information	Fulfillment	Communication & Support	Total LBS	Information	Navigation					Communication & Support	Payment & Billing
No. / category		69	16	6	5	5	13	4	5	3	1	12	10	9	6	
Average no. / LSP		25	7,1	2,25	2,9	1,95	2,9	1,55	1,25	0	0,1	5,1	2,9	2,8	3,9	
Share / LSP		36%	44,38%	37,50%	58,00%	39,00%	22,31%	38,75%	25,00%	0,00%	10,00%	42,50%	29,00%	31,11%	65,00%	
1	Mei Tuan (美团)	5	41	9	3	4	2	5	3	2	0	0	7	6	5	9
2	E Le Me (饿了么)	5	36	8	2	4	2	4	3	1	0	0	7	6	4	7
3	Xun Hui Tong Cheng Gou (寻惠同诚购)	5	22	6	2	3	1	2	1	1	0	0	5	2	3	4
4	Tong Cheng Gong Xiang (同城共享)	5	27	9	3	4	2	4	2	2	0	0	4	4	2	4
5	Da Wu Tong Cheng (大悟同城)	5	32	10	3	4	3	4	2	2	0	0	8	3	3	4
6	Nuo Ya (嗒呀)	5	16	5	2	3	0	0	0	0	0	0	3	2	4	2
7	Ben Di You (本地有)	5	24	7	0	3	4	1	1	0	0	0	5	4	4	3
8	Ba Zhua Tong Cheng (八爪同城)	5	29	10	4	3	3	2	1	1	0	0	7	4	2	4
9	Le Xiang Zhen Yuan (乐享镇远)	5	28	10	3	4	3	4	2	2	0	0	5	3	3	3
10	Ben Di Dao Gou (本地导购)	5	24	8	3	3	2	6	3	2	0	1	4	1	2	3
11	Xiao Bai He (晓百合)	5	21	7	2	3	2	1	1	0	0	0	4	3	2	4
12	Xi He Tong Cheng (西和同城)	5	24	6	3	1	2	4	2	2	0	0	6	2	2	4
13	Hong Gou (红购)	5	21	7	3	3	1	5	2	2	0	1	3	2	2	2
14	Jie Guang (街逛)	5	23	6	2	3	1	2	2	0	0	0	7	2	3	3
15	Lan Dao Jia (懒到家)	5	16	3	0	2	1	1	1	0	0	0	5	2	2	3
16	Cai Cheng Sheng Xian (菜城生鲜)	5	17	3	1	1	1	3	1	2	0	0	3	1	3	4
17	Xi Shui Gong Xiang Xin Xi Xin Ling Shou Ping Tai (习水共享信息新零售平台)	5	20	5	1	2	2	1	0	1	0	0	6	2	3	3
18	Lu Xi Tong Cheng (泸溪同城)	5	29	9	3	3	3	3	1	2	0	0	6	4	3	4
19	Xi Shui Sheng Huo Wang (习水生活网)	5	24	8	3	3	2	3	1	2	0	0	5	3	1	4
20	Xun Cheng Ma (巡城马)	5	20	6	2	2	2	3	2	1	0	0	2	2	3	4

Table 34: Service Offering on LSPs in China

The results of comparing Chinese and German LSPs indicated a higher level of location-enabled services for Chinese LSPs. Like German LSPs, Chinese LSPs provide a high level of information services (e.g., opening hours or contact information). However, Chinese LSPs have a higher offering of communication services (e.g., feedback and community options and loyalty cards). Moreover, all Chinese LSPs offers multiple fulfilment services (e.g., same-day delivery and click & collect). Only six German LSPs offered multiple fulfilment services for their customers, with a combination of same-day delivery and click & return/collect services. However, the majority offered only one delivery option. The location-based service level offered in China is significantly higher than in Germany. Chinese LSPs offer multiple information services (e.g., barcode scanner 15 LSPs; location-based maps 12 LSPs) and navigation services (e.g., shopping guides 11 LSPs; outdoor navigation 14 LSPs). However, only two LSPs offer location-based payment with a self-checkout function in China. Only three German LSPs offer location-based services with information services (location-based maps for the next store (1 LSPs) and navigation services (outdoor navigation (2 LSPs)). None of the LSPs in either country offered location-based communication services.

Sample	Number of Platforms	Offered Services		
		Location-Enabled	Location-Based	Location-Independent
Affiliate & Full Transaction DE	24	26.00% (100 of 384)	0.02% (6 of 312)	31.15% (299 of 960)
Full Transaction CN	20	44.38% (142 of 320)	22.31% (58 of 260)	36.75% (294 of 800)

Table 35: Offered Services in CN and DE

Both countries have a high number of location-independent services. LSPs in both countries offer multiple recommendation services, but differ slightly regarding the logistic services (e.g., more product availability services online or delivery on demand in China). Concerning payment services, LSPs in both countries offer card-based and digital wallet payment. Chinese LSPs have a stronger focus on the payment via the digital wallet (e.g., WeChat Pay or Alipay), which contrasts with card-based payment options (EC or credit) in Germany. The Chinese LSP communication and support services are only social media (e.g., Weibo and WeChat) driven. German LSPs also have a strong focus on social media (e.g., Facebook and Instagram), but also offer newsletters (14 LSPs) as a communication medium. Interestingly, 17 of 20 Chinese LSPs provide their service solely via a mobile app (instead of a website). Only four LSPs offered their services via a website in China and among the platforms with the lowest location-based service offerings (see Ben Di You (本地有), Ba Zhua Tong Cheng (八爪同城), Lan Dao Jia (懒到家), and Xi Shui Gong Xiang Xin Xi Xin Ling Shou Ping Tai (习水共享信息新零售平台)). All LSPs in Germany provided their services via a website. Only a few LSPs in Germany provided a mobile app for their customers and were among the platforms with the highest location-based offerings.

## Discussion

With regard to RQ1, the results confirmed the platform types derived from former studies (Bärsch et al. 2019, p. 609, Bärsch et al. 2021, p. 9). The study revealed that the Chinese LSP market can be characterised as full transaction platform-driven. This is in line with current business reports on the retail market (Fung Business Intelligence 2014; Fung Business Intelligence 2021; McKinsey 2020). The German LSP market can be characterised as information and communication driven, due to the majority of store-locator, product catalogue and enquiry platforms. With regard to RQ2, the comparison of both countries revealed that Chinese LSPs offer a higher level of location-dependent services. They understand the importance of the mutual exchange of information, and indirect communication between LOOROs and their customers, which contrasts with the strongly-criticized one-way communication approach of German LSPs (Bärsch et al. 2021, p. 15; Schade et al. 2018, p. 10).

However, it is not only the communication that matters, but also the fulfilment service. Chinese LSPs offered greater fulfilment services to address the last-mile problem of e-commerce (Li and Wang 2016, p. 6). Moreover, the higher logistic capabilities are in line with customer preferences for time reduction and increase the attractiveness of the e-marketplace (Lin et al. 2018, p. 19; Yang et al. 2016, p. 295; Ye et al. 2020, p. 7), while German LSPs hesitate to extend their fulfilment service capabilities. Chinese LSPs offer a higher level of location-based services to match their customers' needs (Schade et al. 2018, p. 147; Yang et al. 2016, p. 295). For instance, barcode scanners match the customer preference for multiple-channel shopping (Fung Business Intelligence 2021; Lu and Rucker 2006, p. 43). The results of the location-based services also confirm the importance of online-offline integration for customer adoption from the service perspective (Yang et al. 2016, p. 295). The results indicate that Chinese LSPs focus more on utilising locational proximity between LOOROs and their customers. Apparently, they have understood that they depend on the existence of LOOROs, and that only strong local partners can provide a sustainable basis for their platforms (Berendes et al. 2020, p. 7). German LSPs still neglect the utilisation of locational proximity with location-dependent services. The location-independent service findings show that Chinese LSPs utilise multiple social media accounts to address customer expectations (McKinsey 2019). German LSPs also utilise social media accounts, but still use e-mail newsletters, which contrasts with customers' current social media usage (GIM 2021).

For answering RQ3 we linked our findings with Hofstede's cultural dimensions. The results indicated that the cultural dimensions of Hofstede can explain the service provision of LSP in Germany and China. In particular, China has a very high PDI value compared to Germany, which indicates that they are not using direct and open communication. Our results confirm the need for indirect communication with the high offering of indirect customer communication (Hofstede et al. 2010, p. 67; Hofstede-Insights 2022; Hofstede 2022; Li et al. 2012, p. 509). Even the high number of chat options for customer support services for the location-independent services confirm this result. In the Chinese case, indirect communication helps to avoid confrontation and maintain harmony with their customers or the LSPs providers (HBR 2022). A further explanation is anonymity because LOOROs or customers may communicate more boldly than in a face-to-face situation (online disinhibition effect) (Clark-Gordon et al. 2019, pp. 107-109). Therefore, digital communication services help LOOROs and customers to overcome their cultural boundaries without losing their face in China. In line with the low PDI, LSPs and LOOROs or LOOROs with their customers have direct and open communication (Hofstede et al. 2010, p. 67; Hofstede-Insights 2022; Hofstede 2022). It is more critical for LOOROs to lure the customer into the store with location-enabled services like information services (e.g., maps with store locations, store opening hours, or store contact data) to have a face-to-face situation.

Interestingly, according to the IDV dimension, location-enabled communication and support services (e.g., customer feedback and community integration) should be higher in individualism than collectivist culture. Because less collective society tends to be uncertain even if products are selected as bestsellers. Thus, they need more reviews/customer feedback to judge the quality of the product (Fang et al. 2013, p. 12). Hence, the result of Germany does not confirm former studies (Fang et al. 2013, p. 12; Kim et al. 2018, p. 146) and the cultural dimension. The low level of the UAI dimension in China is reflected by the higher offering of new digital services. For instance, the intense use of location-based services information services (e.g., QR-code scanners) navigation service (e.g., location-based shopping tours), payment and billing services (e.g., self-checkout services) and location-enabled services fulfilment services (e.g., click & return/collect), which confirms the Chinese characteristics of LSPs as adaptable and entrepreneurial (Hardaker and Zhang 2021, p. 8; Hofstede-Insights 2022). Chinese LSPs and the connected LOOROs seem more comfortable with new digital services than their German counterparts. A further explanation of the Chinese openness to new digital services is trust. In China, trust accumulates *guanxi* (network of relations) and *mianzi* (need to save face and self-protection). Therefore, LOOROs trust the quality of the provided services by the LSPs or related third-parties like delivery services (e.g., same-day delivery) (Moser et al. 2011, p. 106). In the case of Germany, former studies show that LOOROs refuse to integrate their sales into an online marketplace or implement location-dependent services due to their internal and external barriers (Bollweg et al. 2020, p. 12; Delgado-de Miguel et al. 2019, p. 11). Our study extends this finding by the cultural dimension. The cultural bond of uncertainty avoidance can also be seen as a factor which decoupled LOOROs from their near and far business environment (Bollweg et al. 2020, p. 12). Therefore, LOOROs are more concerned about the risks of LSPs or their offered services instead of the opportunities.

## 4.4 Conclusion Chapter 4

### 4.4.1 Discussion

The fourth chapter aimed to shed light on *RQ3.1*, *RQ3.2* and *RQ3.3*. For *RQ3.1: To what extent do local shopping platforms help retailers with their digital transformation?* Comparing the two studies with an LSP sample from 2016 and 2019 revealed that the platform types in the LSPs market in Germany changed from a majority of Full Transaction Platforms to a majority of Store Locator Platforms. The dominance of the "Strictly Local Approach" reflect this result. This means that the majority of LSP focus on local retailers and local customers, which is in line with the self-restriction criterion of LSPs. Only a few LSPs consider the "Scaling Local Approach" and focus on local retailers, local customers, and non-local customers. For instance, Atalanda also addresses customers outside Germany. Platforms with a "Scaling Local Approach" tend to be Affiliate Transaction and Full Transaction Platforms.

The comparison of the two studies for the service offered location-dependent services revealed that German LSPs with a "Strictly Local Approach" had increased their location-dependent service offering for Store Locator, Product Catalog and Product Enquiry Platforms in absolute values. Especially the location-enabled service level increased over time and confirm that LSPs match the needs of LOOROs, which prefer a clear focus on local customers instead their global counterparts (Schade et al. 2018, p. 148). In particular, the results revealed a strong focus on location-enabled information services (e.g., opening hours, the LOORO contact data, Google Maps with the location of the LOORO) and confirmed retailers' need for attention and digital awareness (Berendes et al. 2020, p. 7; Delgado de Miguel et al. 2019, p. 9). In general, LSPs with a "Strictly Local Approach" increase the digital visibility of LOOROs with location-enabled services and try to lure customers into the store. However, platforms with a "Strictly Local Approach" still fall short in providing location-based services that utilise the location of the retailer (e.g., in-store navigation, barcode scanner), which is vital for the customer shopping experience (Bollweg et al. 2019, p. 4). Moreover, the offered location-enabled service still has room for improvements like offering more fulfilments option.

The development of platforms with a "Scaling Local Approach" revealed a decrease in location-dependent services for an Affiliate Platform in absolute values. This also holds for the results of Full Transaction Platforms in absolute values. However, the offering of location-independent services sharply increased for Full Transaction Platforms in absolute values, while it also decreased for Affiliate Transaction Platforms. In the case of Full Transaction Platforms, the result indicates that LSPs, with a "Scaling Local Approach", strengthened their focus on fostering online sales while still not utilising the locational position of LOOROs with suitable location-dependent services. In general, LSPs with a "Scaling Local Approach" still stumble in supporting LOOROs digital transformation with suitable location-dependent services.

For instance, LSPs with a "Scaling Local Approach" offer more location-independent communication and support services (e.g., online chat, support via E-Mail, social media channels like Facebook) or payment & billing services (e.g., more payment options like a credit card, PayPal, Coupons).

For the *RQ3.2: To what extent has the coronavirus outbreak affected the development of local shopping platforms?* The coronavirus seems to be a game changer and fostering the willingness of LOORO to follow e-commerce trends more than ever (IFH Köln 2020c). In general, the coronavirus led to an increased number of new LSPs during the lockdown in Germany (Hardaker 2022, p. 167). Most of those new LSP can be characterised as Store Locator Platforms, except for one Product Catalog Platform and Full Transaction Platform. In line with their platform types, most new platforms only consider information services like opening hours or contact information (e.g., telephone numbers). Regarding the objective of the new LSPs, the majority of new LSP provider agreed that the LSPs is intended to ensure the short-term survival of local retail during the lockdown in the corona crisis. However, the telephone interviews also revealed that most of the new LSP providers plan to extend the platform regarding the service level (e.g., further development to a city platform). Even LSPs that existed before the pandemic outbreak agreed to develop their platform further. Some LSP providers also mentioned that the lockdown had shaken many awake regarding the importance of digitalisation. Despite new LSPs offering a low entrance or existing LSPs offering a price discount, all LSPs reported decreasing interest and decreasing participation of LOOROs since the easing of the first coronavirus restrictions. This finding is in line with recent research and indicates that the coronavirus did not change the digitalisation activities of LOOROs (Friedrich et al. 2020, p. 83). Although studies showed that increasing e-commerce activities strengthened retailers during the pandemic (Hardaker et al. 2022, p. 10). Nevertheless, it cannot be clarified if the coronavirus was in favour of LSPs or not. For instance, the study of Hardaker (2022) revealed in their interview-based study that the expansion of new LSPs by city-related actors (e.g., city marketing) during the lockdown could harm the image of LSPs because of the bad quality of such platforms (Hardaker 2022, p. 169). Our study also confirms a higher number of city-related actors that focus on providing only rudimentary information on Store Locator Platforms. Therefore, LOOROs are still not fully convinced of the positive impact of LSPs (e.g., Friedrich et al. 2020, p. 83) because LSPs have not substantially further developed their service offers during the lockdown, and it needs to be doubted that Store Locator Platforms will effectively support LOOROs in their digital transformation.

Lastly, for the *RQ3.3 What can German LSPs learn from Chinese LSPs regarding their location-dependent service offerings?* The results show that Chinese LSP focuses more on the fulfilment services regarding location-enabled services like same-day delivery, click & collect or click & return, which strengthen the location of the LOORO because the customer has to go to the store to pick up the product.

In contrast to Germany, each Chinese LSPs offer multiple fulfilment options for customers to meet their preference, which increases the attractiveness of the LSPs as an e-marketplace (Lin et al. 2018, p. 19; Yang et al. 2016, p. 295; Ye et al. 2020, p. 7). A further difference from their German counterparts is the higher offering of location-based information services like a barcode scanner, shopping guides or location-dependent maps with the nearest products (availability search). Especially, the barcode scanner is only usable in the local retail store and matches the preference of multiple-channel shoppers (e.g., Fung Business Intelligence 2021, p. 6). This also holds for the offered mutual exchange communication services of Chinese LSPs compared to the one-way communication approach of LSPs in Germany. Chinese LSPs also foster online sales but understand that their success depends on the existence of LOOROs. Therefore, they integrated the location of LOOROs in their service offering to provide an offline and online service integration for Chinese customers.

Hofstede's cultural dimensions can explain the offering of location-dependent services in the study. The results revealed that German LSPs have a higher preference for the face-to-face situation and therefore neglect the option of indirect communication (e.g., fewer chat options). However, this approach aligns with their cultural preference but ignores the advantages of mutual exchange with potential customers via chats and the changing customer behaviour regarding multichannel shopping in Germany. According to a current report is, the smartphone the most preferred shopping device in Germany (Burgstedt and Kokott 2021). Chinese LSPs have a higher level of indirect communication tools that confirm the cultural need for indirect communication (e.g., Hofstede et al. 2010, p. 67). Moreover, the individualism-collectivism dimension should indicate a higher level of location-enabled services like customer feedback or customer integration in Germany to address the uncertainty of product quality. This is not the case and does not fit the German cultural (Kim et al. 2018, p. 146; Zeithaml et al. 2018, p. 41). Interestingly, according to the individualism-collectivism dimension, the Chinese culture is characterised as seeking group consensus, introverted and disagreeable (Hofstede-Insights 2022). But the content analysis revealed a very high number of offerings of customer feedback and community integration among the investigated LSPs in China.

The high level of UAI shows that German LSPs and LOOROs are more concerned about the risk of new digital services than opportunities. In contrast, Chinese LSPs and LOOROs are more open to new digital service offerings. An explanation is Trust. Trust acts as a guarantee of the provided digital services by LSPs for LOOROs and customers. Otherwise, LSPs would lose their faces (面子). This also holds for LOOROs when they cooperate with LSPs. Moreover, when LOOROs start joining LSPs, this is a positive signal for further LOOROs and customers and creates a network of relations (关系) (Zhuang 2013, p. 315). This so-called network of relations implies trust and mutual obligations between business parties, which is essential for business success in China (Moser 2011, p. 106; Wenderoth 2018).

This cultural aspect helps Chinese LSPs overcome the chicken and egg problem and increase the number of participating retailers as well as offered products. Thus also increasing the attractiveness of LSPs. Whereas German LSPs are struggling with gaining participating retailers and can, therefore, offer fewer products that would increase the attractiveness of the platform (Bollweg et al. 2019, p. 2).

In general, Chinese LSPs understand offering services that match the changing customer behaviour and integrate the LOOROs location into the service provision (e.g., a high level of location-based services). Especially the integration of mobile channels seems to be an essential aspect of the service provision of Chinese LSPs. Chinese LSPs also enable mutual communication with their customers and between the customers of LOOROs and LOORO owners instead of just providing information like German LSPs. A further nuance is offering multiple fulfilment services (e.g., same-day delivery, click & collect etc.) so the customer can choose based on their shopping preference.

