

**THESIS OF THE
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CONSUMER ATTITUDE TOWARD MOBILE APPS IN
RETAIL: THE ROLE OF CUSTOMER SATISFACTION
AND PUSH NOTIFICATIONS

Created

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Research Backgrounds and Objective

Background

Retail is one of the most important sectors of the economy in Germany and many other countries (Statistisches Bundesamt, 2020b). While stationary retail is coming under increasing cost pressure, partly due to declining productivity per unit area, e-commerce is steadily gaining in relevance (HDE et al., 2019). More than twelve percent of German retail sales were already generated online in 2018 (Statistisches Bundesamt, 2020a). Digitization offers new opportunities for retailers, even outside of e-commerce (Deckert & Wohllebe, 2021). In this context, the strong spread of smartphones is highly relevant (BITKOM, 2019). In particular, **mobile apps**, which are among the most relevant smartphone functions from the user's perspective (BITKOM, 2017), are already being used in numerous sectors such as healthcare, education and tourism (McGookin et al., 2019; Papadakis et al., 2018; Ross, 2020).

Researchers are focusing more and more on the topic with the emergence of mobile apps. However, data from ScienceDirect.com (2021) shows that in particular the last few years have received a great degree of attention. For example, around a quarter of all papers on "mobile apps retail" published overall since 2007 were published in 2020. With regard to "mobile apps" in general, around 20% of all papers published on this topic since 2007 were published in 2020 (Figure 1).

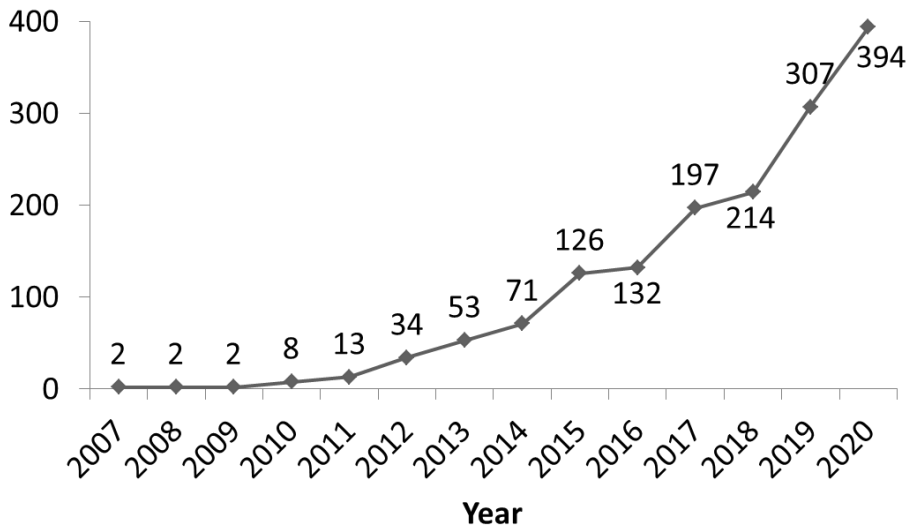


Figure 1: Number of publications on “mobile apps retail” per year since 2007, based on ScienceDirect (2021).

Mobile apps can also be used **effectively in stationary retail** as an advertising tool and can thus have a positive impact on customer loyalty and sales (Bellman et al., 2013; Dinner et al., 2015; Heerde et al., 2019; S. J. Kim et al., 2015; Verma & Verma, 2013). Since consumers must first install and use the app, understanding the interaction between consumers and mobile apps is of great importance, especially against the background of acceptance and recommendation.

Based on the Theory of Reasoned Action (TRA) according to Fishbein and Ajzen (1975) and the Technology Acceptance Model (TAM) according to Davis (1985), it can also be assumed that the acceptance and use of mobile apps in retail results from the intention to use. Previous research papers on consumer acceptance in this context preferentially use the TAM. Accordingly, results show that perceived benefit of use and perceived ease of use are the main factors that affect consumer acceptance

of mobile apps in retail (Briz-Ponce & García-Peñalvo, 2015; Saare et al., 2019; Vahdat et al., 2020; Yoon, 2016).

In terms of building a sustainable user base, retailers need to ensure, on the one hand, that users are satisfied with the app, where satisfaction is individually determined by balancing expectations and actual experience (Rosa, 2019; Ross & Wohllebe, 2021). At the same time, satisfaction also leads to repeat purchases and a willingness to recommend the app to others, and in this respect is not only relevant *ex post* for evaluating an app's performance, but should also be understood *ex ante* as a predictor of its growth through recommendations (Luo et al., 2019; Reichheld, 2003; Siqueira et al., 2019; Xu et al., 2015).

