

Digitalization of Local Owner-Operated Retail Outlets: Between Customer Demand, Competitive Challenge and Business Persistence

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Abstract. The digitalization of the retail industry is a disruptive innovation process that threatens the very existence of Local Owner Operated Retail Outlets (LOOROs). Despite the manifold digital options to regain competitive power, LOOROs struggle in their digital transformation and persist often in their traditional business behavior. As their customers get more and more used to buying via digital channels, they more and more expect the provision of digital services. This paper and the presented study aim to understand why the LOOROs are so hesitant. Our results show that the owners of LOOROs are often decoupled from their near and far business environment. This leads to a wrong self-assessment and implies the risk that the services provided do neither match the competitive environment nor customer expectations.

Keywords: Digitalization, innovation, business transformation, retail outlets.

1 Introduction

The digital transformation of all parts of the society and of the retail industry in particular poses tremendous challenges to local owner-operated retail outlets (LOOROs), which are characterized by a small-sized store area, a limited number of staff and high owner-involvement in the day-to-day business operations [7]. This kind of retail market offers a personal relationship between the shop owners and their customers and provides a lot of advantages compared to online shops. Nevertheless the shopping habits of customers have changed during the last years. They not only expect low prices that can easily be found on the Internet, but also that different communication channels are provided for any customer service [24]. Big-box retail outlets and chain stores already react to these needs. They digitalize their business models and offer multichannel sales and services to their local customers [22]. On the other side, formerly pure online players begin to conquer the cities with physical stores [23],[29]. All of these factors pressure LOOROs to rethink and adapt their traditional business models.

However, despite their limited resources (for example lack of time and knowledge, as well as of human and financial resources, etc.), LOOROs are not defencelessly

exposed to this development. Many 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, can help them to overcome their inherent restrictions [7],[49] and support them in developing locational advantages in a situation where (online-)competitors offer multiple channels to customers [36]. But like other smaller enterprises, LOOROs try to persist their traditional business model and still hesitate to actively face the digital transformation [6],[39].

This paper investigates this phenomenon and aims at a better understanding of the reasons why LOOROs hesitate to digitalize their infrastructure and their business processes in the face of customer demands and competitive challenges. Only with such an understanding, options for actions can be derived for shop owners, politicians and city representatives, on how to help local retail grow digital and turn into multi-channel Local Commerce. In particular, this study focuses on the interplay of the internal (organizational) and external (environmental) factors that impact the technology adoption of LOOROs. For this, we conducted a survey among 223 LOOROs from 26 cities in Germany to answer the following research question:

RQ: How do internal and external factors influence the adoption of digital tools by owners of LOOROs?

The remainder of this paper is organized as follows: Section 2 discusses the theoretical background. The research model for the survey is developed in section 3 and analyzed in section 4. The paper closes with a discussion of the results in section 5.

2 Technology Adoption of SME Retail

Although the relevance and importance of small retailers for city centers, their infrastructure, local economies, or for the labor market is often emphasized by policy and studies [24], research concerning the technology adoption of micro enterprises (ME) like LOOROs is 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 and representative results [7],[27]. For this, our structured literature analysis [53] focused on research about SME retail outlets and the adoption of technology by SMEs in general as an equivalent for LOOROs and ME retailers. We used the databases EbscoHost, IEEE, and ScienceDirect and restricted the search to the years from 2000 to 2017. After deleting all duplicate findings, we received a total of 219 unique papers. Analyzing the title and abstract, we were able to reduce our literature body to 51 publications. Last-mentioned were read completely and in turn yielded a final set of twelve relevant papers that coped with internal and/or external factors influencing the adoption of new technologies.

Despite of the heterogeneous definition of SME in the retail sector (for example [3],[26],[33],[42],[46]) a commonality is the classification of factors influencing the innovation and technology adoption process into external and internal factors (see Table 1). External factors are factors that are out of the direct control of SMEs. These factors are related to the competitive environment, governmental regulations, pressure

from value chain partners (e.g., suppliers and customers) and the availability of external resources [26],[27],[42],[51]. Internal factors can be categorized into factors from the organizational-level and from the individual-level (attitudinal) [3],[16]. The organizational-level comprises factors concerning the readiness, such as the availability of internal resources (for example human resources and infrastructure), as well as the overall organizational commitment towards digitalization. The individual-level concerns factors like attitude, intentions, and prior and current usage of digital tools and approaches [3],[16].