#### **4.4.2 Managerial Implications**

Several lessons can be learned from this study. First, it is questionable if LSPs can help LOOROs with their digital transformation in a sustainable manner. So far, the service offers of LSPs are focusing solely on the online PoS of the platforms themselves while neglecting the digital opportunities of local physical stores with location-dependent services generally. In particular, platforms with a "Scaling Local Approach" loosen their focus on local customers, running the risk of discouraging LOOROs from joining their platforms. But it is also questionable if LSPs with a "Strictly Local Approach" (e.g., Store Locator Platforms), with their low service level, can substantially contribute to the LOOROs digital transformation. Also, the retailers expressed their doubts over the ability of Store Locator Platforms to help them reach customers (Berendes et al. 2020, p. 7). LSP providers need to understand that they depend on the existence of LOOROs and that only strong local retail partners can provide a sustainable basis for their platforms (Bärsch et al. 2021, p. 15). Therefore, more location-dependent services (e.g., location-based services) and urban functions need to be implemented on the platforms to attract and keep customers on the platforms (Schade et al. 2018, p. 153). Without support structures that strengthen local retailers' digital transformation, LSPs risk being only a temporal phenomenon. Especially, in today's omnichannel retail world, with merging sales and communication channels, such a single-channel service strategy needs to be considered outdated and "location-dependent services" are considered a critical success factor (Brynjolfsson et al. 2013). Furthermore, big retail chains have started revolutionising the stationary retail sector with innovative store concepts; LSPs seem to be ignoring this upcoming challenge so far (Perakslis 2017, pp. 1-2).



Second, despite these critical aspects, LSPs also carry opportunities for LOOROs. Small retailers could make use of the strength of LSPs to get a low-barrier entrance to the realm of e-commerce and use the digital environment to learn for their own digital transformation. The results of our telephone interviews confirm that entry barriers matter. LSP providers need to create tools that facilitate and ease the active use of their platforms for LOOROs, this way also reducing entry barriers for them (Delgado-de Miguel et al. 2019, p. 9).

Third, also LOOROs need to understand that customers want convenience and prefer local shopping malls/agglomerations of local shops over individual online presences (Teller et al. 2016, p. 14). Therefore, LOOROs should also invest in cooperative online initiatives like LSPs. Once connected to an LSP, they should actively improve the visibility of their cooperation through active link-building (Bollweg et al. 2018, pp. 512-523). LOOROs should also learn from the recent lockdown that digitalisation is now and not in the far future. They must overcome their internal adaption barriers and check if their self-perception still matches their competitive situation and customer expectations (Bollweg et al. 2020, pp. 12-13). Accordingly, LOOROs should utilise LSPs as digital service hubs. Furthermore, to improve their relationship with the platforms, LOOROs should demand location-based services from the LSPs to support their physical stores and help attract more foot traffic. At the same time, satisfied offline customers have the opportunity to buy 24/7 at their preferred LOOROs via local platforms. This offers loyal customers an online channel, preventing them from switching to other online shops (Saeed et al. 2005, p. 248).

Fourth, the service offerings of platform providers are culturally-driven. Therefore, LSP providers cannot easily copy services from foreign LSPs or e-marketplaces. In the first step, LSP needs to understand the cultural needs of their customers and then, in the second step, select the appropriate service to address them. This also allows LOOROs to grow in their cultural environment (e.g., offering more cultural-related services like customer feedback options).

Fifth, China has a high offering of indirect customer communication, which aligns with its cultural environment. In contrast, German LSPs' offering focuses on location-enabled information services to lure customers into the store. But luring the customer into the store is only the first step. The Chinese case shows that the store channel synergies with the mobile channel and increases purchase frequency and customer loyalty (Jiang et al. 2020, p. 9). Therefore, it is important to satisfy German customers' direct communication needs and their changing preferences for new communication and shopping channels (e.g., mobile apps). The existing approaches in China could provide a blueprint for German LSPs. Suppose LSPs, are still ignoring the changing customer behaviour. In that case, customers will stop doing business with LSPs or the connected LOOROs after poor customer shopping experiences, which is the top reason for customers (Twilio 2022).

Sixth, German LOOROs are culturally bonded by their uncertainty avoidance in contrast to their adaptable and entrepreneurial Chinese counterparts. Local governments in Germany should hire "caretakers" to address this cultural barrier. For instance, "caretakers" could provide information (e.g., property rights of product pictures) or help with the implementation of new services. By doing so, "caretakers" can lower the threshold for LOOROs digital transformation and would fill a current institutional gap. When LOOROs are more willing to adopt new digital services, this would also increase the number of offered services of LSPs. A higher service provision of LSP positively influences customer attitudes and intentions to buy on the LSP (Bollweg et al. 2019, p. 7; Berendes et al. 2020, p. 7). For instance, the Chinese case shows that a higher logistic capability (e.g., more multiple fulfilment services offerings) would increase the attractiveness of the LSPs from a customer perspective (Ye et al. 2020, p. 7). Moreover, LSPs would also meet the changing customer behaviour in Germany (Burgstedt and Kokott 2021).

#### **4.4.3 Limitation and Future Research**

The results of this study should be interpreted in the context of several key limitations: First, we derived the sample for the analysis from an explorative web search on Google and Baidu that might have missed additional types of LSPs hidden on the Web. The search settings of Google's or Baidu's search algorithm are not fully transparent; therefore, the study could suffer, e.g. from a country-dependent search bias. Future research should extend the regional scope and the keyword list. Thereby, modern technologies like Web Crawlers could help to improve the quality and completeness of the search process. Future studies should also consider other sources of information to identify platforms, like, e.g. industry information websites or blogs, and they should work with different language and regional settings on Google or Baidu. Due to the coders' language proficiencies, the analysis was limited to German, English and Chinese platforms.

Second, regarding the location-dependent services offered by LSPs, research is needed on the orchestration of location-enabled and location-based services and the list of location-dependent services in general. Moreover, future research should analyse the actual customer behaviour of location-dependent services and link them, for instance, with the cultural dimensions, geographical patterns or the platform type.

Third, further research is necessary on whether and how LSPs and location-dependent services can help LOOROs overcome informational disadvantages compared to online retailers. For instance, a higher in-store analytics infrastructure could help the retailer to provide a better digital service for their customers (e.g., in-store navigation, push-up messages etc.).

Fourth, studies also argue that LSPs provide the digital infrastructure for LOOROs and fill an institutional gap with their role as advisers. This institutional role of LSPs or platforms is controversially discussed in the literature (Langley and Leyshon 2017, p. 5). Therefore, future research is necessary to understand the impact of LSPs as an adviser on the development of the city centre in the long term.

Fifth, the third study investigated the cultural impact on service provision in two countries. Nevertheless, our study limited the focus to only three out of six dimensions of the Hofstede model. Moreover, the Hofstede model cannot explain further important factors like the legal system's impact on the LSP type or the market environment (e.g., competition). Therefore, future research should investigate the cultural impact with various approaches like Porter's five forces.

Sixth, we provide a written introduction of the location-dependent and location-independent services with examples to all coders in all three studies to address any uncertainties or misinterpretations. However, we cannot rule out any biases for sure.

# **Chapter 5:**

# **Conclusion**

## 5 Conclusion

### 5.1 Key Findings

This dissertation aimed to investigate the digital transformation opportunities for retailers. For this purpose, this dissertation was structured into three main chapters to adequately address the research questions (*RQ1.1, RQ1.2, RQ2, RQ3.1, RQ3.2 and RQ3.3*). Accordingly, this dissertation concludes with a discussion of the key findings of the research questions to understand the retailers' opportunities better.

The second chapter aimed to answer *RQ1.1: How do environmental factors influence the adoption of digital tools and applications by owners of LOOROs?* and *RQ1.2: How can retailers' digital transformation be supported?* For this purpose, the study considered the S-O-R Model as a framework with the TRA/TPB and TAM theory. The developed research model also incorporates environmental organisation factors as a stimulus influencing retailers' digitalisation attitude. Retailers' digitalisation attitudes were considered as an organism that shaped the intention to use. The intentions to use affect LOOROs' current use of digital service, which is the response in the research model. It can be stated that all organisation factors impact retailers' attitudes towards digitalisation. For the internal organisation factors, the availability of human resources has the highest impact by far among all factors. Therefore, employees or retailers with necessary IT-knowledge, enough time and motivation can be considered a crucial factor in the innovation processes of LOOROs. But also, the availability of infrastructure (e.g., capacities and necessary IT infrastructure) is decisive for a positive retailer's digitalisation attitude. For the external organisation factors, competitive pressure as external pressure is founded to be a positive driver of retailer attitude. Generally, a positive attitude fosters all intentions to use digital tools and services. The results also revealed that the existence of other technologies significantly fosters the implementation of newer ones. For instance, the digitalisation of the administrative backend only influences its direct successors (digitalisation of marketing). The digitalisation of marketing significantly influences the digitalisation of sales, and the digitalisation of sales influences the digitalisation of services. That means that the digitalisation process of LOOROs seems to evolve from backend to frontend step by step.

Regarding *RQ1.2*, municipal leaders and local governments should actively communicate and motivate LOOROs to digitalise their business model and provide support measures (e.g., IT training, financial support, and city digital chief officer like Kümmerer). Especially, LOOROs existing digital administration can be considered a starting point for municipal leaders' and local governments' support measures. It is also decisive to provide educational courses to sensitise owners of LOOROs about the risk and how to deal with it.

Moreover, municipal leaders and local governments should foster cooperation or set up incentives such as financial rebates to motivate local retailers to increase their digital visibility and help them overcome their digital transformation barriers.

The results of the second chapter revealed that there are ways for municipal leaders and local governments to specifically promote the digitization of their local retailers. Targeted support with technologies that fit the current backend technology of the LOOROs, thus facilitating the entry for them to new digital tools and applications (e.g., new digital services, marketing, sales channels). LOOROs are, therefore, not without opportunities and can install new tools and applications in their stores step by step. In particular, these tools and applications will help LOOROs burst their "offline bubble". As a result, LOOROs are once again closer to the needs of all customers and can monitor the competitiveness of their stores on a regular basis. These new tools and applications will also help LOOROs, to a certain extent, to win back customers or to acquire new customers. In addition, these tools and applications also offer the opportunity to enter new markets. For example, retailers can reach more cities in a region through increased digital visibility, or customers can discover the retailer's products in various online channels.

As chapter two showed, the digital transformation offers retailers the opportunity to tap into new markets and customers. Moreover, benefit can also be realized for retailers, such as an improvement in the work performance of employees in the store or time savings because the purchasing processes are shortened by technologies such as MP or SST. However, retailers need to understand what drives or inhibits customers from adopting these new technologies and services in order to take advantage of the associated value-adds. Therefore, this dissertation analysed four studies in chapter three to address the *RQ2: What drives and inhibits the customer's adoption of technologies and services?* To answer *RQ2*, the studies in chapter three considered various innovations (e.g., MP, LSS, SST), utilised several theoretical backgrounds (e.g., TAM, TTAT, DOI, Trust, CMICM), and applied different research methods (e.g., SEM, permutation tests, t-testing). The results of the four studies revealed that customers considered the usefulness of innovation as an essential aspect. But innovation must be good in absolute terms and in relation to the existing alternatives, like in the case of MP with cash and card payment. Moreover, the importance of usefulness significantly varies between cash and card payments. A further crucial technical characteristic is fun. For instance, gamification elements like leaderboards for collected loyalty points address customers' numerous intangibles and emotional aspects in customers' shopping trips in the case of SST. Nevertheless, the fun can also lead to a decreased intention to use a service in the case of LSS. In this case, retailers do not need to be funny or full of anecdotes and should focus more on providing useful product information. Furthermore, innovation also bears some risk, which inhibits customers' adop-

tion. Therefore, retailers need to consider the customers' worries when they offer an innovation. For instance, the studies revealed that performance, financial and perceived switching costs negatively affect the customer intention of MP.

A further nuance of the evaluation of the drivers and inhibitors is the customers' experience level. For instance, chapter three studies showed that SST or MP's usefulness is higher among experienced users. In the case of the MP data threat, the data threat becomes insignificant for experienced users, while it is still a significant risk for inexperienced users. This also holds for the financial risk of MP. Additionally, the studies also revealed differences regarding the age or used system of the customer. For instance, people between the age of 25-34 reported a much stronger influence of the threats when MP is compared to cash payment than younger people do or that the retailers' social presence is significantly vital for people between 25-34 compared to those between 18-24 years.

The results of chapter three clearly indicated that it is not enough to simply offer technology or a new service. It is important to consider the customers' expectations and fears with regard to this new technology. Technologies or services that have fallen into disrepute because of poor data protection or involve high fees are difficult to sell to customers. Of course, the same is true for services that do not provide quality performance service and have recurring issues. If retailers do not take these aspects into account, they will be left sitting on their investment costs, and it will be difficult for them to amortize their investments. This would not be a good scenario for smaller retailers because they have limited financial resources.

When introducing new technologies and services, retailers must also consider their customers' benefits. Do these technologies and services even offer benefits to your customers? What do my customers expect? Do my customers want more information? Do my customers want to be entertained? As shown in chapter three, these expectations also vary by age and gender. In addition to expectations, it is also important to look at the technical requirements of your customers. Do my customers all have smartphones and can download an SST app? Or is it easier to provide SST at the entrance of the store?

When embracing new technologies and services, it is important that retailers do not just look at their benefits. It is essential to put the customer first and check suitability beforehand. If there is suitability, retailers can also experience the benefits of new technologies and services. Of course, it is crucial that retailers also check their prerequisites for new technologies and services. For example, do they have the equipment to produce live-stream content or even have the time? Are the POS systems suitable for MP? Does the store layout fit the use of SST? These last aspects were not investigated in this dissertation but are a challenge for many retailers and should be addressed by future research.

LSPs serve as digital service providers and reduce the internal and external barriers of LOOROs regarding their digital transformation. But it is still questionable if the services offered by LSPs are enough to sustain LOOROs' threatened core business, namely, their physical store. In chapter four, this dissertation investigated this aspect with regard to *RQ3.1: To what extent do local shopping platforms help retailers with their digital transformation?* To answer *RQ3.1*, two studies in chapter four utilised content analysis as a methodological approach. The results of chapter four showed that the German LSP market changed from a majority of Full Transaction Platforms to a majority of Store Locator Platforms. The dominance of the "Strictly Local Approach" reflect this result. This development also matches the needs of LOOROs, which prefer a clear focus on local customers. Only a few LSPs consider the "Scaling Local Approach" and focus on local retailers, local customers, and non-local customers. The development of the offered location-dependent services also follows this trend. On the one hand, LSPs have enhanced location-based services (e.g., opening hours, the LOORO's contact information, and Google Maps with the LOORO's location), thereby increasing the digital visibility of LOOROs. On the other hand, they still fail to provide location-based services that integrate the retailer's location (e.g., in-store navigation, barcode scanner) in their service concept. Significantly, location-based services (e.g., in-store navigation, barcode scanner) increase customers' shopping experience, loyalty and willingness to purchase. Therefore, LSPs must increase the level of location-based services. In general, LSPs with a "Strictly Local Approach" support LOOROs' digital transformation to a certain degree. In particular, they provide rudimentary information services but still neglect the location of the retailers as a service point. This also holds for LSPs with a "Scaling Local Approach". They focus on fostering online sales and still not utilising the locational position of LOOROs with suitable location-dependent services.

In line with the criticism of the concept of LSPs, the results of the studies in chapter four also reported a decrease in existing LSPs. Therefore, this dissertation also investigated if the coronavirus outbreak affected the situation of LSPs in Germany. Hence, chapter four also addressed *RQ3.2: To what extent has the coronavirus outbreak affected the development of local shopping platforms?* To answer *RQ3.2*, the second study of chapter four also interviewed LSPs providers that existed before and since the outbreak of COVID-19. The results showed that COVID-19 led to an increased number of new LSPs during the lockdown in Germany. But most of the new LSPs can be characterised as Store Locator Platforms or platforms following a "Strictly Local Approach" with a high level of location-enabled information services. However, the coronavirus pushed the development of new LSPs regarding the time or motivated LSPs providers to extend the service offerings in the long term. Nevertheless, all LSPs reported decreasing interest and decreasing participation of LOOROs since the easing of the first coronavirus restrictions. Moreover, the expansion of new LSPs by city-related actors (e.g., city marketing) during the lockdown could harm the image of LSPs because of the lousy quality of such platforms.



The third study in chapter four addressed *RQ3.3: What can German LSPs learn from Chinese LSPs regarding their location-dependent service offerings?* To answer *RQ3.3*, the third study of chapter four also conducted a content analysis in China. The third study compared the findings with the second study and used Hofstede's cultural dimensions as a theoretical lens to explain the differences. The results revealed that LSPs in China offered mutual exchange communication services instead of besieging the customer with information like German LSP do with their one-way communication approach. Moreover, full transaction platforms foster online sales but also understand that their success depends on the existence of LOOROs. Therefore, Chinese LSPs utilise the location of the LOOROs to offer a better shopping experience to meet the changing customer behaviour and increase the customers' intention to purchase on the platform. In contrast to German LSPs, Chinese LSPs support the digital transformation of LOOROs on a higher level regarding location-dependent services. Nevertheless, the difference in the study results between both countries can also be explained by Hofstede's cultural dimensions. For instance, in line with their PDI value, Chinese LSPs offered a higher level of indirect communication options (e.g., more chat options) to avoid confrontation and maintain harmony between the customer and the LOORO or the LSP provider.

Interestingly, instead of providing a high level of customer feedback and community integration to address customers' uncertainty regarding the quality of the product. German LSPs do not act in line with their cultural environment regarding the IDV dimension. Whereas Chinese LSPs are characterised as seeking group consensus, introverted and disagreeable. The results showed a higher customer feedback and community integration offering than in Germany. Although, customers' collective society tends to be less uncertain regarding product quality. Lastly, the Germans and Chinese LSPs and LOOROs have different approaches to deal with uncertainty (UAI Dimension). Also, due to the turbulent retail history in China, Chinese LSPs are more adaptable and entrepreneurial, which is a clear advantage concerning the digital transformation. Moreover, the concept of trust in China also matters. In contrast, German LSPs and LOOROs are more concerned about the risk of new digital services than their opportunities.

The results of the fourth chapter demonstrated that LSPs can support LOOROs in their digitization projects. However, in many cases, this support is limited to digital visibility. Only a few LSPs offer additional digital services or transaction processing. LSPs with a scaling approach enable the development of new customers or sales markets. However, these LSPs too often focus on their interests. In doing so, LSPs often forget the location of the LOORO as a service and transaction point. This is also critical for LSPs. In particular, when LOOROs disappear, their products also disappear from the websites of the LSPs, and their attractiveness declines as a result. LSPs should, therefore, also take greater account of the interests of LOOROs.

The results from the fourth chapter also suggest looking beyond one's home country and learning from other countries such as China. Of course, services cannot simply be copied. However, if new services better address changed customer behaviour and met the cultural requirements of the customer, these services should be taken into account. This would also allow many LOOROs to benefit from new service offerings simultaneously and thus address the changing customer behaviour. New service offerings would also increase the competitiveness of LOOROs, and this also helps LSPs.

On the one hand, LSPs gain more LOOROs; on the other hand, they increase the platform's attractiveness. The increased attractiveness is reflected in higher revenues. The future will show to what extent LSPs make a long-term contribution to the digitization of LOOROs. Currently, most of them offer only a rudimentary entry into the digital world, except for a few platforms.

## 5.2 Strategic Imperative for Retailers

Drawing upon the key findings outlined in subsection 5.1, this discussion addresses strategic implications pertaining to digital resources, organisational structure (culture), and the formulation of a digital growth strategy. It is important to note that these strategic implications have broad applicability across various retail contexts and are not confined to any specific retail format. Furthermore, it is imperative to acknowledge that the implications presented here pertain specifically to the aspects examined within this dissertation and do not constitute an exhaustive list.

### *Digital resources*

In accordance with Barney (1991, pp. 101-103), resources, whether tangible (e.g., available digital tool infrastructure) or intangible (e.g., employee expertise), constitute the assets and capabilities under a retailer's ownership and control. In the context of digital transformation, retailers must evaluate their existing resource base, as the absence of such resources increasingly hinders the adoption of emerging innovations (Wang et al. 2011, pp. 52-55). However, before retailers invest in new technologies and services or align their infrastructure accordingly, they must know which technologies and services suit them. This is a challenging question to answer and requires a certain amount of digital agility from retailers.