Research Gap and Contributions

The increasing relevance of mobile apps in general and the specific challenges of retail require an in-depth understanding of mobile apps in retail, also and especially with a view to the customer. Previous research papers in the context of mobile apps often focus primarily on the mobile app as a technical product and in many cases ignores the broader context in which it stands (Beeck et al., 2020; S. Kim & Baek, 2018; Parker & Wang, 2016; Tupikovskaja-Omovie & Tyler, 2018). In particular, the question of the role of the retailer who develops, publishes, and distributes a mobile app, away from a primarily technological perspective using the TAM, has been little explored (Wohllebe, 2021). At the same time, however, various research results suggest that in the case of branded apps in the broader sense, the **brand associated with a mobile app** certainly has an impact on acceptance and usage (Bellman et al., 2013; Peng et al., 2014; Stocchi et al., 2018; Wu, 2015). Because of this relationship, the question of the effect of consumer attitude toward the

retailer on consumer acceptance and ultimately on the recommendation of the retailer's mobile app must be considered as a research gap.

To fill this research gap, consumer acceptance and recommendation of mobile apps in retail must not be viewed solely as a result of technological performance in terms of meeting perceived benefit expectations and ease of use expectations. Rather, research on consumer acceptance and recommendation of a retailer's mobile app must also consider the retailer itself in its role as the app publisher. A bridge between a retailer's app as a technology and the retailer as the company publishing the app is needed. Thus, this thesis fills the research gap described above by **shifting the focus from the app as a technology to the retailer as a company** and brand when examining consumer adoption and recommendation of the retailer's app. Additionally the thesis incorporates the role of push notifications in this context as a central feature of mobile apps.

Based on the identified research gap, this thesis integrates four research avenues: the factors of consumer acceptance in the specific case of retail, quantifying the influence of customer satisfaction with a retailer on the acceptance of its mobile app, the role of push notifications as a central feature of mobile apps and in particular the influence of the frequency of notifications on consumer rejection, and finally the perception of a retailer and its push notifications as **factors influencing the willingness to recommend the app** and in this respect indirectly on satisfaction with the app.

This allows for a **comprehensive look at**, in particular, **the role of customer satisfaction** with a retailer in relation to acceptance and, ultimately, recommendation of the retailer's app.

Research Questions and Objectives

The overall objective is to gain an understanding of how **consumer attitude toward mobile apps in retail is affected by customer satisfaction with the retailer and how this relationship is influenced by push notifications**. Recommendation is understood to be the most important indicator of satisfaction, in line with the literature considered. This leads to the overarching research question:

RQ: What is the role of the retailer as a company in consumer acceptance and recommendation of its mobile app and how is this relationship influenced by push notifications? (cf. Wohllebe et al. (2022))

The overarching research question requires taking multiple perspectives, so initially there are three partially interrelated questions which answers finally lead to answering the overarching research question:

Q1: What are the drivers of consumer acceptance of mobile apps in retail? (cf. Wohllebe et al. (2020))

Q2: What influence does customer satisfaction with a retailer have on the willingness to accept its app? (cf. Wohllebe et al. (2020))

Q3: How does variation in advertising pressure from different frequencies of push notifications affect consumer rejection of mobile apps in retail? (cf. Wohllebe et al. (2021))

The research approaches the overarching goal and the research questions in **four publications**, which, taking into account further own and external papers, partly build on each other. Figure 2 summarizes the research problems identified, the objectives derived from the research problems and the published papers included to achieve these objectives.