Table 1. Categories of Influencing Factors

No.	Author / Year	Internal Factors (Attitude)	Internal Factors (Organisation)	External Factors (Environment)
1.	Mehrtens et al. (2001), [33]	Attitude	Organizational Readiness	External Pressure
2.	Erosa (2009), [16]	Prior Use	-	External Pressure
3.	Vize et al. (2013), [52]	Attitude, Prior Use	-	External Pressure
4.	Pantano and Viasonne (2014), [39]	Attitude, Prior Use	Organ. Readiness, Available Resources	-
5.	Pantano (2014), [38]	Attitude, Prior Use	Organizational Readiness	-
6.	Amin and Hussin (2014), [3]	Current Use	Organizational Readiness	External Pressure, Available Resources
7.	Savrul et al. (2014), [46]	Prior Use	Organizational Readiness	External Pressure
8.	Kurnia et al. (2015), [27]	-	Organizational Readiness	External Pressure
9.	Rahayu and Day (2015), [42]	Attitude	Organizational Readiness	External Pressure, Available Resources
10.	Osei et al. (2016), [37]	-	-	External Pressure
11.	Maduku et al. (2016), [30]	Current Use, Prior Use	Organizational Readiness	External Pressure, Available Resources
12.	Kabanda and Brown (2017), [26]	Prior Use	Organizational Readiness	External Pressure

In this line, [33] focused on internet adoption and found that the internal and external factors “perceived benefits”, “organizational readiness”, and “external pressure” significantly influence a company’s decision to adopt technology. [16] investigated the role of prior use on technology adoption. As internal factors, risk perception, advantages of IT and the owner’s perspective were used. In addition, external technological influence was considered as an external factor. Results show that low prior use and use intentions have a negative impact on the actual use of technology. [39] presents a push-pull approach based on the external push of technology and the pull of retailers’ internal demand. In particular, the internal factors have a high impact. The diffusion of technology-based innovation is mainly influenced by retailers’ expecta-

tions and their propensity to invest. [3] applied an extension of the “Technology-Organization-Environment Framework” to examine technology adoption and showed that technology adoption is a process passing certain stages instead of being a one-level process. [27] combined the Diffusion of Innovation Theory with the National Institutions Perspective to examine the effect of internal factors based on attitudes and several external factors on the technology adoption process. They distinguished external factors of the industry (competition), the nation (government), and the overall environment (society), and showed the importance of the context of retailers for digital development. This paper orientates to this distinction but will merge the government and society perspective and add a customer dimension instead.

3 Research Framework & Conceptual Model

3.1 Stimulus-Organism-Response Model

In contrast to large companies, in ME like LOOROs the owner is the key decision-maker who decides on important strategic questions like the digitalization alone. Hence, organizational factors can be seen – to a certain extent – as external factors. As a result, an investigation on the adoption processes of ME like the one of this paper should focus on an owner-centric examination on the individual level) [31]. Subsequently, common small, medium, and large enterprise related technology adoption approaches operating on the organizational level (e.g., the Technology-Organization-Environment Framework (TOE)) are less suitable [43]. Accordingly, this study’s research framework will be built on the Stimulus-Organism-Response Model (S-O-R Model) that operates on the individual level [26],[27],[42], [51]. The S-O-R Model [32] originates from the environmental psychology field [55] and is often used in marketing research to examine the customer response to a situational or environmental (external) stimulus [28]. The main idea behind the model is that environmental processes and changes, called stimuli (S), are perceived by an organism (O) and instigate reactions of the organism called behavioral response (R).

3.2 Conceptual Model

According to the research of [43], a broad range of theories about technology adoption, acceptance and implementation, extent of usage, effectiveness, success, and satisfaction is well-established in Information Systems (IS) research. Two streams can be distinguished: On the one hand, technology-centered theories focus on the characteristics of the technology itself and the diffusion through different channels [45]. These theories are helpful for explaining technology adoption outcomes on an organizational level. On the other hand, decision maker centered theories focus on the individual level and analyze human behavior and its impact on the decision-making process regarding technology adoption and use [1],[11].