In terms of digital agility, retailers must be adept at detecting and capitalising on market opportunities arising from digital technologies (Lee et al. 2015, p. 398; Lu and Ramamurthy 2011, p. 946). It is acknowledged that, especially for LOORO, which has adopted a cautious 'hold and wait' approach to digitalisation, predicting technological trends and accurately anticipating shifting customer demands is a formidable challenge (see chapter two). Nevertheless, flexibility is paramount for retailers to adapt to evolving customer requirements, such as the introduction of new technologies and services like MP, SST, or LSS, and respond to the intensified competition (e.g., boundaries and removal of entry barriers) with suitable measurements like participating in cooperations (Koch and Windsperger 2017, pp. 8-10). However, budget constraints, particularly for LOOROs, leave minimal room for experimentation and trial phases. Consequently, retailers must convey their willingness to embrace digitalisation and actively seek guidance to mitigate the risks of misinvestment. In this context, municipal leaders and local governments can play a pivotal role in assisting retailers, particularly LOOROs, select the requisite digital tools and applications. Equally important is their support in facilitating retailers' self-sufficiency and enhancing their intangible resources, such as the digital acumen of their employees, through appropriate training programs offered by local institutions.

Once the appropriate technology or service has been selected, a system must be set up or integrated into an existing system (like a website or new service such as MP, which requires new cashier systems). For acquiring such missing "tangible" resources (e.g. Wi-Fi, website, new cashier systems), collaborations with research institutions, platforms, or other retailers are an option. However, this approach requires a certain degree of networking capability.

Regarding retailers networking capabilities. As highlighted in the study titled 'Are We Speaking the Same Language' (see subchapter 4.3.3), customers have grown accustomed to engaging with retailers across multiple channels, necessitating a responsive approach from retailers. However, addressing users' cross-channel expectations poses a considerable challenge for retailers. This challenge is particularly pronounced for LOOROs, given their limited budget allocation for digitising their back-end and front-end operations. Consequently, retailers must adopt a network-centric perspective, collaborating with a constellation of digitally interconnected firms, platforms or local city initiatives (Koch and Windsperger 2017, pp. 8-10; Libert et al. 2016, p. 70). This approach is increasingly prevalent, supported by a study that suggests firms now perceive their competitive advantage as being determined not solely by internal factors but also by the strength of their partnerships and chosen ecosystems (Accenture 2017). Nevertheless, effective networking demands heightened efforts from retailers, especially regarding platform engagement. This entails becoming a member of a network and actively participating within it. For instance, retailers should consider actions such as linking from the platform to their website (Bollweg et al. 2019, pp. 520-523).

#### *Organisational structure (culture)*

The ongoing process of modification and reconfiguration holds significant implications for retailers' organisational structures and cultures. A survey encompassing 4,800 business executives identified a positive attitude as a pivotal determinant, surpassing mere access to technology, in fostering digital transformation within their firms (Kane et al. 2015, p. 9). The findings from the study titled 'The Digitalisation of Local Owner-Operated Retail Outlets: How Environmental and Organisational Factors Drive the Use of Digital Tools and Applications' in Chapter two, as well as previous research (Amin and Hussin 2014, p. 4), corroborate the constructive influence of a positive attitude. Thus, a positive attitude towards novel technologies and services serves as a fundamental prerequisite for enacting strategic measures that underpin the success of a digital transformation.

It is, therefore, important for retailers to be open to new technologies and services instead of rejecting them outright. Of course, retailers should not unquestioningly adopt any new trends. In particular, the comparative study between Chinese and German LSPs has shown that cultural differences influence the service offering (see subchapter 4.4). Therefore, retailers need to consider new technologies and services with a view to their customer needs.

For LOOROs, however, it is also important to see not only their own customers as the basic population of all customers in order to get out of their "offline bubble" (Bollweg et al. 2020, p. 12). Instead, LOOROs should also pay attention to the customer wishes of customers who buy from the competition to get a comprehensive picture.

Furthermore, earlier research underscores the significance of a flexible organisational structure, often composed of business units or adopting agile organisational forms. Despite facing internal and external adoption barriers, LOOROs enjoy a strategic advantage over retail chains due to their reliance on owner-driven organisational structures. This enables LOOROs to adapt the given organisational structure to the changed conditions. In contrast, large firms, such as retail chains, must contemplate alternative approaches, including establishing separate business units. In this context, research in business model innovation advocates the development of new and occasionally disruptive business models within autonomous business units that operate independently of the central headquarters, thereby facilitating experimentation and rapid learning (Broekhuizen et al. 2018, p. 11; Christensen et al. 2016, pp. 34-36).

An additional approach involves the consideration of agile organisational forms, which contrast with more hierarchical organisational schemes characterised by multiple management layers and a top-down approach. Firms require flexible organisational forms that enable swift responses, such as shorter cycles for testing and updating market assumptions through trial-and-error, to effectively navigate the constantly evolving digital landscape (McGrath 2010, p. 260). It is important to note, however, that the organisational structure of LOOROs or retail, while relevant, falls beyond the scope of the present thesis. Therefore, further exploration within the management literature is recommended.

### *Digital growth strategy*

In recent years, the use of digital platforms has become the most prominent digital growth strategy. Generally speaking, platforms exhibit remarkable scalability and reinforce network effects (Verhof et al. 2021, p. 894). Furthermore, platforms afford digital visibility without necessitating the handling of the technical requisites associated with a website from the retailers' perspective. Naturally, there are also adverse consequences linked to participation in a platform, such as the creation of a self-perpetuating cycle of widespread online price competition, resulting in a significant reduction in (online) selling prices and, consequently, a diminished dispersion of prices among retailers. Reduced prices can, in turn, lead to decreased sales and, consequently, diminished profits (Pan et al. 2002, p. 57). When consumers become aware of the extent of price disparities, many retailers with higher prices may find themselves compelled to exit the market, yielding ground to lower-priced competitors unless they can distinguish themselves through appropriate strategies justifying their higher pricing. Several options exist in this regard, including developing customer relationship management (Passyn et al. 2013, p. 411).

For instance, retailers could employ LSS (see subchapter 3.4) to communicate with customers, fostering loyalty and trust. In practice, enhanced customer loyalty and prolonged customer retention are nearly synonymous. Given the persistent scepticism surrounding unfamiliar online retailers, cultivating customer loyalty today can shield retailers against more direct price-based competition (Passyn et al. 2013, p. 411). Other strategic considerations may encompass the management of both negative and positive customer reviews.

Another detrimental aspect of platforms pertains to the underlying business model, as LOOROs primarily favour a commission-based structure, wherein they receive a percentage of the transaction or sales value, as opposed to a fixed fee (Delgado-de Miguel 2019, p. 9). When examining the platforms under scrutiny, specifically LSPs, it can be asserted that they have the potential to contribute to digital transformation. However, the extent of their impact hinges on two pivotal factors: Service Offering: For instance, affiliate and transaction platforms offer more comprehensive services and are more appealing to the evolving shopping behaviours of customers. Retailer Readiness or Openness: Retailers must either demand new services or display a willingness to adapt to them. Drawing from the findings of the comparative study conducted between China and Germany, it also becomes evident that the shopping experience must be enhanced across various channels. This implies that retailers must make adjustments in physical stores, akin to the investments made on the digital platform. For instance, this might involve the implementation of SST or MP systems (see chapter three). In this context, retailers can strategically collaborate with a platform, possibly by developing an app incorporating SST functionalities and a barcode scanner. Customers could utilise such an app for both offline and online purchases. Consequently, adopting a digital growth strategy would empower retailers to expand their customer reach and enhance their service offerings.

This dissertation analysed the opportunities for retailers in the digital transformation. For this purpose, retailers, customers and local shopping platforms were examined as important players. The results of the various chapters highlighted that digital transformation poses new challenges and opportunities for retailers. With the help of digital tools, applications and channels, retailers can reach new customer groups or win back customers. However, it also requires adaptation processes such as the willingness to digitise its backend system further, learn new IT skills, or register on a platform. Of course, retailers also need to be supported accordingly. Municipalities, cities and their local governments are therefore under pressure to act. If retailers die, the attractiveness of city centres also declines, as retailers increase the attractiveness of shopping streets with their shop windows and invite customers to stroll through the city centre. More customers in the city centre also increase other companies' willingness to set up shop there. If these effects are reversed, the tax revenues of cities also fall. This also reduces the scope for cities to support their retailers (Aguirre Reid and Lackes 2023, p. 61).

But retailers must also be willing to listen more because new technologies and services do not only benefit retailers. Addressing customer needs determines the success or failure of introduced technologies and services. Like the adaptation processes caused by the introduction of department stores or the self-service concept in the 1950s, the digital transformation will also produce losers and winners. Hence, the digital transformation process confirms the opening statement: It has often been said that the only constant in retailing is change (Brown 1987, p. 5; Markin and Duncan 1981, p. 58). It is, therefore, essential for retailers to adapt to the changes with a suitable strategy so that they can take advantage of the opportunities, or to put it more poetically: *“Then you better start swimmin' or you'll sink like a stone. For the times, they are a-changin'”* (Bob Dylan).

### 5.3 Future Research

In line with the structure of this dissertation, future research will be discussed for each discussed chapter. Concerning the second chapter, the dissertation utilised a survey-based study to investigate the retailers' technology adoption. The results revealed the importance of digital administration for LOOROs digital transformation. In line with the finding, future studies should analyse how LOOROs can improve the performance of digital backend activities. Case study approaches of the implementation process would be suitable to understand better the challenges and how LOOROs can be further supported. A further essential aspect is the digitalisation of the store as a digital sales channel. For instance, new technologies and services are already in the starting blocks, like scan & go apps or robots in the store. These new technologies and services also compete with existing options like the traditional PoS in the case of scan & go apps. Therefore, researchers need to focus on the relative advantages of these new technologies and services. However, researchers should not only analyse the technology adoption of customers. Researchers should also focus more on the retailers' perspective. In particular, the small retailers or LOOROs. But it is not only essential to understand what drives or inhibits the adoption from the retailers or customers perspective. It is also decisive to understand how new technologies and services will shape the future of retail. For instance, what new challenges do retailers face regarding store sizes, design or employee activity in the store like in the case of the introduction of the self-service concept in the 1950s-60s? A further issue for future research is the increasing customer demand for an individualised shopping experience and how (also LOOROs) retailers can address these changing customer needs with the proper advertisement (digital marketing) tools at the right time and channel. Therefore, retailers need to learn to track customers across different channels (e.g., online and offline channels). Of course, some research exists regarding in-store analytics and online customer tracking (e.g., Bollweg et al. 2016; Nakano and Kondo 2018), but it is also decisive to bring the best of both worlds (online and offline) together in a way that is also usable for LOOROs to stay competitive.

Concerning the third chapter, the dissertation utilised a survey-based study to investigate customer technology and service adoption. First of all, the underlying studies in chapter three incorporated many theoretical related factors to analyse customer adoption behaviour. However, not all possible influencing factors of a theory have been examined in detail. Further research should focus on these factors to supplement the findings made here. For instance, incorporate further aspects like different types of trust, risk or other variables of the TTAT theory. Moreover, future investigations should also consider other suitable theoretical backgrounds to increase the understanding of customer technology adoption from various perspectives (e.g., social comparison theory). All studies in the third chapter are based on a structural equation model. Although the author runs various analyses to ensure the reliability and validity of the SEM analysis, survey-based studies are not without criticism (see discussion 3.5.3).



Therefore, future studies should consider different research designs to investigate customers' technology and service adoption. For instance, longitudinal studies help to understand the changing customer behaviour over time. Actual behaviour data, like clickstream data or probabilistic datasets from customer devices, provide a better understanding than intentional behaviour data.

Concerning the fourth chapter, this dissertation analysed the platform types and offered location-dependent services of LSPs in Germany and China. The research design limitation also holds for chapter four. These studies analysed the existing types and offered services of LSPs with a content analysis and structural interviews. Although the author checked the intercoder reliability to ensure the quality of the analysis, future studies should utilise different research designs. For instance, researchers should investigate the customers' actual usage of location-dependent services to understand better which services matter. A further important question is the role of LSPs. Are they capable of filling an institutional role, and how would this affect the city or local retail development? In the fourth chapter, we also addressed the impact of the pandemic. However, further research is needed among the existing LSPs to understand the impact. This included an analysis of all relevant actors like the LSP providers (e.g., did they further develop their LSP during the lockdown), local retailers (e.g., did they change their attitude regarding LSPs and their offered services) or local customers (e.g., how the customer perception changed of LSPs during the lockdown). This analysis also helps cities to develop attractive high streets and tackle further downward spirals. The last research question in chapter four analysed the difference between Chinese and German LSPs. Future research should consider further essential factors that could shape the service offering of LSPs, like the legal system or the market environment (e.g., competition). But also other cultural theories like the Schwarz value theory, Triandis or Hall's cross-cultural communication could provide new insights into the service provision of platforms from different countries.

Strategic implications were formulated in subchapter 5.3, but these claim to be incomplete. In particular, the aspects of metrics and goals and the analysis of large data sets are playing an increasingly important role and were not addressed in this dissertation. For example, how often was my video viewed, how high is the bouncing rate or the click-through rate on my website in order to be able to evaluate whether the measures introduced are effective? Another aspect that needs to be covered is the ability to analyze large data sets in order to conclude further action. However, also to learn more about my customers about their preferences, not forgetting ethnic and privacy aspects. Both aspects need to be considered in future research with a stronger view of the given boundaries for retailers (e.g., lack of technology knowledge, capacities etc.) to make such knowledge more accessible and usable for retailers, especially for LOOROs.

# Appendices

## A Appendix for Chapter 2

### A.1 Survey BIS 2021

Available Infrastructure (Skala: Stimme voll zu 1 – Stimme nicht zu 5)	
AI1	Ich habe ausreichend Ressourcen für das Thema Digitalisierung.
AI2	Ich verfüge über ausreichende Kapazitäten für das Thema Digitalisierung.
AI3	Meine IT-Infrastruktur entspricht nicht den Anforderungen der Digitalisierung.
Available Human Resources(Skala: Stimme voll zu 1 – Stimme nicht zu 5)	
HR1	Die Innovationskraft meiner Angestellten in Bezug auf Digitalisierung ist hoch.
HR2	Ich besitze digitale Kompetenzen.
HR3	Ich bin in Bezug auf Digitalisierung motiviert.
Competitive Pressure (Skala: Stimme voll zu 1 – Stimme nicht zu 5)	
PC1	Viele meiner Online-Konkurrenten sind mir in der Digitalisierung voraus.
PC2	Ich muss gegenüber meinen Online-Konkurrenten in der Digitalisierung aufholen.
PC3	In Zukunft kommt man an Digitalisierung nicht vorbei.
Customer Pressure (Skala: Stimme voll zu 1 – Stimme nicht zu 5)	
CP1	Meine Kunden fragen mich explizit nach digitalen Angeboten.
CP2	Ich fühle mich zur Digitalisierung gedrängt.
CP3	An digitalen Angeboten führt heute kein Weg vorbei.
Society Pressure (Skala: Stimme voll zu 1 – Stimme nicht zu 5)	
SP1	Digitalisierung wird in Zukunft unser Leben wesentlich bestimmen.
SP2	Bürokratie und öffentliche Verwaltung drängen mich zur Digitalisierung.
SP3	Wer nicht digitalisiert, wird abgehängt.
Attitude (Skala: Stimme voll zu 1 – Stimme nicht zu 5)	
A1	Ich finde Digitalisierung gut.
A2	Das Erlernen digitaler Anwendungen fällt mir leicht.
A3	Digitalisierung ist in Zukunft von hoher Bedeutung.
A4	Digitalisierung erhöht meine Effektivität.
Intention to Use Digital Services (Skala: sehr stark 1 – überhaupt keine 5)	
ID1	Angebote digitaler Services/Planung zukünftiger Nutzung.
ID2	Angebote digitaler Zahlungsmöglichkeiten/ Planung zukünftiger Nutzung.
ID3	Angebote von Lieferservices/ Planung zukünftiger Nutzung.
Intention to Use Digital Sales (Skala: sehr stark 1 – überhaupt keine 5)	
IS1	Nutzung eines eigenen Online Shops/ Planung zukünftiger Nutzung.

IS2	Nutzung von Drittanbieterplattformen/ Planung zukünftiger Nutzung.
IS3	Nutzung von In-Store Applikationen/ Planung zukünftiger Nutzung.
Intention to Use Digital Marketing (Skala: sehr stark 1 – überhaupt keine 5)	
IM1	Nutzung digitaler Kommunikationskanäle/ Planung zukünftiger Nutzung.
IM2	Nutzung Online-Werbung/ Planung zukünftiger Nutzung.
IM3	Software zur Marketingunterstützung/ Planung zukünftiger Nutzung.
Intention to Use Digital Admin (Skala: sehr stark 1 – überhaupt keine 5)	
IA1	Nutzung des Internets zur Abwicklung .../ Planung zukünftiger Nutzung.
IA2	Nutzung von Anwendungssoftware .../ Planung zukünftiger Nutzung.
IA3	Nutzung einer digitalen Warenwirtschaft/ Planung zukünftiger Nutzung.
Current Use Digitale Services (Skala: sehr häufig 1 – überhaupt nicht 5)	
CD1	Angebote digitaler Services/ Aktuelle Nutzung.
CD2	Angebote digitaler Zahlungsmöglichkeiten/ Aktuelle Nutzung.
CD3	Angebote von Lieferservices/ Aktuelle Nutzung.
Current Use Digital Sale (Skala: sehr häufig 1 – überhaupt nicht 5)	
CS1	Nutzung eines eigenen Online Shops/ Aktuelle Nutzung.
CS2	Nutzung von Drittanbieterplattformen/ Aktuelle Nutzung.
CS3	Nutzung von In-Store Applikationen/ Aktuelle Nutzung.
Current Use Digital Marketing (Skala: sehr häufig 1 – überhaupt nicht 5)	
CM1	Nutzung digitaler Kommunikationskanäle/ Aktuelle Nutzung.
CM2	Nutzung Online-Werbung/ Aktuelle Nutzung.
CM3	Software zur Marketingunterstützung/ Aktuelle Nutzung.
Current Use Digital Admin (Skala: sehr häufig 1 – überhaupt nicht 5)	
CA1	Nutzung des Internets zur Abwicklung .../ Aktuelle Nutzung.
CA2	Nutzung von Anwendungssoftware .../ Aktuelle Nutzung.
CA3	Nutzung einer digitalen Warenwirtschaft/ Aktuelle Nutzung.