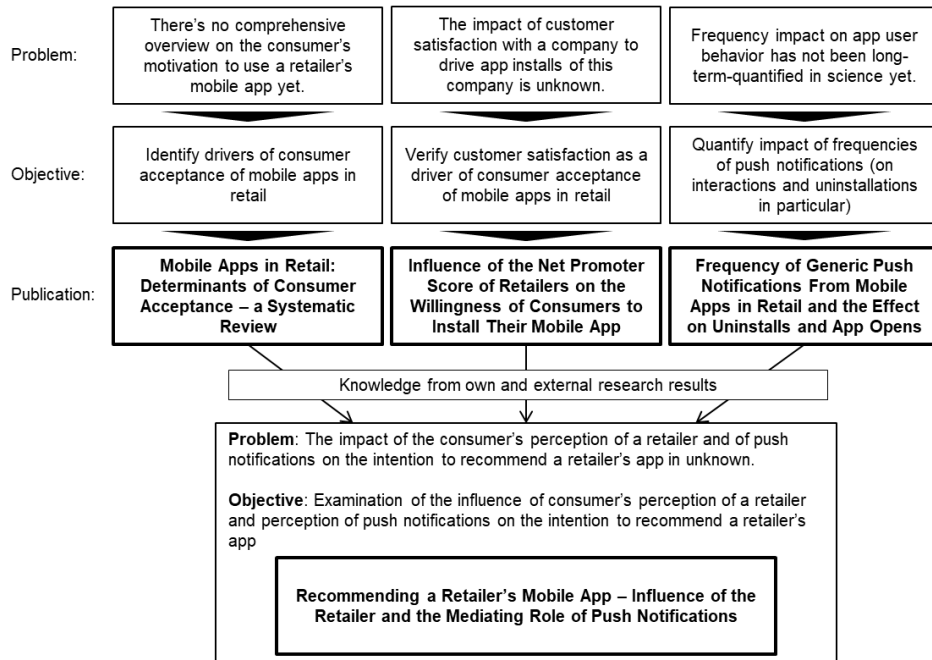


Figure 2: Overview of the structure of the dissertation based on the identified research problems and the derived goals as well as the included publications (own illustration).

A review is first used to provide a comprehensive overview of the **drivers of consumer acceptance of mobile apps in retail** (cf. Wohllebe et al. (2020)). As a results, this paper shows, among other things, that consumer's perception of the retailer itself (in terms of the brand and in terms of the service provided) plays an important role (Iyer et al., 2018; Kaushik et al., 2020; Rosa, 2019). However, the **influence of customer satisfaction with a retailer as a driver for app installations** is still rather unknown and in particular not quantified. Therefore, the extent to

which customer satisfaction with a retailer being a driver of consumer acceptance of mobile apps in retail will be examined (cf. Wohllebe et al. (2020)).

To achieve the overall objective, the role of push notifications is also to be elaborated. To this end, the factors that influence consumer perception of push notifications in the retail sector are to be identified. In addition to other factors, which will be developed in the fourth publication, the **effect of the frequency of push notifications on app opens and app uninstalls** will be examined in particular (cf. Wohllebe et al. (2021)). This influence on app user behavior in the context of mobile apps in retail has not yet been quantified in the long term.

In the final publication, the model for achieving the overall goal of the dissertation will be developed (cf. Wohllebe et al. (2022)). This model aims to investigate the **influence of the consumer's perception of a retailer and of push notifications the retailer sends via its app on the consumer's willingness to recommend the retailer's app**. In addition to the factors that influence the perception of push notifications, the factors that can be used to summarize the consumer's perception of a retailer will be elaborated as well.

The model will understand mobile apps in retail not only as a technological product, but also in the context of the retailer publishing the app and the push notifications sent via the app. As such, the model will simultaneously provide an initial impetus to understand mobile apps more holistically and provide a new, complementary view on factors beyond the well-established Technology Acceptance Model approach, which is primarily narrowed to technology.

Materials and Methods

The four publications on answering the research questions and achieving the objectives are based on different methodological approaches and data bases.

The first paper aims to identify the drivers of consumer acceptance of mobile apps in retail (cf. Wohllebe et al. (2020)). Some research already exists along this line of inquiry, but there is a lack of a comprehensive overview of these research findings. To provide such, a **systematic review based on the PRISMA statement** is done (Moher et al., 2009). The PRISMA statement is a process to identify, screen, select and include relevant research in a literature review. Also the criteria to find relevant literature are defined in a structured way. Therefore, the PRISMA statement ensures that the results are reproducible and allows the investigation to be repeated in the future to conclude about the developments over time.

In the first step of PRISMA, a total of 44,800 search results for "mobile apps retail" will be reduced to 38,500 after exclusion of patents and citations. Filtering for results since 2016 or later reduces the papers eligible for screening to 23,200. Figure 3 shows how in the subsequent PRISMA process the literature list is finally reduced to 18 papers. The content of these 18 papers is analyzed in order to achieve the research objective formulated at the beginning (cf. Wohllebe et al. (2020)).