Looking deeper into the decision maker centered theories, the Theory of Reasoned Action (TRA) [2] and its successor, the Theory of Planned Behavior (TPB) [1] state

that attitudes, control beliefs, and subjective norms influence behavioral intention, which in turn influences actual behavior. [11] applied TRA / TPB to the individual level of technology adoption behavior in the well-known Technology Adoption Model (TAM). Over the last two decades, researchers extended this view, examined antecedent as well as moderating factors and incorporated alternative belief factors into their research models, like TAM2 or the UTAUT Model, while keeping the core structure (behavioral intention influences actual behavior) of TAM [43].

Accordingly, the organism, namely the owner as the decision maker in LOOROs, is captured by the TRA / TBP logic as the attitude towards a technology and influences the intention to use it [4]. This thought process is triggered by internal and external stimuli. We postulate that the perception of organizational resource availability and the perception of external pressures can both be seen as such environmental stimuli leading to the organism's emotional reactions [52]. Finally, the usage of the technology is the stimulated organism's emotional response.

For a better understanding, we interpret digitalization as the use of digital tools and applications in one of the two following areas:

- (1) the digitalization of the front-end sales channels, where we find all digitalization efforts with direct customer touch points, and
- (2) the digitalization of the administrative back-end, invisible to the customer [15].

3.3 Hypotheses Development

Stimulus (S) to Organism (O): A firm's resources are heterogeneous and immobile [5]. Differences in market performance are caused by the distinctive resources and capabilities that are valuable, rare, inimitable and non-substitutable [5],[54]. For a company's future competitiveness, prosperity, and development, the availability of resources is decisive. Companies with limited access to resources (for example human resources) and with insufficient infrastructures (for example capacities) are reluctant to invest in tools and applications that could create a competitive advantage [5]. Resources can be categorized into tangible and intangible resources [5]. The availability of the tangible organizational infrastructure is represented by the availability of general resources (AI1), of necessary capacities (AI2), and of an IT-Infrastructure (AI3). Without the first two resources, the adoption of new technologies becomes extremely difficult for firms [54]. This holds in particular for the IT-Infrastructure when digital tools and applications shall be introduced. To investigate the influence of the available infrastructure on an organism's (O) emotional reactions (attitudes towards digitalization) we hypothesize:

H1: The availability of infrastructure has a positive influence on the attitude towards the digitalization.

The availability of the intangible organizational human resources is represented by characteristics of the employees. Competencies (HR2) and in particular motivation have been proven to be the most influencing success factors [54]. Also the innovative strength (HR1) plays an important role. Therefore we hypothesize:

H2: The availability of human resources has a positive influence on the attitude towards the digitalization.

Several studies have shown that external environmental pressures have an impact on the adaptation of technology among companies [3],[27],[42],[46]. The “Three-Environment Theory” offers a structural understanding of the origins of external influences [48]. Correspondingly, external pressures comprise influences from the near and far environment. To avoid repetition, we neglect the application of technological pressure (like in push and pull theory) as the primary influence indicator, as technology is already the theme and research subject of all indicators, especially in the organism (O) and response (R) sections. The near (specific) environment is formed by influences of competitors and customers that exert a direct impact on the examined organization. The perceived pressure of the competitors is represented by the perception of the own development compared to the development of the competitors (PC1), the perception of the need for own development to stay competitive (PC2) and the perception of external pressure towards digitalization to stay competitive (PC3) [48]. Accordingly, we hypothesize:

H3: Perceived pressure from competitors towards digitalization has a positive influence on the attitude towards digitalization.

The perceived pressure of the customers is represented by the perception of customer actions (CP1), the perception of customer pressure (CP2), the perception of customer expectations (CP3) [48]. Accordingly, we hypothesize:

H4: Perceived pressure from customers towards digitalization has a positive influence on the attitude towards digitalization.

The far environment is defined by the government and socio-political conditions [34]. Thus, the perceived society pressure is represented by the perception of the importance of digitalization (SP1) in general, of governmental pressure (SP2), and of societal expectations (SP3) [48]. Accordingly, we hypothesize:

H5: Perceived pressure from politics and society towards digitalization has a positive influence on the attitude towards digitalization.