**A.2 Items Loading/Weight BIS 2021**

Available Infra-structure	Loading/Weight (formative)	Significance
AI1	0.381	*
AI2	0.673	***
AI3	-0.207	ns
<b>Available Human Resources</b>		
HR1	0.028	ns
HR2	0.287	***
HR3	0.772	***
<b>Competitive Pressure</b>		
PC1	-0.250	**
PC2	0.117	ns
PC3	0.933	***
<b>Customer Pressure</b>		
CP1	0.327	*
CP2	-0.706	*
CP3	0.571	**
<b>Society Pressure</b>		
SP1	0.752	***
SP2	-0.426	***
SP3	0.364	***
<b>Attitude</b>		
A1	0.820	***
A2	0.703	***
A3	0.698	***
A4	0.804	***
<b>Intention to Use Digital Services:</b>		
ID1	0.586	***
ID2	0.464	***
ID3	0.243	**
<b>Intention to Use Digital Sales:</b>		
IS1	0.141	**
IS2	0.277	***
IS3	0.767	***
<b>Intention to Use Digital Marketing</b>		
IM1	0.441	***

IM2	0.324	***
IM3	0.498	***
Intention to Use Digital Admin		
IA1	0.381	***
IA2	0.400	***
IA3	0.565	***
Current Use Digitale Services		
CD1	0.573	***
CD2	0.514	***
CD3	0.259	***
Current Use Digital Sale		
CS1	0.203	***
CS2	0.182	**
CS3	0.781	***
Current Use Digital Marketing		
CM1	0.533	***
CM2	0.245	***
CM3	0.530	***
Current Use Digital Admin		
CA1	0.387	***
CA2	0.458	***
CA3	0.595	***
ns = not significant; *p<0.10; **p<0.05; ***p<0.01		

### A.3. Correlations Model BIS 2021

		Korrelationen														
		Attitude	Available HR	Available Infrastruktur	CU digital admin	CU digital marketing	CU digital sales	CU digital services	Competitive PR	Customer Pressure	Intention to use digital admin	Intention to use digital marketing	Intention to use digital sales	Intention to use digital services	Society Pressure	
Spearman-Rho	Attitude	Korrelationskoeffizient	1,000	,728**	,496**	,423**	,273*	,271**	,335**	,603**	,672**	,521**	,375**	,384**	,449**	,607**
		Sig. (2-seitig)		<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
		N	223	223	223	223	223	223	223	223	223	223	223	223	223	223
Available HR		Korrelationskoeffizient	,728**	1,000	,514**	,450**	,352**	,320**	,328**	,417**	,643**	,461**	,371**	,367**	,396**	,503**
		Sig. (2-seitig)	<.001		<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
		N	223	223	223	223	223	223	223	223	223	223	223	223	223	223
Available Infrastruktur		Korrelationskoeffizient	,496**	,514**	1,000	,240**	,186**	,169**	,153**	,217**	,364**	,187**	,100**	,051**	,168**	,365**
		Sig. (2-seitig)	<.001	<.001		<.001	,005	,018	,022	<.001	<.001	,005	,137	,449	,018	<.001
		N	223	223	223	223	223	223	223	223	223	223	223	223	223	223
CU digital admin		Korrelationskoeffizient	,423**	,450**	,240**	1,000	,388**	,413**	,374**	,308**	,398**	,768**	,333**	,345**	,318**	,314**
		Sig. (2-seitig)	<.001	<.001	<.001		<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
		N	223	223	223	223	223	223	223	223	223	223	223	223	223	223
CU digital marketing		Korrelationskoeffizient	,273**	,352**	,186**	,388**	1,000	,370**	,523**	,208**	,289**	,379**	,720**	,386**	,445**	,288**
		Sig. (2-seitig)	<.001	<.001	,005	<.001		<.001	<.001	,002	<.001	<.001	<.001	<.001	<.001	<.001
		N	223	223	223	223	223	223	223	223	223	223	223	223	223	223
CU digital sales		Korrelationskoeffizient	,271**	,320**	,169**	,413**	,370**	1,000	,395**	,208**	,370**	,397**	,268**	,688**	,302**	,261**
		Sig. (2-seitig)	<.001	<.001	,018	<.001	<.001		<.001	,002	<.001	<.001	<.001	<.001	<.001	<.001
		N	223	223	223	223	223	223	223	223	223	223	223	223	223	223
CU digital services		Korrelationskoeffizient	,335**	,328**	,163**	,374**	,523**	,395**	1,000	,281**	,386**	,375**	,389**	,316**	,716**	,293**
		Sig. (2-seitig)	<.001	<.001	,022	<.001	<.001	<.001		<.001	<.001	<.001	<.001	<.001	<.001	<.001
		N	223	223	223	223	223	223	223	223	223	223	223	223	223	223
Competitive PR		Korrelationskoeffizient	,603**	,417**	,277**	,308**	,208**	,281**	1,000	,423**	,427**	,302**	,318**	,335**	,596**	
		Sig. (2-seitig)	<.001	<.001	<.001	<.001	,002	,002	<.001		<.001	<.001	<.001	<.001	<.001	
		N	223	223	223	223	223	223	223	223	223	223	223	223	223	223
Customer Pressure		Korrelationskoeffizient	,672**	,643**	,354**	,398**	,289**	,370**	,385**	1,000	,453**	,326**	,457**	,421**	,584**	
		Sig. (2-seitig)	<.001	<.001	<.001	<.001	<.001	<.001	<.001		<.001	<.001	<.001	<.001	<.001	
		N	223	223	223	223	223	223	223	223	223	223	223	223	223	223
Intention to use digital admin		Korrelationskoeffizient	,521**	,461**	,187**	,768**	,379**	,397**	,375**	,427**	1,000	,497**	,512**	,450**	,428**	
		Sig. (2-seitig)	<.001	<.001	,005	<.001	<.001	<.001	<.001	<.001		<.001	<.001	<.001	<.001	
		N	223	223	223	223	223	223	223	223	223	223	223	223	223	223
Intention to use digital marketing		Korrelationskoeffizient	,375**	,371**	,100**	,333**	,720**	,288**	,389**	,302**	,326**	,497**	1,000	,517**	,597**	,390**
		Sig. (2-seitig)	<.001	<.001	,137	<.001	<.001	<.001	<.001	<.001	<.001	<.001		<.001	<.001	
		N	223	223	223	223	223	223	223	223	223	223	223	223	223	223
Intention to use digital sales		Korrelationskoeffizient	,384**	,367**	,051**	,345**	,386**	,688**	,315**	,318**	,457**	,512**	,517**	1,000	,454**	,407**
		Sig. (2-seitig)	<.001	<.001	,449	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001		<.001	<.001
		N	223	223	223	223	223	223	223	223	223	223	223	223	223	223
Intention to use digital services		Korrelationskoeffizient	,449**	,396**	,158**	,318**	,445**	,302**	,716**	,335**	,421**	,450**	,597**	,454**	1,000	,396**
		Sig. (2-seitig)	<.001	<.001	,018	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001		<.001
		N	223	223	223	223	223	223	223	223	223	223	223	223	223	223
Society Pressure		Korrelationskoeffizient	,607**	,503**	,365**	,314**	,289**	,261**	,293**	,596**	,584**	,428**	,390**	,407**	,396**	1,000
		Sig. (2-seitig)	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	
		N	223	223	223	223	223	223	223	223	223	223	223	223	223	223

\*\* Die Korrelation ist auf dem 0.01 Niveau signifikant (zweiseitig).  
 \* Die Korrelation ist auf dem 0.05 Niveau signifikant (zweiseitig).

## B Appendix for Chapter 3

### B.1 Survey ICIS 2020

Relative Advantage (Skala: Stimme ganz zu 1 – Stimme nicht zu 5)	
RA1	MP ist effizienter im Gegensatz zu Bargeld, da der Bezahlvorgang schneller abgewickelt werden kann.
RA2	Das Bezahlen mit MP ist praktischer, da man nicht an die Örtlichkeit oder Währung gebunden ist.
RA3	MP ist effektiver im Gegensatz zu Bargeld, da der Bezahlvorgang weniger fehleranfällig ist (z.B. durch Wechselgeld).
RA4	MP ist praktischer im Gegensatz zu EC-/Kreditkarten, da ich mein Smartphone immer dabei habe.
RA5	MP ist effektiver im Gegensatz zu EC-/Kreditkarten, da es bei Diebstahl schwieriger wird, an Karteninformationen zu gelangen.
RA6	MP bietet mir einen besseren Überblick über meine Kontobewegungen, als wenn ich mit Bargeld bezahle.
RA7	Durch MP verringert sich mein „Equipment“ (z.B. EC-/Kreditkarte, Kundenkarte etc.)
Data Threats (Skala: Stimme ganz zu 1 – Stimme nicht zu 5)	
DT1	Die Nutzung von MP führt für mich zu einem Verlust meiner Privatsphäre, da ich keine genaue Kontrolle darüber besitze, welche Daten erhoben verarbeitet werden.
DT2	Die Nutzung von MP setzt mich der Gefahr von Hackerangriffen aus (Hacken von Sperrbildschirm, Malware, Identitätsdiebstahl etc.).
DT3	Die Nutzung von MP setzt mich der Gefahr von Phishing-Attacken aus (Betrug durch gefälschte Nachrichten).
DT4	Durch die Nutzung von MP, könnten meine Daten, ohne meine Zustimmung, an Dritte weitergegeben und diese für personalisierte Werbung oder Erstellung von Kundenprofilen missbraucht werden.
Performance Threats (Skala: Stimme ganz zu 1 – Stimme nicht zu 5)	
PFT1	MP funktioniert möglicherweise nicht ordnungsgemäß und verarbeitet Zahlungen falsch.
PFT2	Es besteht eine hohe Wahrscheinlichkeit, dass MP aufgrund einer instabilen Internetverbindung nicht richtig ausgeführt wird.
PFT3	Die vorhandenen Schutzmaßnahmen in MP sind unzureichend, um meine Daten und mein Konto zu schützen.
PFT4	Ich kann möglicherweise keine Bezahlung tätigen, aufgrund von nicht genügender Akkulation.
Financial Threats (Skala: Stimme ganz zu 1 – Stimme nicht zu 5)	
FT1	Die Chancen, dass ich durch die Nutzung von MP Geld verliere, ist hoch.
FT2	Durch die Nutzung von MP setze ich mein Konto der Gefahr von potenziellem Betrug aus.
FT3	Durch die Nutzung von MP ist mein Konto einem finanziellen Risiko ausgesetzt.

Perceived Threats (Skala: Stimme ganz zu 1 – Stimme nicht zu 5)	
PCT1	Es gibt zusammenfassend ein allgemein hohes Risiko, MP zu verwenden.
PCT2	Ich denke, dass ich durch die Nutzung von MP einen Verlust erleiden werde.
PCT3	Ich denke, durch die Nutzung von MP entstehen für mich unnötige Probleme.
Social Influence (Skala: Stimme ganz zu 1 – Stimme nicht zu 5)	
SI1	Menschen, die mein Verhalten beeinflussen, denken ich sollte MP nutzen.
SI2	Menschen, die mir wichtig sind, würden mir empfehlen, MP zu nutzen.
SI3	Menschen, die mir wichtig sind, empfinden die Nutzung von MP als vorteilhaft.
SI4	Menschen, die mir wichtig sind, halten MP für eine gute Idee.
Self-Efficacy (Skala: Stimme ganz zu 1 – Stimme nicht zu 5)	
SE1	Ich würde mich wohlfühlen, MP alleine anzuwenden.
SE2	Wenn ich wollte, könnte ich MP ohne Schwierigkeiten allein anwenden.
SE3	Ich wäre in der Lage, MP zu nutzen, auch wenn es keine Person gäbe, die mir bei der Anwendung hilft.
Mobile Payment Adoption (Skala: Stimme ganz zu 1 – Stimme nicht zu 5)	
MP1	Ich ziehe es in Erwägung, MP zu nutzen.
MP2	Ich beabsichtige es, MP in den kommenden Monaten zu nutzen.
MP3	Ich ziehe es in Erwägung, MP häufig zu verwenden.
Continuance Intention (Skala: Stimme ganz zu 1 – Stimme nicht zu 5)	
CI1	Ich beabsichtige es, weiterhin MP nutzen, anstatt die Verwendung davon einzustellen.
CI2	Ich beabsichtige es, weiterhin MP zu nutzen, anstatt auf alternative Bezahlmethoden, wie Bargeld oder EC-/Kreditkarte, zurückzugreifen.
CI3	Ich würde die Verwendung von MP einstellen.



**B.2 Items Loading Inexperienced Users ICIS 2020**

Relative Advantage	Outer loadings Card/Cash	Significance (Bootstrapping)
RA1	0.880	***
RA2	0.638/0.836	***
RA3	0.708	***
RA4	0.804	***
RA5	0.737	***
RA6	Dropped in the cash model 0.538	***/-
RA7	0.656/0.719	***
<b>Data Threats</b>		
DT1	0.873/0.873	***
DT2	0.859/0.859	***
DT3	0.859/0.859	***
DT4	0.783/0.783	***
<b>Performance Threats</b>		
PFT1	0.865/0.865	***
PFT2	0.734/0.734	***
PFT3	0.864/0.863	***
PFT4	Dropped in both models 0.545	-
<b>Financial Threats</b>		
FT1	0.819/0.819	***
FT2	0.873/0.873	***
FT3	0.876/0.876	***
<b>Perceived Threats</b>		
PCT1	0.883/0.881	***
PCT2	0.821/0.820	***
PCT3	0.867/0.870	***
<b>Social Influence</b>		
SI1	0.861/0.860	***
SI2	0.936/0.936	***
SI3	Dropped in both models 6.031 VIF	-

SI4	0.869/0.869	***
Self-Efficacy		
SE1	0.879/0.874	***
SE2	0.811/0.821	***
SE3	0.763/0.762	***
Mobile Payment Adoption		
MP1	0.934/0.935	***
MP2	0.908/0.907	***
MP3	0.940/0.940	***
ns = not significant; *p<0.10; **p<0.05; ***p<0.01		

**B.3 Items Loading Experienced Users ICIS 2020**

Relative Advantage	Outer loadings Card/Cash	Significance (Bootstrapping)
RA1	0.892/0.892	***
RA2	0.653/0.779	***
RA3	0.627	***
RA4	0.849	***
RA5	0.744	***
RA6	Dropped in both models 0.476	-/-
RA7	0.753/0.739	***
<b>Data Threats</b>		
DT1	0.827/ 0.827	***
DT2	0.872/ 0.872	***
DT3	0.859/ 0.859	***
DT4	0.835/ 0.835	***
<b>Performance Threats</b>		
PFT1	0.924/ 0.924	***
PFT2	0.863/0.863	***
PFT3	HTMT Issues in both models	-
PFT4	Dropped in both models 0.468	-
<b>Financial Threats</b>		
FT1	0.870/ 0.870	***
FT2	0.842/ 0.842	***
FT3	0.915/ 0.915	***
<b>Perceived Threats</b>		
PCT1	0.905/ 0.905	***
PCT2	0.914/ 0.914	***
PCT3	0.918/ 0.918	***
<b>Social Influence</b>		
SI1	0.665/0.662	***
SI2	0.901/ 0.900	***
SI3	0.939/ 0.941	***
SI4	0.830/0.831	***

Self-Efficacy		
SE1	0.803/ 0.802	***
SE2	0.924/0.924	***
SE3	0.908/ 0.908	***
Continuance Intention		
CI1	0.907/0.906	***
CI2	0.880/ 0.875	***
CI3res	0.619/ 0.628	***
ns = not significant; *p<0.10; **p<0.05; ***p<0.01		

### B.4 Correlations – Inexperienced Cash Model ICIS 2020

			Korrelationen							
			Data Threat	Financial Threat	Mobile Payment Adoption	Perceived Threat	Performance Threat	Self-Efficacy	Social Influence	relative Adv
Spearman-Rho	Data Threat	Korrelationskoeffizient	1,000	,603**	-,470**	,619**	,515**	-,269**	-,263**	-,122
		Sig. (2-seitig)	.	<,001	<,001	<,001	<,001	,002	,003	,172
		N	128	128	128	128	128	128	128	128
	Financial Threat	Korrelationskoeffizient	,603**	1,000	-,431**	,679**	,542**	-,346**	-,177*	-,147
		Sig. (2-seitig)	<,001	.	<,001	<,001	<,001	<,001	,045	,097
		N	128	128	128	128	128	128	128	128
	Mobile Payment Adoption	Korrelationskoeffizient	-,470**	-,431**	1,000	-,609**	-,363**	,539**	,457**	,448**
		Sig. (2-seitig)	<,001	<,001	.	<,001	<,001	<,001	<,001	<,001
		N	128	128	128	128	128	128	128	128
	Perceived Threat	Korrelationskoeffizient	,619**	,679**	-,609**	1,000	,571**	-,413**	-,258**	-,264**
		Sig. (2-seitig)	<,001	<,001	<,001	.	<,001	<,001	,003	,003
		N	128	128	128	128	128	128	128	128
	Performance Threat	Korrelationskoeffizient	,515**	,542**	-,363**	,571**	1,000	-,267**	-,204*	-,053
		Sig. (2-seitig)	<,001	<,001	<,001	<,001	.	,002	,021	,550
		N	128	128	128	128	128	128	128	128
	Self-Efficacy	Korrelationskoeffizient	-,269**	-,346**	,539**	-,413**	-,267**	1,000	,231**	,343**
		Sig. (2-seitig)	,002	<,001	<,001	<,001	,002	.	,009	<,001
		N	128	128	128	128	128	128	128	128
	Social Influence	Korrelationskoeffizient	-,263**	-,177*	,457**	-,258**	-,204*	,231**	1,000	,257**
		Sig. (2-seitig)	,003	,045	<,001	,003	,021	,009	.	,003
		N	128	128	128	128	128	128	128	128
	relative Adv	Korrelationskoeffizient	-,122	-,147	,448**	-,264**	-,053	,343**	,257**	1,000
		Sig. (2-seitig)	,172	,097	<,001	,003	,550	<,001	,003	.
		N	128	128	128	128	128	128	128	128

\*\* Die Korrelation ist auf dem 0,01 Niveau signifikant (zweiseitig).

\* Die Korrelation ist auf dem 0,05 Niveau signifikant (zweiseitig).

### B.5 Correlations – Inexperienced Card Model ICIS 2020

			Korrelationen							
			Data Threat	Financial Threat	Mobile Payment Adoption	Perceived Threat	Performance Threat	Self-Efficacy	Social Influence	rel. Advantage_
Spearman-Rho	Data Threat	Korrelationskoeffizient	1,000	,603**	-,481**	,623**	,515**	-,272**	-,263**	-,295**
		Sig. (2-seitig)	.	<,001	<,001	<,001	<,001	,002	,003	<,001
		N	128	128	128	128	128	128	128	128
	Financial Threat	Korrelationskoeffizient	,603**	1,000	-,432**	,691**	,542**	-,345**	-,177*	-,191*
		Sig. (2-seitig)	<,001	.	<,001	<,001	<,001	<,001	,045	,031
		N	128	128	128	128	128	128	128	128
	Mobile Payment Adoption	Korrelationskoeffizient	-,481**	-,432**	1,000	-,597**	-,366**	,526**	,456**	,530**
		Sig. (2-seitig)	<,001	<,001	.	<,001	<,001	<,001	<,001	<,001
		N	128	128	128	128	128	128	128	128
	Perceived Threat	Korrelationskoeffizient	,623**	,691**	-,597**	1,000	,583**	-,396**	-,254**	-,415**
		Sig. (2-seitig)	<,001	<,001	<,001	.	<,001	<,001	,004	<,001
		N	128	128	128	128	128	128	128	128
	Performance Threat	Korrelationskoeffizient	,515**	,542**	-,366**	,583**	1,000	-,271**	-,204*	-,184*
		Sig. (2-seitig)	<,001	<,001	<,001	<,001	.	,002	,021	,038
		N	128	128	128	128	128	128	128	128
	Self-Efficacy	Korrelationskoeffizient	-,272**	-,345**	,526**	-,396**	-,271**	1,000	,233**	,398**
		Sig. (2-seitig)	,002	<,001	<,001	<,001	,002	.	,008	<,001
		N	128	128	128	128	128	128	128	128
	Social Influence	Korrelationskoeffizient	-,263**	-,177*	,456**	-,254**	-,204*	,233**	1,000	,242**
		Sig. (2-seitig)	,003	,045	<,001	,004	,021	,008	.	,006
		N	128	128	128	128	128	128	128	128
	rel. Advantage_	Korrelationskoeffizient	-,295**	-,191*	,530**	-,415**	-,184*	,398**	,242**	1,000
		Sig. (2-seitig)	<,001	,031	<,001	<,001	,038	<,001	,006	.
		N	128	128	128	128	128	128	128	128

\*\* Die Korrelation ist auf dem 0,01 Niveau signifikant (zweiseitig).

\* Die Korrelation ist auf dem 0,05 Niveau signifikant (zweiseitig).

**B.6 Correlations – Experienced Cash Model ICIS 2020**

		Korrelationen									
			Continuance Intention	Data Threat	Financial Threat	Perceived Threat	Performance Threat	Relative Advantage Cash	Self-Efficacy	Social Influence	
Spearman-Rho	Continuance Intention	Korrelationskoeffizient	1,000	-,463**	-,645**	-,714**	-,591**	,545**	,435**	,268*	
		Sig. (2-seitig)	.	<,001	<,001	<,001	<,001	<,001	<,001	<,001	,024
		N	71	71	71	71	71	71	71	71	71
	Data Threat	Korrelationskoeffizient	-,463**	1,000	,581**	,505**	,547**	-,222	-,298*	-,166	
		Sig. (2-seitig)	<,001	.	<,001	<,001	<,001	,063	,012	,166	
		N	71	71	71	71	71	71	71	71	71
	Financial Threat	Korrelationskoeffizient	-,645**	,581**	1,000	,751**	,669**	-,527**	-,468**	-,354**	
		Sig. (2-seitig)	<,001	<,001	.	<,001	<,001	<,001	<,001	,002	
		N	71	71	71	71	71	71	71	71	71
	Perceived Threat	Korrelationskoeffizient	-,714**	,505**	,751**	1,000	,737**	-,462**	-,439**	-,348**	
		Sig. (2-seitig)	<,001	<,001	<,001	.	<,001	<,001	<,001	,003	
		N	71	71	71	71	71	71	71	71	71
	Performance Threat	Korrelationskoeffizient	-,591**	,547**	,669**	,737**	1,000	-,362**	-,347**	-,260*	
		Sig. (2-seitig)	<,001	<,001	<,001	<,001	.	,002	,003	,028	
		N	71	71	71	71	71	71	71	71	71
	Relative Advantage Cash	Korrelationskoeffizient	,545**	-,222	-,527**	-,462**	-,362**	1,000	,396**	,240*	
		Sig. (2-seitig)	<,001	,063	<,001	<,001	,002	.	<,001	,044	
		N	71	71	71	71	71	71	71	71	71
	Self-Efficacy	Korrelationskoeffizient	,435**	-,298*	-,468**	-,439**	-,347**	,396**	1,000	,177	
		Sig. (2-seitig)	<,001	,012	<,001	<,001	,003	<,001	.	,139	
		N	71	71	71	71	71	71	71	71	71
	Social Influence	Korrelationskoeffizient	,268*	-,166	-,354**	-,348**	-,260*	,240*	,177	1,000	
		Sig. (2-seitig)	,024	,166	,002	,003	,028	,044	,139	.	
		N	71	71	71	71	71	71	71	71	71

\*\* Die Korrelation ist auf dem 0,01 Niveau signifikant (zweiseitig).