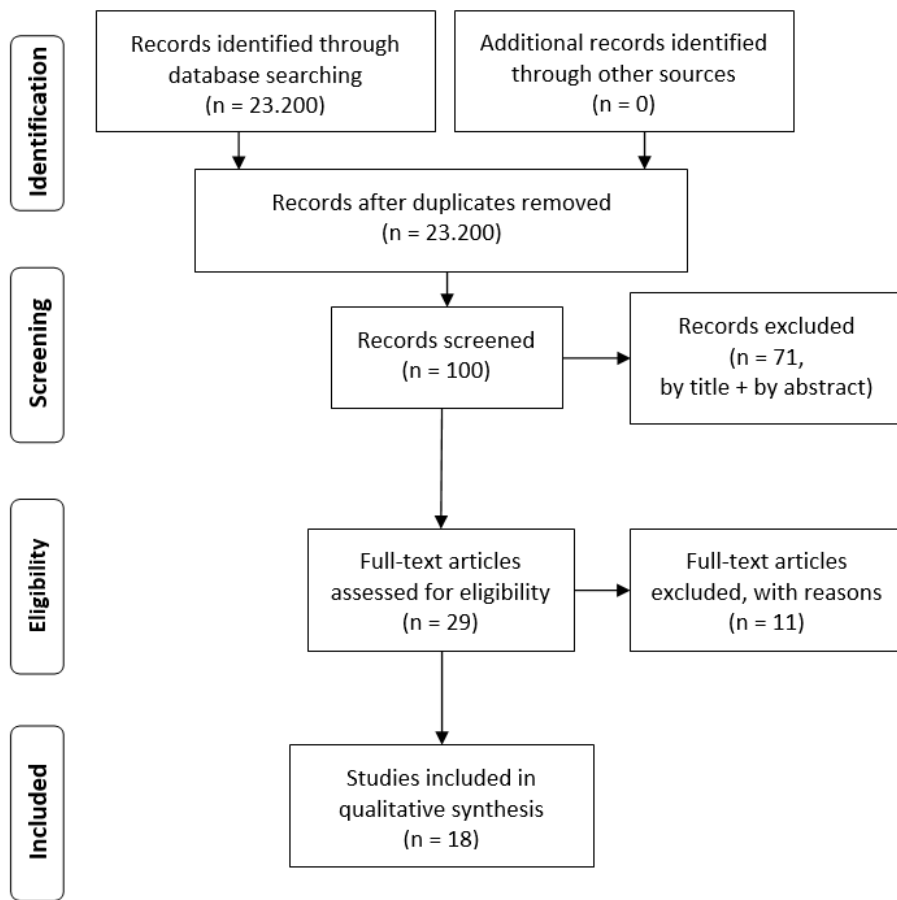


Figure 3: PRISMA statement (cf. Wohllebe et al. (2020) based on Moher et al. (2009)).

The second paper is dedicated to the question of what influence customer satisfaction with a retailer has on the willingness to accept its app. To this end, the influence of customer satisfaction as a driver of consumer acceptance of mobile apps in retail is to be verified. The main **method used to test different hypotheses** in this context is the **linear regression**. The willingness to install an app is the dependent variable and the Net Promoter Score (as an expression of customer satisfaction) is the independent, influencing variable (Frost, 2017, pp. 1, 6). The results of a survey conducted between January and May 2020 in Germany serve as

the data basis, with consumers being asked, among other things, about their willingness to recommend a total of five retailers. Consumers are also asked to indicate for each of the five retailers how likely they would be to install the app of the respective retailer or whether they have already installed it. A total of 105 valid responses can be collected (cf. Wohllebe et al. (2020)).

The third paper examines a specific issue in the context of push notifications that can be sent via mobile apps. The paper aims to find out whether and to what extent the frequency of push notifications (as a form of advertising pressure) affects uninstalls and app opens (as an expression of consumer rejection) in the context of mobile apps in retail. Using a real app, 17,500 app users are divided into five groups of 3,500 users each and **a field experiment is conducted** (cf. Wohllebe et al. (2021)).

Table 1: Start-end-comparison of recipients, direct opens and indirect opens per frequency group (cf. Wohllebe et al. (2021)).

Frequency	Recipients		Direct Opens		Indirect Opens	
	Start	End	Start	End	Start	End
Two per week	3500	3274	478	358	734	477
One per week	3500	3322	479	390	753	492
One every two weeks	3500	3389	480	435	725	550
One per month	3500	3411	495	460	714	551
None	3500	3452	500	530	721	619

Over a period of 7 weeks in summer 2020, the five groups are each exposed to a different frequency of push notifications (from 2 messages per week to no message at all). Subsequently, a linear regression is used to determine whether there is a correlation between advertising pressure and consumer rejection. Table 1 shows per group the recipients and

opening numbers per frequency group at the beginning and at the end of the experiment (cf. Wohllebe et al. (2021)).

The fourth paper examines the final and overarching research question of the influence of a retailer as a company on consumer acceptance and recommendation of its mobile apps and the influence of push notifications in this regard. It aims to find out what influence the consumer perception of a retailer and the perception of push notifications have on the intention to recommend the retailer's app. Therefore a **linear structural equation model** (SEM) is used, assuming causal relationships between variables based on a literature review and confirms (or rejects) them by finding correlations. The data used to calculate the model are based on an online questionnaire that asks about eight manifest variables, which are transformed into three latent variables (Steinmetz et al., 2015, p. 52f.). The questionnaire is validly answered by a total of 131 (cf. Wohllebe et al. (2022)).

Table 2 summarizes for each publication which objective the publication pursues and which method and data are used.