Organism (O) to Response (R): The attitude as well as control beliefs and subjective norms do not influence actual behavior directly, but rather influence the behavioral intention (intention to use), which in turn influences the actual behavior (current use) [1],[11]. Accordingly, we use the core constructs of the TRA/TPB/ TAM theory for the organism section: “Attitude towards Digitalization” and “Intention to use Digitalization”. Measures of the construct “Attitude towards Digitalization” are oriented to the ones of TRA/TPB/TAM theory: Assessment of digitalization (A1), the ease to learn (A2) and the expected effectiveness of digitalization (A3) [1],[11].

H6: A positive attitude towards digitalization has a positive influence on the intention to use digitalization.

Behavioral intentions are said to influence actual behavior and therefore to have direct impact on the current use of digital tools and applications [1],[11]. Hence, we hypothesize:

H7: A high intention to use digitalization has a positive influence on its current use.

To frame the ambiguity of the umbrella term digitalization into an operational understanding, we separate the back-end from the front-end activities [15]. The back-

end activities of retailers represent all activities without customer touch points; front-end activities are all activities with customer touch points and vary regarding their level of customer interaction [15]. Accordingly, we divide the (behavioral) intentions (“Intention to Use”) and the actual behavior (“Current Use”) towards digitalization into the two dimensions administration and sales. Thus, we extend the above stated hypotheses 6 and 7 as follows:

H6a: A positive attitude towards digitalization has a positive influence on the intention to use digital administration tools and applications.

H6b: A positive attitude towards digitalization has a positive influence on the intention to use digital sales channels and provide them to customers.

H7a: A high intention to use digital administration has a positive influence on the current use of digital administration tools and applications.

H7b: 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.

As representation of the intention to use and the hereinafter current use of digital tools and applications among the stated business areas, we derived sets of frequently used digital tools and applications based on recent studies on technological trends in the retail sector [49] (see Table 2). The resulting conceptual model is depicted in Figure 1 in the analysis section 4.

Table 2. Indicators based on frequently used Digital Tools and Applications [49]

Digital Sales Channels	online shop (IS1; CS1)	3 rd party marketplaces (IS2 & CS2)	in-store applications (IS3; CS3)	online advertisement (IS4; CS4)
Digital Administration	software for administration (IA1; CA1)	inventory management System (IA2; CA2)	digital communication channels (IA3; CA3)	digital payment systems (IA4; CA4)

4 Analysis

4.1 Data Collection

Between May and July 2016, we conducted a survey among shop owners of LOOROs in 26 cities in the South Westphalia region in Germany. 390 shop owners were contacted personally. The questionnaire, containing two opening questions (retail industry, no. of employees) and 34 individual questions measured on a 5-point-Likert-scale, was answered by 124 participants via an online form and by 119 participants on paper. In total, the questionnaires of 243 companies were received, including 223 questionnaires with full data sets. The descriptive analysis shows that 25.6% of the respondents sell clothing, fashion and shoes. Other important groups of retailers in this study are jewelers, stationery and office suppliers, as well as opticians, each with a share of 9%. Drugstores, electronic shops, toys and art shops, curtains and photographic supply shops with each around 5% represent a variety of special interest shops in city centers. 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 2.0 [44]. Bootstrapping was done with 5,000 samples and 223 cases, determining the significance of weights, loadings and path coefficients. For the multicollinearity tests, we used SPSS.

Table 3. Bootstrapping and Model Validation (ns = not significant; *p<0.10; **p<0.05; ***p<0.01).