\* Die Korrelation ist auf dem 0,05 Niveau signifikant (zweiseitig).

**B.7 Correlations – Experienced Card Model ICIS 2020**

		Korrelationen									
			Continuance Intention	Data Threat	Financial Threat	Perceived Threat	Performance Threat	Relative Advantage Card	Self-Efficacy	Social Influence	
Spearman-Rho	Continuance Intention	Korrelationskoeffizient	1,000	-,487**	-,666**	-,729**	-,612**	,646**	,449**	,289*	
		Sig. (2-seitig)	.	<,001	<,001	<,001	<,001	<,001	<,001	<,001	,014
		N	71	71	71	71	71	71	71	71	71
	Data Threat	Korrelationskoeffizient	-,487**	1,000	,581**	,505**	,547**	-,377**	-,298*	-,166	
		Sig. (2-seitig)	<,001	.	<,001	<,001	<,001	,001	,012	,166	
		N	71	71	71	71	71	71	71	71	71
	Financial Threat	Korrelationskoeffizient	-,666**	,581**	1,000	,751**	,669**	-,572**	-,468**	-,354**	
		Sig. (2-seitig)	<,001	<,001	.	<,001	<,001	<,001	<,001	<,001	
		N	71	71	71	71	71	71	71	71	71
	Perceived Threat	Korrelationskoeffizient	-,729**	,505**	,751**	1,000	,737**	-,590**	-,439**	-,348**	
		Sig. (2-seitig)	<,001	<,001	<,001	.	<,001	<,001	<,001	,003	
		N	71	71	71	71	71	71	71	71	71
	Performance Threat	Korrelationskoeffizient	-,612**	,547**	,669**	,737**	1,000	-,471**	-,347**	-,260*	
		Sig. (2-seitig)	<,001	<,001	<,001	<,001	.	<,001	,003	,028	
		N	71	71	71	71	71	71	71	71	71
	Relative Advantage Card	Korrelationskoeffizient	,646**	-,377**	-,572**	-,590**	-,471**	1,000	,380**	,333**	
		Sig. (2-seitig)	<,001	,001	<,001	<,001	<,001	.	,001	,005	
		N	71	71	71	71	71	71	71	71	71
	Self-Efficacy	Korrelationskoeffizient	,449**	-,298*	-,468**	-,439**	-,347**	,380**	1,000	,177	
		Sig. (2-seitig)	<,001	,012	<,001	<,001	,003	,001	.	,139	
		N	71	71	71	71	71	71	71	71	71
	Social Influence	Korrelationskoeffizient	,289*	-,166	-,354**	-,348**	-,260*	,333**	,177	1,000	
		Sig. (2-seitig)	,014	,166	,002	,003	,028	,005	,139	.	
		N	71	71	71	71	71	71	71	71	71

\*\* Die Korrelation ist auf dem 0,01 Niveau signifikant (zweiseitig).

\* Die Korrelation ist auf dem 0,05 Niveau signifikant (zweiseitig).

**B.8 Survey BIR 2022**

Relative Advantages (Skala: Stimme gar nicht zu 1 – Stimme völlig zu 5)	
R1 Cash	Ich denke, dass die Nutzung von Mobile Payment schneller ist als Bargeldzahlung.
R1 Card	Ich denke, dass die Nutzung von Mobile Payment schneller ist als Kartenzahlung.
R2 Cash	Ich denke, dass die Nutzung von Mobile Payment, die Notwendigkeit reduziert, Bargeld mit sich zu führen.
R2 Card	Ich denke, dass die Nutzung von Mobile Payment die Notwendigkeit reduziert, Karten mit sich zu führen.
R3 Cash	Ich denke, dass die Nutzung von Mobile Payment, hygienischer ist als Bargeldzahlung.
R3 Card	Ich denke, dass die Nutzung von Mobile Payment, hygienischer ist als Kartenzahlung.
R4 Cash	Ich denke, dass die Nutzung von Mobile Payment, die Überprüfung meiner Ausgaben im Vergleich zu Bargeldzahlung transparenter macht.
R4 Card	Ich denke, dass die Nutzung von Mobile Payment, die Überprüfung meiner Ausgaben im Vergleich zu Kartenzahlung transparenter macht.
R5 Cash	Ich denke, dass Mobile Payment im Vergleich zu Bargeldzahlung für mich den Bezahlvorgang vereinfacht (z.B. kein Bargeld mehr zählen).
R5 Card	Ich denke, dass Mobile Payment im Vergleich zu Kartenzahlung für mich den Bezahlvorgang vereinfacht (z.B. keine PIN-Eingabe bis 25€).
Perceived Switching Cost (Skala: Stimme gar nicht zu 1 – Stimme völlig zu 5)	
PC1	Ich denke, dass ich durch die Nutzung von Mobile Payment am Anfang viel Zeit und Aufwand investieren muss, um ausreichend Informationen über die verschiedenen Mobile Payment Anbieter zu sammeln.
PC2	Ich denke, dass ich durch die Nutzung von Mobile Payment am Anfang viel Zeit und Aufwand investieren muss, um es auf dem Smartphone einzurichten.
PC3	Ich denke, dass ich durch die Nutzung von Mobile Payment am Anfang viel Zeit und Aufwand investieren muss, um zu lernen, wie es funktioniert.
PC4	Ich denke, dass ich durch die Nutzung von Mobile Payment am Anfang viel Zeit und Aufwand investieren muss, mir ein neues Smartphone anzuschaffen.
Social Influence (Skala: Stimme gar nicht zu 1 – Stimme völlig zu 5)	
S1	Menschen, die wichtig für mich sind, denken, dass ich Mobile Payment nutzen sollte.
S2	Menschen, deren Meinung ich wertschätze, finden, ich sollte Mobile Payment nutzen.
S3	Ich fühle mich von der Gesellschaft dazu gedrängt, Mobile Payment zu nutzen.
S4	Ich fühle mich von dem Einzelhandel dazu gedrängt, Mobile Payment zu nutzen.
S5	Es wird von mir erwartet, Mobile Payment zu nutzen.
Compatibility (Skala: Stimme gar nicht zu 1 – Stimme völlig zu 5)	
COM1	Ich denke, dass Mobile Payment zu meinem Lifestyle passt.

COM2	Ich denke, dass Mobile Payment zu der Art und Weise passt, wie ich meine Finanzen verwalte (z.B. Mobile Banking).
COM3	Ich denke, dass Mobile Payment zu der Art und Weise passt, wie ich Produkte und Dienstleistungen bezahle (z.B. oft bargeldlos).
COM4	Ich denke, dass Mobile Payment im Allgemeinen gut zu meinem Bezahlverhalten passt.
Perceived Threat (Skala: Stimme gar nicht zu 1 – Stimme völlig zu 5)	
PT1	Ich habe Sorge, dass Mobile Payment nicht akzeptiert wird und ich das Produkt nicht kaufen kann.
PT2	Ich habe Sorge, dass Mobile Payment an der Kasse nicht funktioniert und ich dies als persönlich unangenehm empfinden würde.
PT3	Ich habe Sorge, dass Mobile Payment nicht richtig ausgeführt wird und es zu falschen Buchungen auf meinem Konto kommt.
PT4 Card	Ich habe Sorge, dass Mobile Payment ein allgemein höheres Risiko beim Bezahlen im Vergleich zu Kartenzahlung aufweist.
PT4 Cash	Ich habe Sorge, dass Mobile Payment ein allgemein höheres Risiko beim Bezahlen im Vergleich zu Bargeldzahlung aufweist
Data Threat (Skala: Stimme gar nicht zu 1 – Stimme völlig zu 5)	
DT1 Card	Ich habe Sorge, dass Mobile Payment im Vergleich zu Kartenzahlung die Gefahr birgt, dass Kriminelle meine Kontodaten auslesen (Hackerangriff).
DT1 Cash	Ich habe Sorge, dass Mobile Payment im Vergleich zu Bargeldzahlung die Gefahr birgt, dass Kriminelle meine Daten auslesen (Hackerangriff).
DT2 Card	Ich habe Sorge, dass Mobile Payment im Vergleich zu Kartenzahlung meine Daten an Dritte weitergegeben werden.
DT2 Cash	Ich habe Sorge, dass Mobile Payment im Vergleich zu Bargeldzahlung meine Daten an Dritte weitergegeben werden.
DT3 Cash	Ich habe Sorge, dass Mobile Payment im Vergleich zu Bargeldzahlung die Gefahr birgt, zum „gläsernen Kunden“ zu werden (Verlust der Privatsphäre).
DT3 Card	Ich habe Sorge, dass Mobile Payment im Vergleich zu Kartenzahlung die Gefahr birgt, zum „gläsernen Kunden“ zu werden (Verlust der Privatsphäre).
Intention to Use (Skala: Stimme gar nicht zu 1 – Stimme völlig zu 5)	
I1	Ich beabsichtige, Mobile Payment in Zukunft zu nutzen.
I2	Ich werde versuchen, Mobile Payment für meine täglichen Einkäufe zu nutzen.
I3 Cash	Ich plane, Mobile Payment statt Bargeldzahlung zu nutzen.
I3 Card	Ich plane, Mobile Payment statt Kartenzahlung zu nutzen.



**B.9 Items Loading BIR 2022**

Relative Advantages	Outer loadings (Cash/Card)	Significance (Bootstrapping)
R1 Cash	0.870	***
R1 Card	0.851	***
R2 Cash	Dropped in both models, 0.659	-
R2 Card	Dropped in both models, 0.563	-
R3 Cash	Dropped in both models, 0.520	-
R3 Card	Dropped in both models, 0.479	-
R4 Cash	Dropped in both models, 0.599	-
R4 Card	Dropped in both models, 0.635	-
R5 Cash	0.921	***
R5 Card	0.874	***
<b>Perceived Switching Cost</b>		
PC1	0.860/0.860	***
PC2	0.867/0.866	***
PC3	0.836/0.837	***
PC4	Dropped in both models, 0.616/0.603	-
<b>Social Influence</b>		
S1	Dropped in both models, VIF 5.187	-
S2	Dropped in both models, VIF 5.181	-
S3	0.882/0.869	***
S4	0.967/0.973	***
S5	0.815/0.789	***
<b>Compatibility</b>		
COM1	0.931/0.933	***
COM2	0.918/0.918	***
COM3	0.893/0.889	***
COM4	Dropped in both models, VIF 5.213	-
<b>Perceived Threat</b>		
PT1	0.890/0.879	***
PT2	0.899/0.909	***
PT3	0.746/0.748	***

PT4 Card	Dropped in both models, 0.469/0.435	-
PT4 Cash	Dropped in both models 0.288/0.260	-
Data Threat		
DT1 Card	0.855	***
DT1 Cash	0.840	***
DT2 Card	0.888	***
DT2 Cash	0.860	***
DT3 Cash	0.827	***
DT3 Card	0.822	***
Intention to Use		
I1	0.932/0.941	***
I2	0.945/0.935	***
I3 Cash	0.923	***
I3 Card	0.908	***
ns = not significant; *p<0.10; **p<0.05; ***p<0.01		

**B.10 Correlations Cash Model BIR 2022**

			Korrelationen						
		Compatibility	Data Threat CASH	Intention to Use MP VS CASH	Perceived Cost	Perceived Threat CASH	Relative Advantage CASH	Social Influence_	
Spearman-Rho	Compatibility	Korrelationskoeffizient	1,000	-,293**	,742**	-,368**	-,462**	,606**	-,216**
		Sig. (2-seitig)	.	<,001	<,001	<,001	<,001	<,001	<,001
		N	257	257	257	257	257	257	257
	Data Threat CASH	Korrelationskoeffizient	-,293**	1,000	-,363**	,241**	,605**	-,126*	,105
		Sig. (2-seitig)	<,001	.	<,001	<,001	<,001	,044	,094
		N	257	257	257	257	257	257	257
	Intention to Use MP VS CASH	Korrelationskoeffizient	,742**	-,363**	1,000	-,330**	-,517**	,616**	-,099
		Sig. (2-seitig)	<,001	<,001	.	<,001	<,001	<,001	,113
		N	257	257	257	257	257	257	257
	Perceived Cost	Korrelationskoeffizient	-,368**	,241**	-,330**	1,000	,344**	-,247**	,195**
		Sig. (2-seitig)	<,001	<,001	<,001	.	<,001	<,001	,002
		N	257	257	257	257	257	257	257
	Perceived Threat CASH	Korrelationskoeffizient	-,462**	,605**	-,517**	,344**	1,000	-,323**	,193**
		Sig. (2-seitig)	<,001	<,001	<,001	<,001	.	<,001	,002
		N	257	257	257	257	257	257	257
	Relative Advantage CASH	Korrelationskoeffizient	,606**	-,126*	,616**	-,247**	-,323**	1,000	-,140*
		Sig. (2-seitig)	<,001	,044	<,001	<,001	<,001	.	,025
		N	257	257	257	257	257	257	257
	Social Influence_	Korrelationskoeffizient	-,216**	,105	-,099	,195**	,193**	-,140*	1,000
		Sig. (2-seitig)	<,001	,094	,113	,002	,002	,025	.
		N	257	257	257	257	257	257	257

\*\* Die Korrelation ist auf dem 0,01 Niveau signifikant (zweiseitig).

\* Die Korrelation ist auf dem 0,05 Niveau signifikant (zweiseitig).

**B.11 Correlations Card Model BIR 2022**

			Korrelationen						
		Compatibility	Data Threat CARD	Intention to Use MP VS CARD	Perceived Cost	Perceived Threat CARD	Relative Advantage CARD	Social Influence_	
Spearman-Rho	Compatibility	Korrelationskoeffizient	1,000	-,333**	,718**	-,368**	-,457**	,472**	-,248**
		Sig. (2-seitig)	.	<,001	<,001	<,001	<,001	<,001	<,001
		N	257	257	250	257	257	257	257
	Data Threat CARD	Korrelationskoeffizient	-,333**	1,000	-,424**	,336**	,656**	-,295**	,198**
		Sig. (2-seitig)	<,001	.	<,001	<,001	<,001	<,001	,001
		N	257	257	250	257	257	257	257
	Intention to Use MP VS CARD	Korrelationskoeffizient	,718**	-,424**	1,000	-,333**	-,509**	,616**	-,124
		Sig. (2-seitig)	<,001	<,001	.	<,001	<,001	<,001	,050
		N	250	250	250	250	250	250	250
	Perceived Cost	Korrelationskoeffizient	-,368**	,336**	-,333**	1,000	,343**	-,205**	,209**
		Sig. (2-seitig)	<,001	<,001	<,001	.	<,001	<,001	<,001
		N	257	257	250	257	257	257	257
	Perceived Threat CARD	Korrelationskoeffizient	-,457**	,656**	-,509**	,343**	1,000	-,294**	,230**
		Sig. (2-seitig)	<,001	<,001	<,001	<,001	.	<,001	<,001
		N	257	257	250	257	257	257	257
	Relative Advantage CARD	Korrelationskoeffizient	,472**	-,295**	,616**	-,205**	-,294**	1,000	,041
		Sig. (2-seitig)	<,001	<,001	<,001	<,001	<,001	.	,511
		N	257	257	250	257	257	257	257
	Social Influence_	Korrelationskoeffizient	-,248**	,198**	-,124	,209**	,230**	,041	1,000
		Sig. (2-seitig)	<,001	,001	,050	<,001	<,001	,511	.
		N	257	257	250	257	257	257	257

\*\* Die Korrelation ist auf dem 0,01 Niveau signifikant (zweiseitig).

**B.12 Measurement Model BIR 2022**

<b>Construct</b>	<b>Cash</b>			<b>Card</b>		
	<b>Alpha</b>	<b>Relia- bility</b>	<b>AVE</b>	<b>Alpha</b>	<b>Relia- bility</b>	<b>AVE</b>
Compatibility	0.901	0.938	0.835	0,901	0,938	0,835
Data Threat	0.798	0,880	0,710	0,819	0,891	0,732
Perceived Switching Cost	0,818	0,890	0,730	0,818	0,890	0,730
Perceived Threat CASH/CARD	0,639	0,884	0,719	0.699	0,884	0,719
Relative Advantage CASH/CARD	0,758	0,891	0,803	0,711	0,872	0,774
Social Influence	0,893	0,919	0,792	0,893	0,911	0,775
Intention to Use MP VS CASH/CARD	0,926	0,953	0,872	0,920	0,949	0,862

**B.13 Survey Under Review Paper**

Usefulness (formative) (Skala: Stimme nicht zu 1 – Stimme zu 5)	
U1	Ich spare durch das eigene Scannen Zeit.
U2	Ich habe einen besseren Überblick über meinen Warenkorb.
U3	Ich habe einen besseren Überblick über meine Ausgaben.
Usefulness (reflective) (Skala: Stimme nicht zu 1 – Stimme zu 5)	
U5	Das Einkaufen mit diesem System ist vorteilhaft.
U6	Das Einkaufen mit diesem System stelle ich mir grundsätzlich nützlich vor.
U7	Die Benutzung dieses Systems macht meinen Einkauf einfacher.
U8	Das Einkaufen mit diesem Einkauf ist effizient für mich
Fun (Skala: Stimme nicht zu 1 – Stimme zu 5)	
F1	Ich glaube, der Einkauf mit diesem System würde mir Spaß machen.
F2	Das Einkaufen mit diesem System stelle ich mir interessant vor.
F3	Der Einkauf mit einem Scanner wäre abwechslungsreich.
Trust (Skala: Stimme nicht zu 1 – Stimme zu 5)	
T1	Ich vertraue generell der Technologie dieses Systems.
T2	Ich habe keine Angst, dass das System nicht sicher ist.
T3	Ich habe generell das Gefühl, dass ich diesem System vertrauen kann.
Intention to Use (Skala: Stimme nicht zu 1 – Stimme zu 5)	
IN1	Ich möchte dieses System, wenn möglich immer nutzen.
IN2	Ich möchte auf solch ein System nicht verzichten.
IN3	Ich kann mir vorstellen, den „normalen“ Einkauf durch das System zu ersetzen.