Table 2: Overview of objectives, data and methodology.

Publication	Objective	Methodology	Data
Mobile Apps in Retail: Determinants of Consumer Acceptance – a Systematic Review (Wohllebe, Dirrler, et al., 2020).	Identify drivers of consumer acceptance of mobile apps in retail	Systematic review (PRISMA)	Number of papers: 44,800 (search results), 23,200 (filtered), 18 (included)
Influence of the Net Promoter Score of Retailers on the Willingness of Consumers to Install Their Mobile App (Wohllebe, Ross, et al., 2020).	Verify customer satisfaction as a driver of consumer acceptance of mobile apps in retail	Online questionnaire and linear regression	105 respondents, Germany
Mobile apps in retail: Effect of push notification frequency on app user behavior (Wohllebe et al., 2021).	Quantify impact of frequencies of push notifications (on interactions and uninstallations in particular)	Field experiment and linear regression	17,500 app users, 5 different frequencies, 7 weeks, German retailer app
Recommending A Retailer's Mobile App – Influence Of The Retailer And The Mediating Role Of Push Notifications (Wohllebe et al., 2022).	Examination of the influence of consumer's perception of a retailer and perception of push notifications on the intention to recommend a retailer's app	Online questionnaire and structural equation model	131 respondents, Germany

Results

The results of the four publications can answer the research questions so that the previously outlined objectives can be achieved.

The paper on the question of what the drivers of consumer acceptance of mobile apps in retail are provides three main points. On the one hand, most of the literature in this context refers to generic influencing factors such as perceived value, practical benefits, user friendliness and trust. On the other hand, apart from these factors, which mainly refer to the app as a technical product, two points are essential for consumer acceptance in the retail sector. **Acceptance is positively driven by the retailer's brand and customer satisfaction** with its services. Additionally, the literature review also shows that consumers expect a retailer's app to be less of an online store and more of a digital shopping assistant that assists with on-site shopping. It should be noted that the results depend significantly on the criteria for searching and selecting the literature (cf. Wohllebe et al. (2020)).

Regarding the impact of customer satisfaction with the retailer on the willingness to install the retailer's mobile app, the results confirm the hypotheses derived from the literature. Specifically, there is a **significant positive influence of customer satisfaction with the retailer on the willingness to install its app**. A positive correlation between Net Promoter Score and average willingness to install an app per retailer can also be demonstrated. The results are based on survey data and assume a very simple model, however they provide valuable insights for theory and practice (cf. Wohllebe et al. (2020)).

The impact of different frequencies of push notifications (advertising pressure) on app-related consumer response (uninstalls and app opens) is also investigated. In particular, the results show that there is a significant influence of notification frequency on uninstalls. An **increase in push notification frequency leads to increasing app uninstalls**. Increasing notification frequency has a significant negative effect on direct interactions with push notifications. These findings are consistent with hypotheses derived from other field of human-computer interaction research (cf. Wohllebe et al. (2021)).

Regarding the overarching research question of what role a retailer as a company has on the willingness to recommend its mobile app and how this relationship is influenced by push notifications, a structural equation model is calculated (cf. Wohllebe et al. (2022)). Figure 4 shows **the latent and manifest variables of the proposed model**.

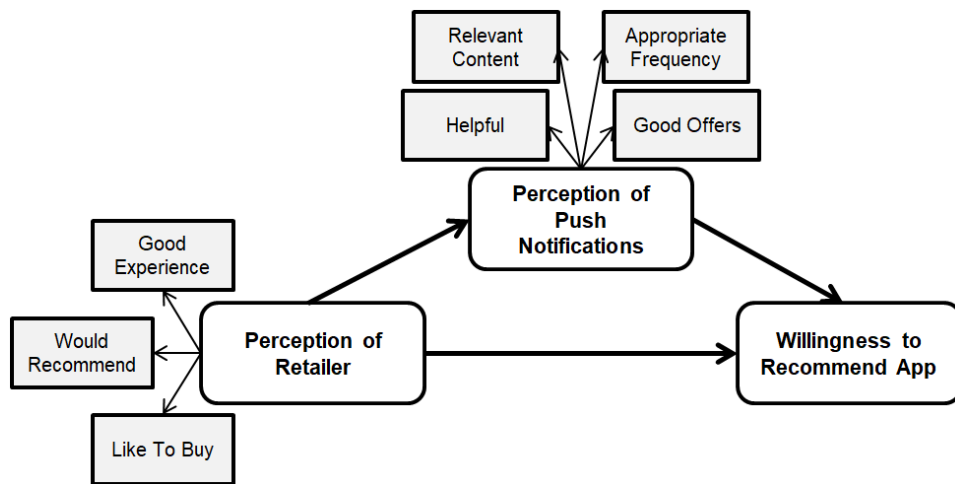


Figure 4: Proposed model including measured variables (cf. Wohllebe et al. (2022)).