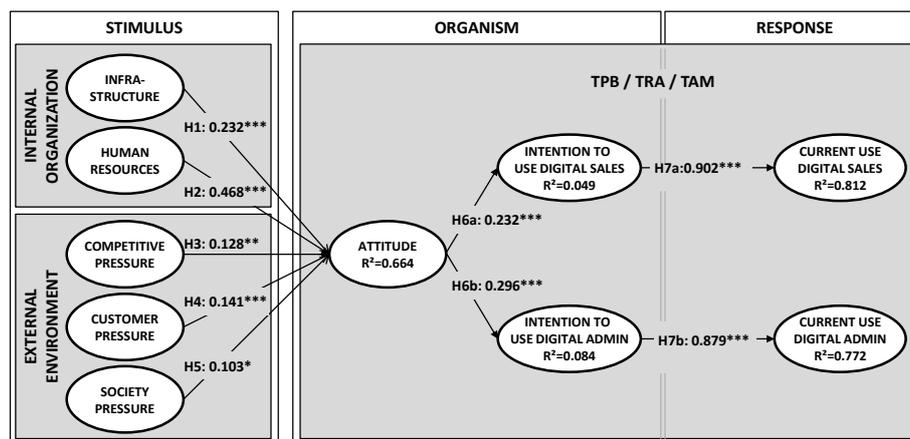
Construct	Indicator	Loading / Weight	t-statistics	Significance	VIF	R ²	AVE	Composite Reliability	Cronbach's Alpha
Available Infrastructure	AI1	0.394	2.595	***					
	AI2	0.661	4.440	***	-	-	-	-	-
	AI3	0.219	2.003	**					
Available Human Resources	HR1	0.023	0.369	ns					
	HR2	0.404	5.316	***	-	-	-	-	-
	HR3	0.671	9.302	***					
Perceived Competitive Pressure	PC1	0.345	2.039	**					
	PC2	0.115	1.072	ns	-	-	-	-	-
	PC3	0.895	9.720	***					
Perceived Customer Pressure	CP1	0.176	1.592	ns					
	CP2	0.797	8.841	***	-	-	-	-	-
	CP3	0.591	5.166	***					
Perceived Society Pressure	SP1	0.591	4.183	***					
	SP2	0.538	4.669	***	-	-	-	-	-
	SP3	0.501	3.865	***					
Attitude	A1	0.839	30.990	***					
	A2	0.794	23.629	***	1.64	0.664	0.661	0.854	0.743
	A3	0.805	22.202	***					
Intention Digital Admin	IA1	0.084	1.075	ns					
	IA2	0.473	2.552	**		0.084	-	-	-
	IA3	0.605	4.876	***	-				
	IA4	0.272	1.514	ns					
Intention Digital Sales	IS1	0.063	0.933	ns					
	IS2	0.381	2.196	***		0.049	-	-	-
	IS3	0.714	4.623	***	-				
	IS4	0.010	0.144	ns					
Current Use Digital Admin	CA1	0.115	1.378	ns					
	CA2	0.491	2.756	***		0.772	-	-	-
	CA3	0.555	4.309	***	-				
	CA4	0.302	1.640	ns					
Current Use Digital Sales	CS1	0.053	0.800	ns					
	CS2	0.351	2.021	**		0.812	-	-	-
	CS3	0.748	5.014	***	-				
	CS4	0.039	0.571	ns					

4.2 Measurement Model

The research model has one reflective construct ('Attitude towards Digitalization'). The other nine constructs are formative, so that different analyses are needed [17]. The significance of the constructs' indicators is assessed by their loadings (reflective constructs) or weights (formative constructs) and their t-values. Table 3 shows the t-values as well as the corresponding loadings/weights for all indicators of our model and further indicates the result regarding the calculated significances. Concerning the reflective construct, all indicators are significant [25]. For the convergence criterion, three measures have to be checked: the average variance extracted (AVE), the composite reliability, and the Cronbach's alpha [8]. As the AVE (Average Variance Extract-

ed) is 0.6609 (minimum > 0.5), the composite reliability is 0.8539 (min. 0.7) and Cronbach's alpha is 0.7432 (min. 0.7), the model fits to the convergence criteria [8],[10],[18],[21],[20]. The discriminant validity that indicates if constructs are sufficiently different is also given as the model complies with the Fornell-Larcker criterion: Its highest squared construct correlation is meeting the *AVE* maximum of 0.5 and the loadings of the reflective indicators are significantly higher than their cross loadings as compared to the other constructs. The internal consistency is given, as the reflective construct exceeds the critical value of 0.7 for Cronbach's alpha (Attitude towards Digitalization: 0.7432) [20]. The predictive validity of a reflective construct shows if the data points of the construct's indicators are well predicted. The prediction validity Q^2 is with 0.3201 higher than the minimum of 0 [21]. For the formative constructs, the discriminant validity must be verified. The highest correlation between the latent variables with a value of 0.9016 still matches the maximum of 0.9, so that the criterion is met [21]. In addition, multicollinearity between indicators of formative constructs is not permitted [12],[14]. The variance inflation factor (VIF) for all indicators i , with $VIF_i=1/(1-R_i^2)$ is lower than five and the condition indices are below 30 so that there is no sign for multicollinearity [21]. Hence, no item had to be omitted.