**B.14 Item Loading Under Review Paper**

Usefulness (formative)	Outer Loadings	Load- ing/Weight	Significance (Bootstrap- ping)
U1	0,838	0,504	***
U2	0,869	0,279	***
U3	0,827	0,396	***
Usefulness (reflective)			
U5	0,923	-	***
U6	0,926	-	***
U7	0,923	-	***
U8	0,898	-	***
Fun			
F1	0,910	-	***
F2	0,936	-	***
F3	0,853	-	***
Trust			
T1	0,911	-	***
T2	0,865	-	***
T3	0,930	-	***
Intention to Use			
IN1	0,901	-	***
IN2	0,826	-	***
IN3	0,841	-	***
ns = not significant; *p<0.10; **p<0.05; ***p<0.01			

**B.15 Survey WI 2022**

Stickiness Intention (Skala: Stimme gar nicht zu 1 – Stimme völlig zu 5)	
ST1	Ich könnte mir vorstellen, Livestream-Shopping-Übertragungen häufiger zu besuchen.
ST2	Ich könnte mir vorstellen, länger bei Livestream-Shopping-Übertragungen zu sein, als auf einer herkömmlichen Shopping Website.
ST3	Ich beabsichtige, beim Livestream-Shopping über die gesamte Übertragungsdauer anwesend zu sein (z.B. 45min- 90min).
Two-Way Communication (Skala: Stimme gar nicht zu 1 – Stimme völlig zu 5)	
TW1	Ich denke es ist wichtig, dass die HändlerInnen effektiv Feedback einholen, beispielsweise, ob das Produkt gut in die Kamera gehalten wird.
TW2	Ich denke es ist wichtig, dass die HändlerInnen den BesucherInnen das Gefühl vermittelt, ihnen zuzuhören.
TW3	Ich denke es ist wichtig, dass die VerkäuferInnen die wechselseitige Kommunikation zwischen den KundInnen und sich selbst erleichtern.
TW4	Ich denke es ist wichtig, dass die HändlerInnen dem KundInnen die Möglichkeit geben mit ihm in Kontakt zu treten (via Chat).
Synchronicity (Skala: Stimme gar nicht zu 1 – Stimme völlig zu 5)	
SZ1	Ich denke es ist wichtig, dass die HändlerInnen den Erhalt von Nachfragen zum Produkt in der Livestream Shopping Übertragung den fragenden KundInnen schnell signalisieren.
SZ2	Ich denke es ist wichtig, dass die HändlerInnen schnell auf die Nachfragen der KundInnen reagieren.
SZ3	Ich denke es ist wichtig, dass die HändlerInnen ohne Verzögerung die nachgefragten Informationen der KundInnen bereitstellen.
SZ4	Ich denke es ist wichtig, dass die KundInnen das Gefühl haben, dass die HändlerInnen alle notwendigen Informationen sofort zur Verfügung stellen (z.B. Größe, Produktmaterial, Preis, ggf. Lieferkosten).
Social Presence (Skala: Stimme gar nicht zu 1 – Stimme völlig zu 5)	
SP1	Mir ist wichtig, dass die HändlerInnen beim Livestream-Shopping ein Gefühl des menschlichen Kontakts vermitteln.
SP2	Mir ist wichtig, dass die HändlerInnen beim Livestream-Shopping ein Gefühl der Persönlichkeit vermitteln.
SP3	Mir ist wichtig, dass die HändlerInnen beim Livestream-Shopping ein Gefühl der Geselligkeit vermitteln.
SP4	Mir ist wichtig, dass die HändlerInnen beim Livestream-Shopping ein Gefühl der menschlichen Wärme vermitteln.
Functional Values (Skala: Stimme gar nicht zu 1 – Stimme völlig zu 5)	
FV1	Die bereitgestellten Informationen im Livestream-Shopping wären für meine Kaufentscheidung hilfreich.
FV2	Livestream-Shopping würde es mir erleichtern Produkte zu visualisieren.
FV3	Livestream-Shopping ist nützlich, um schneller Produktinformation zu erhalten.

FV4	Durch die Nutzung von Livestream-Shopping könnte ich Zeit einsparen beim Kauf von Produkten (z.B. ich muss nicht Extra in die Stadt gehen oder auf der Website nach Informationen suchen).
FV5	Livestream-Shopping würde mir die Möglichkeit geben, angesagte Produkte zu kaufen.
Hedonic Value (Skala: Stimme gar nicht zu 1 – Stimme völlig zu 5)	
HV1	Ich denke, die Nutzung von Livestream-Shopping sollte unterhaltsam sein.
HV2	Ich denke, die Nutzung von Livestream-Shopping sollte abenteuerlich sein (z.B. um neue Produkte zu entdecken oder Fashiontrends).
HV3	Ich denke, die Nutzung von Livestream-Shopping sollte entspannend sein (z.B. um dem Alltag zu entfliehen).
HV4	Ich denke, die Nutzung von Livestream-Shopping sollte aufregend sein (z.B. Teilnahme an Gewinnspielen).
HV5	Ich denke, die Nutzung von Livestream-Shopping sollte mit Aktivitäten verknüpft sein (z.B. Flash Sales, Werbegeschenke, Rabattaktionen).



**B.16 Items Loading WI 2022**

Stickiness Intention	Outer Loadings	Significance (Bootstrapping)
ST1	0.883	***
ST2	0.876	***
ST3	0.804	***
<b>Two-Way Communication</b>		
TW1	0.769	***
TW2	0.866	***
TW3	0.865	***
TW4	0.823	***
<b>Synchronicity</b>		
SZ1	0.845	***
SZ2	0.884	***
SZ3	0.777	***
SZ4	0.827	***
<b>Social Presence</b>		
SP1	0.918	***
SP2	0.911	***
SP3	0.873	***
SP4	0.890	***
<b>Functional Values</b>		
FV1	0.809	***
FV2	0.794	***
FV3	0.729	***
FV4	0.754	***
FV5	0.785	***
<b>Hedonic Value</b>		
HV1	0.779	***
HV2	0.774	***
HV3	0.754	***
HV4	0.704	***
HV5	0.732	***
ns = not significant; *p<0.10; **p<0.05; ***p<0.01		

**B.17 Correlations WI 2022**

		Korrelationen						
		Functional Value	Hedonic Value	Social Presence	Stickness	syn	two-way	
Spearman-Rho	Functional Value	Korrelationskoeffizient	1,000	,446**	,417**	,528**	,241**	,379**
		Sig. (2-seitig)	.	<,001	<,001	<,001	<,001	<,001
		N	256	256	256	256	256	256
	Hedonic Value	Korrelationskoeffizient	,446**	1,000	,512**	,247**	,291**	,416**
		Sig. (2-seitig)	<,001	.	<,001	<,001	<,001	<,001
		N	256	256	256	256	256	256
	Social Presence	Korrelationskoeffizient	,417**	,512**	1,000	,398**	,295**	,509**
		Sig. (2-seitig)	<,001	<,001	.	<,001	<,001	<,001
		N	256	256	256	256	256	256
	Stickness	Korrelationskoeffizient	,528**	,247**	,398**	1,000	,146*	,164**
		Sig. (2-seitig)	<,001	<,001	<,001	.	,020	,009
		N	256	256	256	256	256	256
	syn	Korrelationskoeffizient	,241**	,291**	,295**	,146*	1,000	,551**
		Sig. (2-seitig)	<,001	<,001	<,001	,020	.	<,001
		N	256	256	256	256	256	256
	two-way	Korrelationskoeffizient	,379**	,416**	,509**	,164**	,551**	1,000
		Sig. (2-seitig)	<,001	<,001	<,001	,009	<,001	.
		N	256	256	256	256	256	256

\*\* Die Korrelation ist auf dem 0,01 Niveau signifikant (zweiseitig).

\* Die Korrelation ist auf dem 0,05 Niveau signifikant (zweiseitig).

**B.18 Test for Normal Distribution BIS 2021**

		Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
		Statistik	df	Signif- ikanz	Statistik	df	Signifikanz
Attitude	A1	,275	33	<,001	,803	33	<,001
	A2	,210	33	<,001	,854	33	<,001
	A3	,295	33	<,001	,746	33	<,001
	A4	,238	33	<,001	,874	33	,001
Int. Digital Services	ID1	,240	33	<,001	,902	33	,006
	ID2	,202	33	,001	,880	33	,002
	ID3	,183	33	,007	,891	33	,003
Int. Digital Sales	IS1	,200	33	,002	,891	33	,003
	IS2	,223	33	<,001	,831	33	<,001
	IS3	,361	33	<,001	,703	33	<,001
Int. Digital Admin	IA1	,195	33	,003	,897	33	,004
	IA2	,246	33	<,001	,827	33	<,001
	IA3	,294	33	<,001	,765	33	<,001
Int. Digital Marketing	IM1	,271	33	<,001	,867	33	<,001
	IM2	,221	33	<,001	,867	33	<,001
	IM3	,184	33	,006	,874	33	,001
Comp. Pressure	PC1	,198	33	,002	,907	33	,008
	PC2	,206	33	,001	,905	33	,007
	PC3	,321	33	<,001	,715	33	<,001

Society Pressure	SP1	,320	33	<,001	,765	33	<,001
	SP2	,157	33	,039	,920	33	,018
	SP3	,200	33	,002	,872	33	,001
Avail. Infra structure	AI1	,273	33	<,001	,881	33	,002
	AI2	,270	33	<,001	,870	33	<,001
	AI3	,316	33	<,001	,827	33	<,001
Avail. HR	HR1	,196	33	,002	,897	33	,004
	HR2	,229	33	<,001	,873	33	,001
	HR3	,269	33	<,001	,785	33	<,001
Customer Pressure	CP1	,321	33	<,001	,792	33	<,001
	CP2	,277	33	<,001	,863	33	<,001
	CP3	,227	33	<,001	,836	33	<,001
CU Digital Admin	CA1	,198	33	,002	,908	33	,009
	CA2	,235	33	<,001	,834	33	<,001
	CA3	,311	33	<,001	,727	33	<,001
CU Digital Sales	CS1	,324	33	<,001	,757	33	<,001
	CS2	,392	33	<,001	,648	33	<,001
	CS3	,459	33	<,001	,510	33	<,001
CU Digital Marketing	CM1	,177	33	,010	,915	33	,014
	CM2	,182	33	,007	,894	33	,004
	CM3	,338	33	<,001	,730	33	<,001
CU Digital Services	CD1	,214	33	<,001	,863	33	<,001
	CD2	,219	33	<,001	,880	33	,002
	CD3	,158	33	,035	,892	33	,003

a. Significance correction according to Lilliefors

**B.19 Test for Normal Distribution ICIS 2020 Inexperience Card**

		Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
		Statistik	df	Signifikanz	Statistik	df	Signifikanz
Data Threats	DT1	,286	128	<,001	,847	128	<,001
	DT2	,282	128	<,001	,821	128	<,001
	DT3	,271	128	<,001	,865	128	<,001
	DT4	,260	128	<,001	,832	128	<,001
Fin. Threats	FT1	,256	128	<,001	,888	128	<,001
	FT2	,249	128	<,001	,886	128	<,001
	FT3	,221	128	<,001	,892	128	<,001
MP Adoption	MP1	,231	128	<,001	,880	128	<,001
	MP2	,187	128	<,001	,876	128	<,001
	MP3	,198	128	<,001	,878	128	<,001
Perc. Threats	PCT1	,206	128	<,001	,902	128	<,001
	PCT2	,277	128	<,001	,874	128	<,001
	PCT3	,226	128	<,001	,894	128	<,001
Perfom. Threats	PFT1	,215	128	<,001	,903	128	<,001
	PFT2	,225	128	<,001	,890	128	<,001
	PFT3	,197	128	<,001	,900	128	<,001
Rel. Adv.	RA2	,265	128	<,001	,760	128	<,001
	RA4	,209	128	<,001	,880	128	<,001
	RA5	,158	128	<,001	,910	128	<,001
	RA7	,271	128	<,001	,836	128	<,001
Self-Efficacy	SE1	,211	128	<,001	,883	128	<,001
	SE2	,251	128	<,001	,783	128	<,001
	SE3	,267	128	<,001	,773	128	<,001
Social Influence	SI1	,273	128	<,001	,801	128	<,001
	SI2	,259	128	<,001	,821	128	<,001
	SI4	,185	128	<,001	,882	128	<,001

a. Significance correction according to Lilliefors

**B.20 Test for Normal Distribution ICIS 2020 Inexperience Cash**

		Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
		Statistik	df	Signif- ikanz	Statistik	df	Signifikanz
Data Threats	DT1	,286	128	<,001	,847	128	<,001
	DT2	,282	128	<,001	,821	128	<,001
	DT3	,271	128	<,001	,865	128	<,001
	DT4	,260	128	<,001	,832	128	<,001
Fin. Threats	FT1	,256	128	<,001	,888	128	<,001
	FT2	,249	128	<,001	,886	128	<,001
	FT3	,221	128	<,001	,892	128	<,001
MP Adoption	MP1	,231	128	<,001	,880	128	<,001
	MP2	,187	128	<,001	,876	128	<,001
	MP3	,198	128	<,001	,878	128	<,001
Perc. Threats	PCT1	,206	128	<,001	,902	128	<,001
	PCT2	,277	128	<,001	,874	128	<,001
	PCT3	,226	128	<,001	,894	128	<,001
Perfom. Threats	PFT1	,215	128	<,001	,903	128	<,001
	PFT2	,225	128	<,001	,890	128	<,001
	PFT3	,197	128	<,001	,900	128	<,001
Rel. Adv.	RA1	,279	128	<,001	,798	128	<,001
	RA2	,265	128	<,001	,760	128	<,001
	RA3	,233	128	<,001	,885	128	<,001
	RA7	,271	128	<,001	,836	128	<,001
Self-Efficacy	SE1	,211	128	<,001	,883	128	<,001
	SE2	,251	128	<,001	,783	128	<,001
	SE3	,267	128	<,001	,773	128	<,001
Social Influence	SI1	,273	128	<,001	,801	128	<,001
	SI2	,259	128	<,001	,821	128	<,001
	SI4	,185	128	<,001	,882	128	<,001

a. Significance correction according to Lilliefors

**B.21 Test for Normal Distribution ICIS 2020 Experience Card**

		Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
		Statistik	df	Signifikanz	Statistik	df	Signifikanz
Cont. Intention	CI1	,251	71	<,001	,794	71	<,001
	CI2	,235	71	<,001	,859	71	<,001
	CI3res	,255	71	<,001	,801	71	<,001
Fin. Threats	DT1	,254	71	<,001	,881	71	<,001
	DT2	,189	71	<,001	,895	71	<,001
	DT3	,208	71	<,001	,899	71	<,001
	DT4	,276	71	<,001	,869	71	<,001
Fin. Threats	FT1	,197	71	<,001	,869	71	<,001
	FT2	,235	71	<,001	,824	71	<,001
	FT3	,232	71	<,001	,885	71	<,001
Perc. Threats	PCT1	,210	71	<,001	,893	71	<,001
	PCT2	,238	71	<,001	,850	71	<,001
	PCT3	,232	71	<,001	,848	71	<,001
Perf. Th.	PFT1	,193	71	<,001	,884	71	<,001
	PFT2	,168	71	<,001	,905	71	<,001
Rel. Adv.	RA2	,339	71	<,001	,693	71	<,001
	RA4	,262	71	<,001	,813	71	<,001
	RA5	,163	71	<,001	,888	71	<,001
	RA7	,259	71	<,001	,779	71	<,001
Self-Efficacy	SE1	,268	71	<,001	,797	71	<,001
	SE2	,361	71	<,001	,715	71	<,001
	SE3	,359	71	<,001	,684	71	<,001
Social Influence	SI1	,186	71	<,001	,895	71	<,001
	SI2	,187	71	<,001	,909	71	<,001
	SI3	,201	71	<,001	,906	71	<,001
	SI4	,218	71	<,001	,904	71	<,001

a. Significance correction according to Lilliefors

**B.22 Test for Normal Distribution ICIS 2020 Experience Cash**

		Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
		Statistik	df	Signifikanz	Statistik	df	Signifikanz
Cont. Intention	CI1	,251	71	<,001	,794	71	<,001
	CI2	,235	71	<,001	,859	71	<,001
	CI3res	,255	71	<,001	,801	71	<,001
Fin. Threats	DT1	,254	71	<,001	,881	71	<,001
	DT2	,189	71	<,001	,895	71	<,001
	DT3	,208	71	<,001	,899	71	<,001
	DT4	,276	71	<,001	,869	71	<,001
Fin. Threats	FT1	,197	71	<,001	,869	71	<,001
	FT2	,235	71	<,001	,824	71	<,001
	FT3	,232	71	<,001	,885	71	<,001
Perc. Threats	PCT1	,210	71	<,001	,893	71	<,001
	PCT2	,238	71	<,001	,850	71	<,001
	PCT3	,232	71	<,001	,848	71	<,001
Perf. Th.	PFT1	,193	71	<,001	,884	71	<,001
	PFT2	,168	71	<,001	,905	71	<,001
Rel. Adv.	RA1	,343	71	<,001	,700	71	<,001
	RA2	,339	71	<,001	,693	71	<,001
	RA3	,224	71	<,001	,829	71	<,001
	RA7	,259	71	<,001	,779	71	<,001
Self-Efficacy	SE1	,268	71	<,001	,797	71	<,001
	SE2	,361	71	<,001	,715	71	<,001
	SE3	,359	71	<,001	,684	71	<,001
Social Influence	SI1	,186	71	<,001	,895	71	<,001
	SI2	,187	71	<,001	,909	71	<,001
	SI3	,201	71	<,001	,906	71	<,001
	SI4	,218	71	<,001	,904	71	<,001

a. Significance correction according to Lilliefors

**B.23 Test for Normal Distribution BIR 2022 Card**

		Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
		Statistik	df	Signifikanz	Statistik	df	Signifikanz
Comp.	COM1	,239	257	<,001	,887	257	<,001
	COM2	,242	257	<,001	,884	257	<,001
	COM3	,273	257	<,001	,860	257	<,001
Data Threat	DT1	,280	257	<,001	,864	257	<,001
	DT2	,258	257	<,001	,885	257	<,001
	DT3	,208	257	<,001	,899	257	<,001
Intention to use	INT1	,230	257	<,001	,889	257	<,001
	INT2	,161	257	<,001	,910	257	<,001
	INT3	,157	257	<,001	,908	257	<,001
Perceived Switching Cost	PC1	,231	257	<,001	,884	257	<,001
	PC2	,219	257	<,001	,904	257	<,001
	PC3	,239	257	<,001	,895	257	<,001
Rel. Adv.	R1	,223	257	<,001	,889	257	<,001
	R5	,237	257	<,001	,891	257	<,001
Perceived Threat	PT1	,263	257	<,001	,859	257	<,001
	PT2	,239	257	<,001	,888	257	<,001
	PT3	,220	257	<,001	,893	257	<,001
Social Influence	S3	,273	257	<,001	,810	257	<,001
	S4	,316	257	<,001	,769	257	<,001
	S5	,346	257	<,001	,739	257	<,001

a. Significance correction according to Lilliefors



**B.24 Test for Normal Distribution BIR 2022 Cash**

		Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
		Statistik	df	Signifikanz	Statistik	df	Signifikanz
Comp.	COM1	,239	257	<,001	,887	257	<,001
	COM2	,242	257	<,001	,884	257	<,001
	COM3	,273	257	<,001	,860	257	<,001
Data Threat	DT1	,298	257	<,001	,776	257	<,001
	DT2	,293	257	<,001	,784	257	<,001
	DT3	,291	257	<,001	,729	257	<,001
Intention to use	INT1	,230	257	<,001	,889	257	<,001
	INT3	,156	257	<,001	,901	257	<,001
	INT2	,161	257	<,001	,910	257	<,001
Perceived Switching Cost	PC1	,231	257	<,001	,884	257	<,001
	PC2	,219	257	<,001	,904	257	<,001
	PC3	,239	257	<,001	,895	257	<,001
Rel. Adv.	R1	,253	257	<,001	,784	257	<,001
	R5	,269	257	<,001	,841	257	<,001
Perceived Threat	PT1	,263	257	<,001	,859	257	<,001
	PT2	,239	257	<,001	,888	257	<,001
	PT3	,220	257	<,001	,893	257	<,001
Social Influence	S3	,273	257	<,001	,810	257	<,001
	S4	,316	257	<,001	,769	257	<,001
	S5	,346	257	<,001	,739	257	<,001

a. Significance correction according to Lilliefors

**B.25 Test for Normal Distribution Under Review Paper**

		Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
		Statistik	df	Signifikanz	Statistik	df	Signifikanz
Intention	IN1	,169	201	<,001	,893	201	<,001
	IN2	,181	201	<,001	,886	201	<,001
	IN3	,209	201	<,001	,897	201	<,001
Useful. formativ	U1	,254	201	<,001	,844	201	<,001
	U2	,220	201	<,001	,855	201	<,001
	U3	,231	201	<,001	,853	201	<,001
Usefulness	U5	,263	201	<,001	,827	201	<,001
	U6	,256	201	<,001	,835	201	<,001
	U7	,275	201	<,001	,836	201	<,001
	U8	,253	201	<,001	,871	201	<,001
Fun	F1	,274	201	<,001	,811	201	<,001
	F2	,261	201	<,001	,823	201	<,001
	F3	,262	201	<,001	,851	201	<,001
Trust	T1	,263	201	<,001	,867	201	<,001
	T2	,253	201	<,001	,884	201	<,001
	T3	,249	201	<,001	,890	201	<,001