The data collected point to **good reliability**, with frequency included in the model despite the low factor loading based on the literature.

Table 3 summarizes the data on the composition of the latent variables.

Table 3: Measures of latent variables (cf. Wohllebe et al. (2022)).

	Factor Loading	Uniqueness	Cronbach's Alpha
Perception of Retailer			
1.1 Enjoyment	.7838	.3531	.88
1.2 Recommendation	.7951	.3182	
1.3 Experience	.7994	.3519	
Perception of Push Notifications			
2.1 Usefulness	.8171	.3218	.73
2.2 Offers	.6919	.4728	
2.3 Relevance	.8141	.2925	
2.4 Frequency	.1962	.9610	

Regarding the **goodness of fit** of the model, the indices proposed by Kline (2015) and Hu & Bentler (1999) indicate a good fit of the model (cf. Table 4).

Table 4: Model fit statistics (cf. Wohllebe et al. (2022)).

Index	Value
Chi Square	21.515
p(Chi Square)	.254
CFI	.990
TLI	.985
RMSEA	.038
P(RMSEA)	.569
SRMR	.044

Figure 5 shows the **model with the latent variables and the coefficients**.

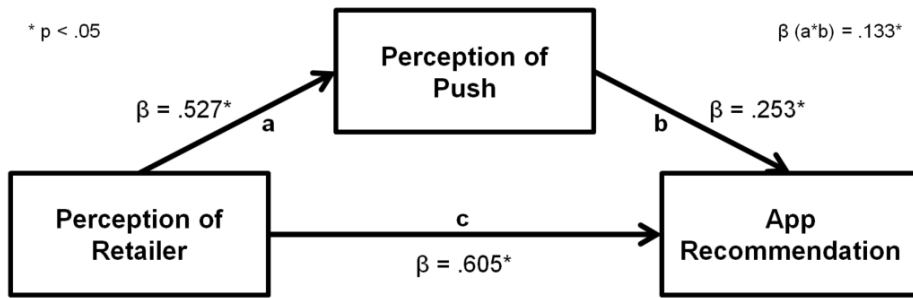


Figure 5: Final estimated model, standardized parameters (cf. Wohllebe et al. (2022)).

For the paths of the model, Table 5 shows the results for the estimated regression coefficients with standard errors and z-values. All calculated coefficients are significant at $p < .05$.

Table 5: Regression results (cf. Wohllebe et al. (2022)).

Effect	Estimate	Standard Error	z-Value	p
a	.527	.107	4.937	.000
b	.253	.106	2.397	.017
c	.605	.121	4.985	.000

In total, the model shows that the overall perception of the retailer has a direct positive effect on the willingness of customers to recommend its app. With regard to the role of push notification perception as a mediator in the relationship between retailer perception and app recommendation, the model confirms the hypotheses. Because both the direct path (c; $\beta = .605$, $p = .000$) and the indirect path (ab; $\beta = .133$, $p = .021$) via push notifications are significant, partial mediation is present. Part of the positive effect of retailer perception on app recommendation is explained by the positive perception of push notifications. Table 6 summarizes the results of the mediation analysis.

Table 6: Regression results of mediation analysis (cf. Wohllebe et al. (2022)).

Effect	Estimate	Standard Error	z-Value	p
a	.527	.107	4.937	.000
b	.253	.106	2.397	.017
c	.605	.121	4.985	.000

In this respect, the **proposed model fully confirms the hypotheses** derived from the literature. It should be noted that in this model the relevance of frequency (as a manifest variable) in the perception of push notifications (as a latent variable) is less relevant than assumed. It seems that users are more willing to tolerate higher frequencies in the case of relevant notifications (cf. Wohllebe et al. (2022)).

In summary, the research contributes to a better understanding of the consumer's attitude towards mobile apps in retail. Despite the geographical limitations, the results largely confirm the existing findings of related questions and disciplines and provide new insights on how consumers adopt mobile apps from retailers. In particular, the results provide the **impetus for research to focus even more on the role of the retailer** – in addition to the already intensively discussed issue of apps as technology.

New Scientific Results

The new scientific results are based on objectives. They are based on the research gaps identified in the literature review. The individual papers provide a variety of new insights. Table 7 gives a brief overview of the new scientific findings.

Table 7: Overview of new scientific results, derived from publications.