Figure 1: Conceptual model and results (* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$)



4.3 Structural Model

The variance inflation factor of constructs with two or more influencing factors (here: Attitude, $VIF=1.64$) is lower than the required level of five and stays even below 3.333, which shows that there is no multicollinearity [13]. The value of R^2 represents the coefficient of determination which indicates a substantial (moderate, weak) influence if the value exceeds 0.67 (0.33; 0.19) [50]. The t-values given in Table 4 and their path coefficients allow conclusions as to the validity of the formulated hypotheses. In sum, all stated hypotheses are significant [17]. See Figure 1 for the results.

Table 4. Path coefficients and effect sizes

Hypothesis	Path Coefficient	<i>t</i> -value	Significance	Effect Size f^2
H1	0.232	3.958	***	0.12
H2	0.468	6.076	***	0.38
H3	0.128	2.069	**	0.03
H4	0.141	3.135	***	0.04
H5	0.103	1.929	*	0.01
H6a	0.232	2.937	***	0.06
H6b	0.296	3.034	***	0.10
H7a	0.902	48.367	***	-
H7b	0.879	46.772	***	-

5 Conclusion

5.1 Results and Implications

The results of our survey among 223 owners of LOOROs in 26 cities in Germany have confirmed all hypotheses. The explanatory power of the model (R^2) is on a high level (77.2% & 81.2%). Our results show that the examined external stimuli (organizational and environmental) have an impact on the attitude towards digitalization, what in turn has an impact on the intentions and subsequently on the current usage of digital tools and applications among LOOROs.

Concerning our research question, “*How do internal and external factors influence the adoption of digital tools by owners of LOOROs*”, our results show for the internal organizational influence factors that the “Available Organizational Infrastructures” as well as the “Available Human Resources” have an impact on the attitudes towards digitalization. Both hypotheses (H1, H2) were confirmed and turned out to be highly significant. This holds in particular for the availability of human resources which have the highest impact by far among all factors. That means that employees drive innovation processes of LOOROs and influence the shop owners if they have enough competencies. However, the descriptive results show only a medium availability. 44% (full agree and agree) of the respondents found their available human resources to have enough “competencies” (HR2) and to be “motivated” (HR3) to handle digitalization (58%). Concerning the “infrastructural readiness”, the level is even lower. Only 31% of the respondents agreed or strongly agreed that they have sufficient “infrastructural resources” (AI1) to face the digitalization challenge (neutral: 43%). Additionally, only 28% confirmed that they have sufficient “capacities” (AI2) (neutral: 42%). Finally, only 26% stated that they have a sufficient “IT-Infrastructure” (AI3) for the challenges of the digitalization (neutral: 28%).

Regarding the external environment, our findings show that all examined factors also have an impact on the attitudes towards digitalization, as all hypotheses (H3, H4, H5) could be confirmed. Surprisingly, LOOROs perception of the pressures from the near environment (Customers and Competitors) and far environment (Society) is contradicting the currently very active digital developments of the customers and the competitors [50],[53]. For the “Perceived Competitive Pressure” our results show that the perception of the “own development” compared to the digital development of the

competitors is on a medium to low level, as 40% consider their own digitalization behind competitors (PC1) and 38% perceive a need to catch up (PC2). But 88% believe that they cannot escape digitalization (PC3). Concerning the “Perceived Customer Pressure” towards digitalization, 11% of the owners perceive “explicit customer expectations” (CP1) with regards to digitalization, 25% perceive pressure to digitalize (CP2) and only 54% of the respondents consider the option that their customers could have digital expectations (CP3). Finally, the examination of the “Perceived Society Pressure” showed that 85% consider digitalization to be important (SP1), while only 56% think that the “society expects digitalization” from them (SP2). Furthermore, only 37% feel that the “government is pressuring” them towards digitalization (SP3). Concerning the organism of the model, which is influenced by the examined stimuli, the owners of LOOROs expressed an overall positive attitude towards digitalization. Nearly 60% have answered that “digitalization is good” (A1) and “easy to learn” (A2) and 52% that digitalization will “increase their effectiveness” (A3).