a. Significance correction according to Lilliefors

**B.26 Test for Normal Distribution WI 2022**

		Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
		Statistik	df	Signifikanz	Statistik	df	Signifikanz
Stickiness Intention	ST1	,231	256	<,001	,849	256	<,001
	ST2	,228	256	<,001	,835	256	<,001
	ST3	,315	256	<,001	,720	256	<,001
Synchronicity	SZ1	,298	256	<,001	,820	256	<,001
	SZ2	,283	256	<,001	,794	256	<,001
	SZ3	,295	256	<,001	,848	256	<,001
	SZ4	,267	256	<,001	,769	256	<,001
Social Presence	SP1	,308	256	<,001	,811	256	<,001
	SP2	,303	256	<,001	,822	256	<,001
	SP3	,223	256	<,001	,889	256	<,001
	SP4	,234	256	<,001	,883	256	<,001
Functional Values	FV1	,323	256	<,001	,824	256	<,001
	FV2	,303	256	<,001	,833	256	<,001
	FV3	,220	256	<,001	,898	256	<,001
	FV4	,180	256	<,001	,910	256	<,001
	FV5	,229	256	<,001	,899	256	<,001
Hedonic Value	HV1	,257	256	<,001	,863	256	<,001
	HV2	,203	256	<,001	,909	256	<,001
	HV3	,242	256	<,001	,885	256	<,001
	HV4	,170	256	<,001	,914	256	<,001
	HV5	,219	256	<,001	,900	256	<,001
Two-Way Commu- nication	TW1	,299	256	<,001	,781	256	<,001
	TW2	,285	256	<,001	,799	256	<,001
	TW3	,295	256	<,001	,796	256	<,001
	TW4	,278	256	<,001	,755	256	<,001

a. Significance correction according to Lilliefors

**B.27 Blindfolding and PLS Predict Test for Endogenous Constructs**

<b>Paper</b>	<b>Endogenous Construct</b>	<b>Blindfolding Q<sup>2</sup></b>	<b>PLS Predict Q<sup>2</sup></b>
BIS 2021	Attitude	0,407	0,701
	Intention To Use Digital Admin	0,164	0,287
	Intention To Use Digital Marketing	0,103	0,153
	Intention To Use Digital Sales	0,088	0,175
	Intention To Use Digital Services	0,105	0,187
	Current Use Digital Admin	0,281	0,211
	Current Use Digital Marketing	0,314	0,126
	Current Use Digital Sales	0,239	0,127
	Current Use Digital Services	0,266	0,154
ICIS 2020 Inexperienced CARD	Intention to Use	0,463	0,510
	Perceived Threat	0,419	0,556
ICIS 2020 Inexperienced CASH	Intention to Use	0,448	0,481
	Perceived Threat	0,419	0,563
ICIS 2020 Experienced CARD	Contiuanance Intention To Use	0,318	0,460
	Perceived Threat	0,487	0,591
ICIS 2020 Experienced CASH	Contiuanance Intention To Use	0,330	0,458
	Perceived Threat	0,487	0,591
BIR 2022 CASH	Intention to Use MP vs. CASH	0,548	0,608
	Perceived Threat	0,289	0,406
BIR 2022 CARD	Intention to Use MP vs. CARD	0,545	0,626
	Perceived Threat	0,319	0,427
Under Review Paper	Intention to Use	0,410	0,513
	Formative_Perceived Usefulness	0,370	0,507
	Reflektiv_Perceived Usefulness	0,546	0,628
WI 2022	Functional Value	0,157	0,271
	Hedonic Value	0,143	0,272
	Social Presence	0,239	0,297
	Stickness Intention of LSS	0,216	0,048

All Q<sup>2</sup> values are clearly above the required minimum of 0 (Chin 1998b, p. 318; Hair et al. 2017, p. 174)

**C Appendix for Chapter 4****C.1 Code Book WI 2019**

Items	Mögliche Codierung
<b>Kategorisierung LSP</b>	
Name LSP	Eingabe Name
Aktiv	Ja/Nein
Erfüllt LSP Definition	Ja/Nein
Transaktionfunktionen	Ja/Nein
Affiliatefunktionen	Ja/Nein
Produkt Request Funktionen	Ja/Nein
Produkt Katalog Funktionen	Ja/Nein
Store Locator Funktionen	Ja/Nein
Ausgabe des Plattformstypen	Automatische Ausgabe
Inhaber geführte Händler	Ja/Nein
Ketten / Franchise	Ja/Nein
Zielgruppe	Lokal / Überregional / Beides
Lieferradius	Stadt / Land / weltweit
<b>Web-Technologien</b>	
Responsive / Mobile Shop	Ja/Nein
Händler App	Ja/Nein
Kunden App	Ja/Nein
<b>Location-Based Services (Informationsdienste)</b>	
Standortab. Produktberatung	Ja/Nein
Barcode Scanner	Ja/Nein
Standortab. Karte mit Standorten der nächsten Geschäfte	Ja/Nein
Standortab. Karte mit nächst gelegenen Produkten (Verfügbarkeitssuche)	Ja/Nein
<b>Location-Based Services (Navigationsdienste)</b>	
In-Store Navigation	Ja/Nein
Shopping Touren	Ja/Nein
Outdoor Navigation	Ja/Nein
<b>Location-Based Services (Payment)</b>	
Self-Checkout	Ja/Nein
<b>Location-Based Services (Kommunikationsdienste)</b>	
Standortab. Beratungsdienste (Berater)	Ja/Nein

Standortab. Werbung	Ja/Nein
Standortab. Rabatte	Ja/Nein
Standort Abhängige Gewinnspiele	Ja/Nein
Standortab. Loyalty Programme	Ja/Nein
Location-Enabled Services (Informationsdienste)	
Karte mit Locations	Ja/Nein
Lokale Nachrichten	Ja/Nein
Lokaler Eventkalender	Ja/Nein
Produktverfügbarkeit Stationär	Ja/Nein
Öffnungszeiten der Ladenlokale	Ja/Nein
Händler Kontaktdaten	Ja/Nein
Location-Enabled Services (Logistik & Lieferdienste)	
Same Day Delivery	Ja/Nein
Same Hour Delivery	Ja/Nein
Click & Return	Ja/Nein
Click & Collect	Ja/Nein
Reserve & Collect	Ja/Nein
Location-Enabled Services (Kommunikationsdienste)	
Beratung / Support @ Home	Ja/Nein
Kundeneinbindung (Feedback)	Ja/Nein
Kundeneinbindung (Community)	Ja/Nein
Lokale Kundenkarte	Ja/Nein
Face 2 Face Beratung (Support @ Store)	Ja/Nein
Location-Independent Services (Empfehlungssysteme)	
Weitere Anbieter dieses Produktes	Ja/Nein
Weiterer Händler in der Stadt	Ja/Nein
Weitere Produkte dieses Händlers	Ja/Nein
Bewertungen / Rezensionen	Ja/Nein
Fragen / Antworten	Ja/Nein
Beliebte Artikel	Ja/Nein
Produkt Empfehlungen	Ja/Nein
Zuletzt angesehene Artikel	Ja/Nein
Ähnliche Artikel des Händlers (Intrashop Empfehlungen)	Ja/Nein
Ähnliche Artikel auf der Plattform (Intershop Empfehlungen)	Ja/Nein
Kunden, dieses Produkt angesehen haben, haben auch angesehen	Ja/Nein

Kunden die dieses Produkt kauften, kauften auch...	Ja/Nein
<b>Location-Independent Services (Communication and Support Part 1)</b>	
Support Online (Chat)	Ja/Nein
Support Hotline	Ja/Nein
Support via Email	Ja/Nein
Shopping Assistent (Service)	Ja/Nein
<b>Location-Independent Services (Logistics)</b>	
Produktverfügbarkeit Online	Ja/Nein
Wunschlieferdatum	Ja/Nein
Lieferung 24 Std	Ja/Nein
Kostenfreier Versand	Ja/Nein
Kostenfreier Rückversand	Ja/Nein
Versand Flatrate	Ja/Nein
<b>Location-Independent Services (Payment &amp; Billing)</b>	
Rechnung	Ja/Nein
Kreditkarte	Ja/Nein
EC / Lastschrift	Ja/Nein
Sofortüberweisung	Ja/Nein
Paypal	Ja/Nein
PayDirect	Ja/Nein
BitCoin	Ja/Nein
Gutschein Einlösen	Ja/Nein
<b>Location-Independent Services (Communication and Support Part 2)</b>	
Unternehmensblog	Ja/Nein
Newsletter	Ja/Nein
Facebook	Ja/Nein
Twitter	Ja/Nein
Pinterest	Ja/Nein
Google+	Ja/Nein
WhatsApp	Ja/Nein
Youtube	Ja/Nein
LinkedIN	Ja/Nein
Instagramm	Ja/Nein
We only consider analysed items in the publication and not the whole code book which consist of 116 items (e.g., Business model, shopping cart, platform architecture, product display)	

**C.2 Code Book Wi 2021**

Items	Mögliche Codierung
<b>Kategorisierung LSP</b>	
Name LSP	Eingabe Name
Aktiv	Ja/Nein
Erfüllt LSP Definition	Ja/Nein
Transaktionfunktionen	Ja/Nein
Affiliatefunktionen	Ja/Nein
Produkt Request Funktionen	Ja/Nein
Produkt Katalog Funktionen	Ja/Nein
Store Locator Funktionen	Ja/Nein
Ausgabe des Plattformstypen	Automatische Ausgabe
Inhaber geführte Händler	Ja/Nein
Ketten / Franchise	Ja/Nein
Zielgruppe	Lokal / Überregional / Beides
Lieferradius	Stadt / Land / weltweit
Standorte der LSP	Lokal, National, International
<b>Web-Technologien</b>	
Responsive / Mobile Shop	Ja/Nein
Händler App	Ja/Nein
Kunden App	Ja/Nein
<b>Location-Based Services (Informationsdienste)</b>	
Standortab. Produktberatung	Ja/Nein
Barcode Scanner	Ja/Nein
Standortab. Karte mit Standorten der nächsten Geschäfte	Ja/Nein
Standortab. Karte mit nächst gelegenen Produkten (Verfügbarkeitssuche)	Ja/Nein
<b>Location-Based Services (Navigationsdienste)</b>	
In-Store Navigation	Ja/Nein
Shopping Touren	Ja/Nein
Outdoor Navigation	Ja/Nein
<b>Location-Based Services (Payment)</b>	
Self-Checkout	Ja/Nein
<b>Location-Based Services (Kommunikationsdienste)</b>	
Standortab. Beratungsdienste (Berater)	Ja/Nein
Standortab. Werbung	Ja/Nein



Standortab. Rabatte	Ja/Nein
Standort Abhängige Gewinnspiele	Ja/Nein
Standortab. Loyalty Programme	Ja/Nein
Location-Enabled Services (Informationsdienste)	
Karte mit Locations	Ja/Nein
Lokale Nachrichten	Ja/Nein
Lokaler Eventkalender	Ja/Nein
Produktverfügbarkeit Stationär	Ja/Nein
Öffnungszeiten der Ladenlokale	Ja/Nein
Händler Kontaktdaten	Ja/Nein
Location-Enabled Services (Logistik & Lieferdienste)	
Same Day Delivery	Ja/Nein
Same Hour Delivery	Ja/Nein
Click & Return	Ja/Nein
Click & Collect	Ja/Nein
Reserve & Collect	Ja/Nein
Location-Enabled Services (Kommunikationsdienste)	
Beratung / Support @ Home	Ja/Nein
Kundeneinbindung (Feedback)	Ja/Nein
Kundeneinbindung (Community)	Ja/Nein
Lokale Kundenkarte	Ja/Nein
Face 2 Face Beratung (Support @ Store)	Ja/Nein
Location-Independent Services (Empfehlungssysteme)	
Weitere Anbieter dieses Produktes	Ja/Nein
Weiterer Händler in der Stadt	Ja/Nein
Weitere Produkte dieses Händlers	Ja/Nein
Bewertungen / Rezensionen	Ja/Nein
Fragen / Antworten	Ja/Nein
Beliebte Artikel	Ja/Nein
Produkt Empfehlungen	Ja/Nein
Zuletzt angesehene Artikel	Ja/Nein
Ähnliche Artikel des Händlers (Intrashop Empfehlungen)	Ja/Nein
Ähnliche Artikel auf der Plattform (Intershop Empfehlungen)	Ja/Nein
Kunden, dieses Produkt angesehen haben, haben auch angesehen	Ja/Nein
Kunden die dieses Produkt kauften, kauften auch...	Ja/Nein

Location-Independent Services (Communication and Support Part 1)	
Support Online (Chat)	Ja/Nein
Support Hotline	Ja/Nein
Support via Email	Ja/Nein
Shopping Assistent (Service)	Ja/Nein
Location-Independent Services (Logistics)	
Produktverfügbarkeit Online	Ja/Nein
Wunschlieferdatum	Ja/Nein
Lieferung 24 Std	Ja/Nein
Kostenfreier Versand	Ja/Nein
Kostenfreier Rückversand	Ja/Nein
Versand Flatrate	Ja/Nein
Location-Independent Services (Payment & Billing)	
Rechnung	Ja/Nein
Kreditkarte	Ja/Nein
EC / Lastschrift	Ja/Nein
Sofortüberweisung	Ja/Nein
Paypal	Ja/Nein
PayDirect	Ja/Nein
BitCoin	Ja/Nein
Klarna	Ja/Nein
Gutschein Einlösen	Ja/Nein
Location-Independent Services (Communication and Support Part 2)	
Unternehmensblog	Ja/Nein
Newsletter	Ja/Nein
Facebook	Ja/Nein
Twitter	Ja/Nein
Pinterest	Ja/Nein
WhatsApp	Ja/Nein
Youtube	Ja/Nein
LinkedIN	Ja/Nein
Instagramm	Ja/Nein
We only consider analysed items in the publication and not the whole code book which consist of 121 items (e.g., Business model, shopping cart, platform architecture, product display)	

### C.3 Telephone Interview Survey WI 2021

Reasons for the Chosen LSP Type and the Implemented Services	
1	Existierte die LSP schon vor der Coronakrise? ( <b>offene</b> Frage):
2	Wer hat die Idee einer LSP initiiert? ( <b>offene</b> Frage):
3	Wer hat die Idee umgesetzt? ( <b>offene</b> Frage):
4	Ist ein zukünftiger Betreiberwechsel geplant? ( <b>offene</b> Frage):
5	Ist ein zukünftiger Kümmerer vor Ort (z.B. Servicefee) oder ein Team als Ansprechpartner geplant? ( <b>offene</b> Frage):
6	Welche Zielstellung verfolgt die LSP: Sie soll das kurzfristige Überleben des lokalen Handels während der Coronakrise sichern? ( <b>Skala</b> : Stimme eher nicht zu – Stimme völlig zu)
7	Welche Zielstellung verfolgt die LSP: Sie soll die online Sichtbarkeit des lokalen Handels auch nach Corona stärken? ( <b>Skala</b> : Stimme eher nicht zu – Stimme völlig zu)
8	Welche Zielstellung verfolgt die LSP: Sie soll die Abwanderung der Kunden an große online Händler generell verhindern? ( <b>Skala</b> : Stimme eher nicht zu – Stimme völlig zu)
9	Welche Zielstellung verfolgt die LSP: Sie soll den Umsatz generieren (parallel) zum stationären Handel? ( <b>Skala</b> : Stimme eher nicht zu – Stimme völlig zu)
10	-Weitere Anmerkungen durch Befragte (Bzgl. der Zielstellung) ( <b>offene</b> Fragen):
Experiences and new developments during the corona crisis	
10	Der Umsetzungszeitraum vom ersten Gespräch bis zur Onlineschaltung für den aktuellen Stand betrug: ( <b>offene</b> Frage):
11	Welche Schwierigkeiten gab es bei der Umsetzung ( <b>Skala</b> : Sehr Einfach – Sehr Schwer): -Geeignete Plattforminfrastruktur zu finden? -Finanzierung der Plattform-infrastruktur? -Händler Gewinnung? -Erstellung des Content durch die Händler? -Erstellung des Content für die Händler (Impiziert die Informationsbeschaffung)? -Aufbau/Erweiterung der Logistik für die Zustellung der Produkte? -Weitere Anmerkungen durch Befragte bzgl. Schwierigkeiten
12	-Wurde während der Coronakrise die LSP erweitert, z.B. sind jetzt Transaktionen möglich? ( <b>offene</b> Frage):
13	War vor der Coronakrise eine LSP in Planung? ( <b>offene</b> Frage): -Falls, Ja: Wurde die Erstellung durch die Coronakrise beschleunigt?
14	Wie wird die Wirksamkeit der LSP erfasst? ( <b>offene</b> Fragen): -Nutzung einer Webanalytics Lösung -Falls Ja, Welche der folgenden Elemente werden ausgewertet: Besucheranzahl auf der LSP?; Verweildauer auf der LSP?; Transaktionen auf der Plattform? -Über die Plattform initiierte Transaktionen beim Händler

	<ul style="list-style-type: none"> <li>- Falls nein, ist eine zukünftige Erfassung geplant?</li> <li>- Wenn ja, welche Art der Erfassung?</li> </ul>
15	<p>Bitte vergleichen Sie Ihre Plattform vor und während der Coronakrise (<b>offene</b> Fragen):</p> <ul style="list-style-type: none"> <li>-Bitte beziffern Sie die Anzahl an neuen Händlern pro Monat während der Coronakrise?</li> <li>-Bitte beziffern Sie die Anzahl an neuen Händlern pro Monat während der Coronakrise?</li> <li>-Wie setzt sich die Regionalität der Händler zusammen? Ausschließlich Händler aus dem Ort?</li> <li>-Wie setzt sich die Regionalität der Händler zusammen. Ausschließlich Händler aus anderen Nachbarorten?</li> <li>-Wie hat sich die Regionalität der Händler vor der Coronakrise zusammengesetzt. Wie viel ihrer Händler waren nicht aus dem Ort (überregional)?</li> <li>-Wie setzt sich die Händlerstruktur zusammen? Bitte Beziffern Sie die Anzahl (absolute Zahl) an: (inhabergeführte stationäre Einzelhändler vs. filialisierte Einzelhändler)</li> <li>-Welche Produktkategorien wurden am meisten vor der Coronakrise nachgefragt? (Nicht-Lebensmittel Produkte (1-3 Beispiele nennen) vs. Lebensmittel)</li> <li>-Welche Produktkategorien werden seit der Coronakrise nachgefragt? (Nicht-Lebensmittel Produkte (1-3 Beispiele nennen) vs. Lebensmittel)</li> <li>-Gibt es finanzielle Vergünstigungen für neue Händler, für die Teilnahme auf der LSP, während der Coronakrise die es vorher nicht gab?</li> <li>-Gelten die finanziellen Vergünstigen auch für Bestandshändler?</li> </ul>
<b>Strategies to Sustain the LSPs After the Corona Crisis</b>	
16	<p>Welche Chancen verbinden Sie mit der LSP (<b>Skala:</b> Stimme eher nicht zu – Stimme völlig zu):</p> <ul style="list-style-type: none"> <li>-Einfacher Einstieg für lokale Händler in die Digitalisierung?</li> <li>-Einfacher Einstieg für die Kommune/Stadt in die Digitalisierung?</li> <li>- Weiterentwicklung zu einer Cityplattform mit Eventkalender, Toursimus etc.?</li> <li>-Wir beabsichtigen in Zukunft die Plattform deutlich weiter zu entwickeln?</li> <li>-Weitere Anmerkungen durch Befragte bzgl. der zukünftigen Strategien</li> </ul>