No.	Result	Novelty	Reference(s)
1	Retail consumers expect features from mobile apps that enhance the in-store shopping experience.	First time summary of customer expectations of mobile apps specifically in retail by systematic review of multiple studies	Wohllebe et al. (2020a)
2	Retailers as app publishers, companies and brands have a high impact on consumer adoption of mobile apps in retail.	First time summary of customer expectations of mobile apps specifically in retail by systematic review of multiple studies	Wohllebe et al. (2020a)
3	Customer satisfaction with a retailer has a significant positive impact on app installation readiness.	First time investigation of impact of customer satisfaction, expressed in Net Promoter Score, on app installation willingness in retail sector	Wohllebe et al. (2020b)
4	Consumer perception of retailer as app publisher has a strong positive impact on app recommendation.	First time to prove influence of retailer's overall perception as determinant in app context	Wohllebe et al. (2022)
5	Increased frequency of push notifications significantly increases app uninstalls.	First time to prove influence of frequency on app uninstalls in experiment based on real observed data in retail	Wohllebe et al. (2021)

It was found that there's a lack of insights into what motivates consumers to use a retailer's mobile app. For a positive consumer attitude towards mobile apps in retail, the added value offered is of high importance. The systematic review shows that this added value is manifested in the fact that a retailer's mobile app **must enhance the in-store shopping experience**. In particular, it is not enough to merely offer an online shopping function with the app (cf. Wohllebe et al. (2020a)).

Also, the influence of customer satisfaction on the willingness to install a mobile app in retail was unknown until then. The systematic review suggests that the **retailer as a company and brand** is very important for consumer adoption in this regard (cf. Wohllebe et al. (2020a)). The study of the influence of customer satisfaction with the retailer on the willingness to install an app shows, especially taking into account the Net Promoter Score, for the first time a significant **positive impact of customer satisfaction** on the willingness to install an app in the retail context (cf. Wohllebe et al. (2020b)). Positive consumer perception of the retailer is a decisive factor in the willingness to recommend an app, whereby willingness to recommend can be seen as a measure for satisfaction. The research results show for the first time very clearly that a **mobile app in retail benefits strongly from the retailer as its app publisher** apart from its characteristics as a technical software product (cf. Wohllebe et al. (2022)).

The role of push notifications in the context of mobile apps in retail has also hardly been researched so far. Especially regarding the frequency of push notifications, there are hardly any reliable results from practical research – also from other research fields; the frequency impact on app user behavior has not been long-term quantified in science yet. On the one hand, the results show a significant impact of consumer perception of push notifications on app recommendation in retail (cf. Wohllebe et al. (2022)). On the other hand, and to the author's knowledge **these results are unique in science so far, real observed app user data** from an experiment show for the first time the massive negative impact of (too) high frequencies over a longer period of time on consumer attitudes in the form of quantifiable app uninstalls (cf. Wohllebe et al. (2021)).

Conclusions and Suggestions

The overall objective of this dissertation is to gain an understanding of the consumer attitude toward mobile apps in retail focusing on the impacts of customer satisfaction with the retailer and how this relationship is influenced by push notifications.

Therefore, the first step is to identify the drivers of consumer acceptance of mobile apps in retail. The results emphasize, in addition to the factors on the Technology Acceptance Model, in particular the **functional requirements** of the stationary shopping experience and the importance of a **company's brand**.

Subsequently, the influence of customer satisfaction with a retailer as a driver for app installations is examined and quantified. The willingness to recommend is used as an indicator for customer satisfaction. The result shows a **strong connection of the retailer brand and the behavioral intention to install the retailer's mobile app**.

In the third step, as a contribution to the understanding of the perception of push notifications, the effect of the frequency of push notifications on app opens and app uninstalls is examined. Based on a field experiment, the results are an important contribution to the controversial debate regarding the effects of frequency. The results show that a **higher frequency** of non-personalized push notifications over a period of several weeks **clearly has a negative impact** on app opens and increases the uninstall rate.

Finally, the influence of the consumer's perception of a retailer and of push notifications the retailer sends via its app on the consumer's willingness to recommend the retailer's app is investigated. The results

show that the **consumer's perception of a retailer** has a positive effect on the consumer's perception of push notifications and on the intention to recommend the app. Also, it can be shown that the perception of push notifications partly mediates the influence of the retailer's perception on app referral.