Subsequently, our findings for the “Intention to Use” and the “Current Use of Digitalization” are emphasizing the consequences of LOOROs’ perception of the internal organizational and external environmental influence factors: LOOROs still hesitate to adopt digital technologies. Concerning the usage of digital tools and application on the sales channels, LOOROs report on low usage intentions, with just 12.6% of them confirming their intention to sell on third-party e-marketplaces (IS2). Only 8% of the respondents expressed their intention to use in-store applications (IS3). Further, only 28% indicated their intention to use an own online shop (IS1), but surprisingly, nearly 41% stated that they plan to use online advertisement in the future (IS4). Finally, the results for the response section of the model are in line with the low intentions and the significance of the indicators from the organism and are showing also an overall low “Current Use” of digital tools and applications among LOOROs. Just 9% make use of third-party e-marketplaces (CS2) to sell their products so far and only 2.3% reported a use of in-store applications (CS3). Only 13% of LOOROs operate their own online shop (CS1) and 22.4% use online advertisement (CS4). With respect to the use of digital tools and applications for administrative purposes, the respondents expressed slightly stronger intentions, with 59% of them intending to use administrative software (IA1), 62% planning to use inventory management systems (IA2), and 41% seeking to use digital payment systems (IA4). Concerning the “Current Use”, our results show that 58.3% of owners of LOORO already use administration software (CA1), 56.1% use digital inventory management systems (CA2) and 35% use digital payment systems (CA4). With only 2%, the lowest usage was reported for digital In-Store Application (CA3). In conclusion, our results show that LOOROs are facing a shortage of available infrastructure and human resources, and that they face a situation of uncertainty. It appears that LOOROs hold and wait with their decision towards digitalization, as they do not know whether their own available infrastructure is sufficient or not and in which technologies to invest [41]. Surprisingly, they do not perceive pressure from changing customer expectations and thus do not see a need to react to digitalization efforts of competitors. If LOOROs are digitalizing their business, they seem to be more open to use digital solutions that improve their operations (pace of work, convenience) [7],[36].

5.2 Managerial Implications

The above results bring about important implications for the owners of LOOROs: First of all, LOOROs seem to be decoupled from their near and far environment [7],[38],[40]. They rarely perceive any pressure towards digitalization neither from their customers or competitors, nor from the society who all have already adapted to the digital age and are getting more and more accustomed to digital sales and services [35]. To reconnect LOOROs with the environmental developments, the owners / managers need to work most importantly on their perception of the current and potential customer needs and expectations [19],[40]. Talking with and involving their employees might help with this as their competencies and motivation is one of the main drivers. Secondly, LOOROs neglect opportunities of digital sales channels and are subsequently inexperienced with the according tools and applications. To first experience the digital world, LOOROs should start using online sales and marketing channels with low entry barriers, like third-party platforms (also local shopping platforms), to keep in touch with existing customers, explore new markets and to get started in the e-commerce arena [47]. Thirdly, LOOROs face a phase of uncertainty and thus remain passive. In fact, opposite behavior would make much more sense: LOOROs should continuously analyze and track the digital developments and actively seek for opportunities [38]. Finally, LOOROs seem to be lost in digitalization, their erroneous perception of the external developments indicates a need for an external (public or governmental) push to support the necessary internal turn around for LOOROs to regain competitive power.

5.3 Limitations & Future Research

When evaluating the above findings, the following limitations need to be taken into account: First of all, LOOROs are not easy to survey and although we collected data from 223 LOOROs in 26 cities, the rather small sample size limits the explanatory power of our findings. Secondly, this study is based on the context of the German retail industry, where LOOROs have a high market share and are traditionally well established and anchored in society. Therefore, the results cannot simply be adapted to other countries with their specific retail cultures. Thirdly, only owners of LOOROs have been investigated but not their customers. 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 apps for sales 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 (including e-commerce channels and online marketing strategies) 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 (subsidies, regulations) the digital development of LOOROs.

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