## C.4 Results of LSP Location-Enabled Services WI 2021

Local Shopping Platform	Typology	Total	Location-Enabled Services			
			Total LES	Information	Fulfillment	Communication & Support
No. / category		<b>7038</b>	<b>1632</b>	612	510	510
Average no. / LSP		<b>106</b>	347	299	34	14
Share / LSP		<b>12%</b>	<b>21,26%</b>	<b>48,86%</b>	<b>6,67%</b>	<b>2,75%</b>
Like Lippstadt	1	12	5	5	0	0
Alstertal Einkaufszentrum	5	19	7	5	2	0
Kaufhaus Lüneburg	5	22	6	4	1	1
LudwigsLust	1	6	3	3	0	0
Mein Rheda-Wiedenbrück	1	9	4	4	0	0
Minden Marketing GmbH	2	14	5	5	0	0
Bauern in Wuppertal	1	5	3	3	0	0
Diepholz bei ebay	5	19	5	3	1	1
Altötting Shop	3	8	4	2	1	1
Lokalschatz	1	6	2	2	0	0
Shopping Vest	3	9	4	3	1	0
Hallo Altmark	3	16	5	2	1	2
Klick Schleswig Holstein	1	4	3	3	0	0
Hamm erleben	1	8	4	4	0	0
Dein Kempen	5	21	6	4	2	0
nettecard	1	7	3	2	0	1
City Partner Offenburg	1	7	3	3	0	0
Lozuka Siegen	5	17	4	2	2	0
Ich kauf in Coburg	1	14	3	3	0	0
Marktplatz Münsterland	1	6	2	2	0	0
Spüre Fulda	1	9	3	3	0	0
Gießen	1	7	4	4	0	0
Emma brings	5	17	5	2	2	1
Xanten aktuell	1	6	3	3	0	0
tuemarkt.de	1	10	4	4	0	0
OnLoKa - Online Lokal Kaufen	5	16	3	2	1	0
Heidenheim erleben	1	9	4	4	0	0
Kauf im Allgäu	3	6	3	2	1	0
Alles regional	1	8	3	3	0	0
Heimatladen	1	5	2	2	0	0
Kompass Rehau	1	5	4	4	0	0
Shopping in Bayern	1	9	4	4	0	0
Dahoam in Dachau	1	9	4	4	0	0
Lozuka Emsaue	5	17	4	2	2	0

Wangen punktet	1	7	3	2	0	1
Webkiez	1	5	2	2	0	0
Brucker Netz	5	15	2	2	0	0
Bummelbude	2	13	3	3	0	0
Bad Camberg	1	5	3	3	0	0
Einkaufen in Hilden	1	4	3	3	0	0
Einkaufen in Weinheim	1	6	3	3	0	0
Ich kauf' in Burgdorf	1	6	4	4	0	0
Illingen hat's	1	5	3	3	0	0
Im Artland	1	8	3	3	0	0
inOsna - Osnabrück online	1	9	4	3	0	1
Treffpunkt Konstanz	1	6	2	2	0	0
Lokal Radar	1	6	3	3	0	0
Aar Einrich	5	11	5	4	1	0
Marktplatz Bruchköbel	3	15	5	4	1	0
Marktplatz Donau	5	15	1	0	1	0
Marktplatz Osnabrück	1	5	4	4	0	0
Mein Ludwigsburg	1	5	2	1	0	1
MyLe - Online Marktplatz Leienfelden	5	11	5	4	1	0
ProFiMe	1	6	4	4	0	0
Quakenbrück 24	3	7	2	2	0	0
regiona	5	18	5	4	1	0
Schaufenster	1	5	3	3	0	0
Schenk Lokal	1	7	3	3	0	0
Stadtgutschein Neuss	1	6	2	2	0	0
Stuttgarter Traditionsge- schäfte	1	4	3	3	0	0
Pfälzer Landmark	3	8	3	3	0	0
Moers Stadtportal	5	10	4	4	0	0
Hofladen Sauerland	5	17	0	0	0	0
Atalanda	5	25	8	5	3	0
Gewerbeverein Nagold	1	4	2	2	0	0
Marktschwärmer	5	20	3	2	1	0
Einkaufen in Leipzig	1	5	1	1	0	0
DLG Punkte	1	6	3	2	0	1
City Points	1	8	3	3	0	0
Münchens erste Häuser	1	3	2	2	0	0
KiezKaufhaus	5	15	4	3	1	0
Findeling	1	15	3	3	0	0
Koomio	4	16	7	4	3	0
Südkurier	5	18	1	1	0	0
yatego local	1	9	3	3	0	0
Welfenmarkt	4	17	6	5	1	0
Smartplatz	2	10	3	3	0	0
Bamberg Rakuten	5	18	2	2	0	0

Wacht My City	1	6	2	2	0	0
Flensburg	1	4	2	2	0	0
Flobee	5	20	4	1	1	2
Lieferladen.de Stuttgart	5	11	3	1	1	1
EMSIG	1	6	3	3	0	0
Ahlen begeistert	1	4	2	2	0	0
Herten erleben	1	7	2	2	0	0
Gelsenkirchen City	1	10	5	5	0	0
Einkaufen in Schwerte	1	7	3	3	0	0
Meschede Aktiv	1	5	2	2	0	0
Dein HSK	3	10	5	5	0	0
Einkaufen in Attendorn	1	9	3	3	0	0
City Guide	1	8	3	3	0	0
Einkaufen in Solingen	1	7	4	4	0	0
AGK Kerpen	1	5	3	3	0	0
Aachen Shopping	1	8	3	3	0	0
Einkaufen in Hangelar	1	5	2	2	0	0
Friedrichstrasse Bonn	1	4	3	3	0	0
Königswinter	1	2	2	2	0	0
Einkaufen in Gunzenhausen	1	8	4	4	0	0
Neuburg	1	11	4	4	0	0
Muenchen	1	11	5	5	0	0
Take-it-Lokal	3	5	3	3	0	0
Lieblingsladen.de	3	11	4	3	1	0

## C.5 Results of LSP Location-Based Services WI 2021

Local Shopping Platforms	Location-Based Services				
	Total LBS	Information	Navigation	Payment & Billing	Communication & Support
No. / category	<b>1326</b>	408	510	306	102
Average no. / LSP	48	8	37	0	3
Share / LSP	<b>3,62%</b>	<b>1,96%</b>	<b>7,25%</b>	<b>0,00%</b>	<b>2,94%</b>
Like Lippstadt	<b>3</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>0</b>
Alstertal Einkaufszentrum	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Kaufhaus Lüneburg	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
LudwigsLust	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Mein Rheda-Wiedenbrück	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>
Minden Marketing GmbH	<b>3</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>2</b>
Bauern in Wuppertal	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Diepholz bei ebay	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Altötting Shop	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Lokalschatz	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>
Shopping Vest	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>
Hallo Altmark	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>
Klick Schleswig Holstein	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Hamm erleben	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>
Dein Kempen	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
nettecard	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
City Partner Offenburg	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Lozuka Siegen	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>
Ich kauf in Coburg	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>
Marktplatz Münsterland	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>
Spüre Fulda	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>
Gießen	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Emma brings	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Xanten aktuell	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
tuemarkt.de	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
OnLoKa - Online Lokal Kaufen	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Heidenheim erleben	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>
Kauf im Allgäu	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Alles regional	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Heimatladen	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>
Kompass Rehau	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Shopping in Bayern	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>
Dahoam in Dachau	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Lozuka Emsaue	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>



Wangen punktet	0	0	0	0	0
Webkiez	0	0	0	0	0
Brucker Netz	0	0	0	0	0
Bummelbude	1	0	1	0	0
Bad Camberg	0	0	0	0	0
Einkaufen in Hilden	1	0	1	0	0
Einkaufen in Weinheim	0	0	0	0	0
Ich kauf' in Burgdorf	1	0	1	0	0
Illingen hat's	0	0	0	0	0
Im Artland	0	0	0	0	0
inOsna - Osnabrück online	1	0	1	0	0
Treffpunkt Konstanz	1	0	1	0	0
Lokal Radar	1	0	1	0	0
Aar Einrich	0	0	0	0	0
Marktplatz Bruchköbel	1	0	1	0	0
Marktplatz Donau	0	0	0	0	0
Marktplatz Osnabrück	0	0	0	0	0
Mein Ludwigsburg	0	0	0	0	0
MyLe - Online Marktplatz Leienfelden	0	0	0	0	0
ProFiMe	0	0	0	0	0
Quakenbrück 24	0	0	0	0	0
regiona	0	0	0	0	0
Schaufenster	0	0	0	0	0
Schenk Lokal	1	0	1	0	0
Stadtgutschein Neuss	0	0	0	0	0
Stuttgarter TraditionsGeschäfte	0	0	0	0	0
Pfälzer Landmark	0	0	0	0	0
Moers Stadtportal	0	0	0	0	0
Hofladen Sauerland	0	0	0	0	0
Atalanda	1	0	1	0	0
Gewerbeverein Nagold	0	0	0	0	0
Marktschwärmer	1	1	0	0	0
Einkaufen in Leipzig	1	0	1	0	0
DLG Punkte	0	0	0	0	0
City Points	2	1	1	0	0
Münchens erste Häuser	0	0	0	0	0
KiezKaufhaus	0	0	0	0	0
Findeling	4	2	2	0	0
Koomio	2	1	1	0	0
Südkurier	0	0	0	0	0
yatego local	1	0	1	0	0
Welfenmarkt	1	0	1	0	0
Smartplatz	4	2	1	0	1
Bamberg Rakuten	0	0	0	0	0
Wacht My City	0	0	0	0	0

Flensburg	1	0	1	0	0
Flobee	0	0	0	0	0
Lieferladen.de Stuttgart	0	0	0	0	0
EMSIG	1	0	1	0	0
Ahlen begeistert	0	0	0	0	0
Herten erleben	0	0	0	0	0
Gelsenkirchen City	0	0	0	0	0
Einkaufen in Schwerte	0	0	0	0	0
Meschede Aktiv	0	0	0	0	0
Dein HSK	0	0	0	0	0
Einkaufen in Attendorn	0	0	0	0	0
City Guide	1	0	1	0	0
Einkaufen in Solingen	0	0	0	0	0
AGK Kerpen	0	0	0	0	0
Aachen Shopping	0	0	0	0	0
Einkaufen in Hangelar	1	0	1	0	0
Friedrichstrasse Bonn	0	0	0	0	0
Königswinter	0	0	0	0	0
Einkaufen in Gunzenhausen	1	0	1	0	0
Neuburg	0	0	0	0	0
Muenchen	0	0	0	0	0
Take-it-Lokal	0	0	0	0	0
Lieblingsladen.de	0	0	0	0	0

## C.6 Results of LSP Location-Independent Services WI 2021

		<b>Location-Independent Services</b>			
<b>Local Shopping Platform</b>	Typology	Recommendation Services	Communication & Support	Fulfillment	Payment & Billing
No. / category		1224	1326	918	612
Average no. / LSP		101	336	42	106
Share / LSP		<b>8,25%</b>	<b>25,34%</b>	<b>4,58%</b>	<b>17,32%</b>
Like Lippstadt	1	0	4	0	0
Alstertal Einkaufszentrum	5	3	4	1	4
Kaufhaus Lüneburg	5	5	3	3	5
LudwigsLust	1	0	3	0	0
Mein Rheda-Wiedenbrück	1	0	4	0	0
Minden Marketing GmbH	2	0	5	0	1
Bauern in Wuppertal	1	0	2	0	0
Diepholz bei ebay	5	7	2	2	3
Altötting Shop	3	2	2	0	0
Lokalschatz	1	0	3	0	0
Shopping Vest	3	2	2	0	0
Hallo Altmark	3	6	3	0	1
Klick Schleswig Holstein	1	0	1	0	0
Hamm erleben	1	0	2	0	1
Dein Kempen	5	1	5	3	6
nettecard	1	0	3	0	1
City Partner Offenburg	1	0	3	0	1
Lozuka Siegen	5	2	5	4	1
Ich kauf in Coburg	1	0	9	0	1
Marktplatz Münsterland	1	0	3	0	0
Spüre Fulda	1	0	4	0	1
Gießen	1	0	3	0	0
Emma bringt's	5	4	4	1	3
Xanten aktuell	1	0	3	0	0
tuemarkt.de	1	0	5	0	1
OnLoKa - Online Lokal Kaufen	5	0	7	4	2
Heidenheim erleben	1	0	3	0	1
Kauf im Allgäu	3	1	2	0	0

Alles regional	1	0	5	0	0
Heimatladen	1	0	2	0	0
Kompass Rehau	1	0	1	0	0
Shopping in Bayern	1	0	4	0	0
Dahoam in Dachau	1	0	4	0	1
Lozuka Emsaue	5	2	5	4	2
Wangen punktet	1	0	3	0	1
Webkiez	1	0	2	0	1
Brucker Netz	5	2	7	0	4
Bummelbude	2	2	7	0	0
Bad Camberg	1	0	2	0	0
Einkaufen in Hilden	1	0	0	0	0
Einkaufen in Weinheim	1	0	3	0	0
Ich kauf' in Burgdorf	1	0	1	0	0
Illingen hat's	1	0	2	0	0
Im Artland	1	2	3	0	0
inOsna - Osnabrück online	1	0	3	0	1
Treffpunkt Konstanz	1	0	2	0	1
Lokal Radar	1	0	2	0	0
Aar Einrich	5	1	3	0	2
Marktplatz Bruchköbel	3	3	5	0	1
Marktplatz Donau	5	6	5	0	3
Marktplatz Osnabrück	1	0	1	0	0
Mein Ludwigsburg	1	0	2	0	1
MyLe - Online Marktplatz Leienfelden	5	3	2	0	1
ProFiMe	1	1	1	0	0
Quakenbrück 24	3	0	5	0	0
regiona	5	4	4	0	5
Schaufenster	1	0	2	0	0
Schenk Lokal	1	0	2	0	1
Stadtgutschein Neuss	1	0	3	0	1
Stuttgarter Traditionsgeschäfte	1	0	1	0	0
Pfälzer Landmark	3	3	2	0	0
Moers Stadtportal	5	2	2	0	2
Hofladen Sauerland	5	5	6	1	5
Atalanda	5	4	4	3	5
Gewerbeverein Nagold	1	0	2	0	0
Marktschwärmer	5	3	8	0	5
Einkaufen in Leipzig	1	0	3	0	0
DLG Punkte	1	0	3	0	0
City Points	1	0	3	0	0
Münchens erste Häuser	1	0	1	0	0
KiezKaufhaus	5	1	4	4	2
Findeling	1	0	7	0	1
Koomio	4	3	3	1	0

Südkurier	5	3	6	3	5
yatego local	1	2	3	0	0
Welfenmarkt	4	1	3	2	4
Smartplatz	2	0	3	0	0
Bamberg Rakuten	5	4	7	1	4
Wacht My City	1	0	4	0	0
Flensburg	1	0	1	0	0
Flobee	5	4	6	2	4
Lieferladen.de Stuttgart	5	2	2	2	2
EMSIG	1	0	2	0	0
Ahlen begeistert	1	0	2	0	0
Herten erleben	1	0	5	0	0
Gelsenkirchen City	1	0	5	0	0
Einkaufen in Schwerte	1	0	3	0	1
Meschede Aktiv	1	0	2	0	1
Dein HSK	3	0	4	0	1
Einkaufen in Attendorn	1	1	4	0	1
City Guide	1	1	2	0	1
Einkaufen in Solingen	1	0	3	0	0
AGK Kerpen	1	0	2	0	0
Aachen Shopping	1	0	4	0	1
Einkaufen in Hangelar	1	0	2	0	0
Friedrichstrasse Bonn	1	0	1	0	0
Königswinter	1	0	0	0	0
Einkaufen in Gunzenhausen	1	0	3	0	0
Neuburg	1	0	6	0	1
Muenchen	1	1	5	0	0
Take-it-Lokal	3	1	1	0	0
Lieblingsladen.de	3	1	4	1	1

**C.7 Code Book BIR 2022**

Items	Mögliche Codierung
<b>Kategorisierung LSP</b>	
Name LSP	Eingabe Name
Aktiv	Ja/Nein
Erfüllt LSP Definition	Ja/Nein
Transaktionfunktionen	Ja/Nein
Affiliatefunktionen	Ja/Nein
Produkt Request Funktionen	Ja/Nein
Produkt Katalog Funktionen	Ja/Nein
Store Locator Funktionen	Ja/Nein
Ausgabe des Plattformstypen	Automatische Ausgabe
Inhaber geführte Händler	Ja/Nein
Ketten / Franchise	Ja/Nein
Zielgruppe	Lokal / Überregional / Beides
Lieferradius	Stadt / Land / weltweit
Standorte der LSP	Lokal, National, International
<b>Web-Technologien</b>	
Responsive / Mobile Shop	Ja/Nein
Händler App	Ja/Nein
Kunden App	Ja/Nein
<b>Location-Based Services (Informationsdienste)</b>	
Standortab. Produktberatung	Ja/Nein
Barcode Scanner	Ja/Nein
Standortab. Karte mit Standorten der nächsten Geschäfte	Ja/Nein
Standortab. Karte mit nächst gelegenen Produkten (Verfügbarkeitssuche)	Ja/Nein
<b>Location-Based Services (Navigationsdienste)</b>	
In-Store Navigation	Ja/Nein
Shopping Touren	Ja/Nein
Outdoor Navigation	Ja/Nein
<b>Location-Based Services (Payment)</b>	
Self-Checkout	Ja/Nein
<b>Location-Based Services (Kommunikationsdienste)</b>	

Standortab. Beratungsdienste (Berater)	Ja/Nein
Standortab. Werbung	Ja/Nein
Standortab. Rabatte	Ja/Nein
Standort Abhängige Gewinnspiele	Ja/Nein
Standortab. Loyalty Programme	Ja/Nein
Location-Enabled Services (Informationsdienste)	
Karte mit Locations	Ja/Nein
Lokale Nachrichten	Ja/Nein
Lokaler Eventkalender	Ja/Nein
Produktverfügbarkeit Stationär	Ja/Nein
Öffnungszeiten der Ladenlokale	Ja/Nein
Händler Kontaktdaten	Ja/Nein
Location-Enabled Services (Logistik & Lieferdienste)	
Same Day Delivery	Ja/Nein
Same Hour Delivery	Ja/Nein
Click & Return	Ja/Nein
Click & Collect	Ja/Nein
Reserve & Collect	Ja/Nein
Location-Enabled Services (Kommunikationsdienste)	
Beratung / Support @ Home	Ja/Nein
Kundeneinbindung (Feedback)	Ja/Nein
Kundeneinbindung (Community)	Ja/Nein
Lokale Kundenkarte	Ja/Nein
Face 2 Face Beratung (Support @ Store)	Ja/Nein
Location-Independent Services (Empfehlungssysteme)	
Weitere Anbieter dieses Produktes	Ja/Nein
Weiterer Händler in der Stadt	Ja/Nein
Weitere Produkte dieses Händlers	Ja/Nein
Bewertungen / Rezensionen	Ja/Nein
Fragen / Antworten	Ja/Nein
Beliebte Artikel	Ja/Nein
Produkt Empfehlungen	Ja/Nein
Zuletzt angesehene Artikel	Ja/Nein
Ähnliche Artikel des Händlers (Intrashop Empfehlungen)	Ja/Nein
Ähnliche Artikel auf der Plattform (Intershop Empfehlungen)	Ja/Nein

Kunden, dieses Produkt angesehen haben, haben auch angesehen	Ja/Nein
Kunden die dieses Produkt kauften, kauften auch...	Ja/Nein
<b>Location-Independent Services (Communication and Support Part 1)</b>	
Support Online (Chat)	Ja/Nein
Support Hotline	Ja/Nein
Support via Email	Ja/Nein
Shopping Assistent (Service)	Ja/Nein
<b>Location-Independent Services (Logistics)</b>	
Produktverfügbarkeit Online	Ja/Nein
Wunschlieferdatum	Ja/Nein
Lieferung 24 Std	Ja/Nein
Kostenfreier Versand	Ja/Nein
Kostenfreier Rückversand	Ja/Nein
Versand Flatrate	Ja/Nein
<b>Location-Independent Services (Payment &amp; Billing)</b>	
WeChat Pay	Ja/Nein
Alipay	Ja/Nein
Union Pay	Ja/Nein
Debit Card Transaction	Ja/Nein
Credit Card Transaction	Ja/Nein
Huabei	Ja/Nein
Apple Pay	Ja/Nein
Balance Payment	Ja/Nein
Gutschein Einlösen	Ja/Nein
<b>Location-Independent Services (Communication and Support Part 2)</b>	
Unternehmensblog	Ja/Nein
Newsletter	Ja/Nein
Weibo	Ja/Nein
WeChat Mini Program	Ja/Nein
WeChat Official Account	Ja/Nein
TikTok	Ja/Nein
We only consider analysed items in the publication and not the whole code book which consist of 114 items (e.g., Business model, shopping cart, platform architecture, product display)	



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