Overall the retailer takes a critical role in consumer acceptance and adoption of retailer mobile apps. Push notifications are also important in this case. Previous literature primarily focuses on apps as a technology. The entirety of the elaboration shows that this focus is not sufficient: **the app publisher and the marketing actions controlled through the app must also be considered.**

The findings offer a **variety of practical implications** for using mobile apps in retail. The implications arise on the individual publications. With regard to the functional orientation of mobile apps in retail, they must above all improve the brick-and-mortar shopping experience by functioning as a digital shopping assistant (cf. Wohllebe, Dirrler, et al. (2020)). When acquiring new app users, retailers should not only focus on the technical quality of the app, but also increasingly leverage the overall business and their brand (cf. Wohllebe, Dirrler, et al. (2020), Wohllebe, Ross, et al. (2020), Wohllebe et al. (2022)). The results also show that satisfied and loyal customers are a particularly suitable target group for app marketing (cf. Wohllebe, Ross, et al. (2020)). With a view to long-term app user satisfaction and app recommendation, retailers should consequently offer not only a good app, but also a good overall customer experience (cf. Wohllebe et al. (2022)). In this context, push notifications and their relevance in terms of content, e.g., special offers, are of particular relevance (cf. Wohllebe et al., (2021, 2022)). When sending

push notifications, retailers must also ensure an appropriate frequency so as not to disturb app users (cf. Wohllebe et al. (2021)).

Several **theoretical implications for further research** can be derived from the limitations, but also from the newly gained insights. The results show that the focus of previous research on mobile apps in retail as a technological software product is only a limited representation of consumer attitude. More **comprehensive models and considerations** are needed to gain a holistic understanding of the drivers of consumer attitude. Specifically, future models that examine satisfaction with or recommendation of mobile apps in retail must also consider the app publisher, i.e., the retailer, as well as interactions with push notifications.

This knowledge contributes to a better understanding of mobile apps in retail and provides new impulses for further research. In particular, the results support the demand that research on mobile apps in retail in particular, but also on human-computer interaction in general, needs models that take a broader scope. Thus, not only the technology as such should be considered, but also the context from which the technology originates - in the case of this thesis **the retailer as the app publisher - should be given more scientific attention.**

Corresponding Publications

Papers of the Cumulative Dissertation

The following papers are part of the cumulative dissertation. The order of the list corresponds to the order in which the articles appear in the dissertation.

Wohllebe, A., Dirrler, P., & Podruzsik, S. (2020). Mobile Apps in Retail: Determinants of Consumer Acceptance – a Systematic Review. *International Journal of Interactive Mobile Technologies (IJIM)*, 14(20), 153–164. <https://doi.org/10.3991/ijim.v14i20.18273>

Wohllebe, A., Ross, F., & Podruzsik, S. (2020). Influence of the Net Promoter Score of Retailers on the Willingness of Consumers to Install Their Mobile App. *International Journal of Interactive Mobile Technologies (IJIM)*, 14(19). <https://doi.org/10.3991/ijim.v14i19.17027>

Wohllebe, A., Hübner, D.-S., Radtke, U., & Podruzsik, S. (2021). Mobile apps in retail: Effect of push notification frequency on app user behavior. *Innovative Marketing*, 17(2), 102–111. [http://dx.doi.org/10.21511/im.17\(2\).2021.10](http://dx.doi.org/10.21511/im.17(2).2021.10)

Wohllebe, A., Hübner, D.-S., Radtke, U., & Podruzsik, S. (2022, forthcoming). Recommending A Retailer’s Mobile App – Influence Of The Retailer And The Mediating Role Of Push Notifications. *Proceedings of International Conference on Interactive Mobile Communication, Technologies and Learning IMCL 2021*, 238–249.

Related Papers

The following papers are not part of the cumulative dissertation, but are closely related to it.

Wohllebe, A. (2020). Consumer Acceptance of App Push Notifications: Systematic Review on the Influence of Frequency. *International Journal of Interactive Mobile Technologies (IJIM)*, 14(13), 36–47. <https://doi.org/10.3991/ijim.v14i13.14563>

Wohllebe, A. (2022, forthcoming). Mobile Apps in Retail: Usage Frequency Before, During, and After the SARS-CoV-2 Pandemic. Proceedings of International Conference on Interactive Mobile Communication, Technologies and Learning IMCL 2021. International Conference on Interactive Mobile Communication, Technologies and Learning, Thessaloniki, Greece.

Wohllebe, A. (2021). Mobile Apps in Stationary Retail: Assessing the Theoretical and Practical Relevance of Features and Developing a Typology – Insights Into the German Market. Proceedings of the 15th International Conference on Economics and Business 2021, 208–222.

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Related Books

The following books are not part of the cumulative dissertation, but are closely thematically related to it.

Deckert, R., & Wohllebe, A. (2021). *Digitalisierung und Einzelhandel: Taktiken und Technologien, Praxisbeispiele und Herausforderungen* (1st ed.). Springer Gabler. <https://www.springer.com/de/book/9783658330897>

Wohllebe, A., & Wolter, N. (2022). *Smartphone Apps im Einzelhandel: Einsatzmöglichkeiten, Praxisbeispiele & Herausforderungen* (1st ed.). Springer Gabler.

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