Mobile payment and loyalty toward the retailer: An extended m-payment acceptance model

MÓNIKA ANETTA ALT[1] – IRMA AGÁRDI[2]

NFC mobile payment is one of the most recent technologies introduced at retailers' POS. However, this payment method is not widely available in retail stores yet. The investment in this technology would be enhanced if the retailers got a competitive advantage and increased consumer store loyalty. Therefore, this paper aims to study whether the acceptance of mobile payment at retailers' points of sales will increase loyalty toward retailers. The specific m-payment technology acceptance model was extended with the loyalty variable, and it was tested on a sample of 580 respondents and analysed with the SEM method. Our findings proved that usefulness, ease of use, social norms, compatibility, and enjoyment played a significant role in the intention to use m-payment technology. Moreover, the intention to use mobile payment in retail stores can create customer loyalty toward the retailer. The originality of the paper lies in extending the mobile payment acceptance model by the effect on retailers.

Keywords: loyalty toward retailers, technology acceptance, NFC mobile payment.
JEL codes: M31, O33, L86.

Introduction

Retailing is a highly competitive sector where companies are pushed to implement innovative technologies to improve their market position. Near-field communication mobile payment (NFC m-payment), which enables payment through radio frequency identification, is one of the most recent technologies introduced at the retailer's point of sale (POS). However, this payment method is not widely available at retail stores yet. The investment in this technology would be enhanced if the retailers gained a competitive advantage and increased consumer store loyalty. M-payment provides numerous benefits to retailers because it simplifies checkout, it improves services, it opens new marketing channels, and last but not least it allows loyalty rewards (Taylor 2016). M-payment allows payments for goods, services, and bills with a mobile device by taking advantage of wireless and other communication technologies (Dahlberg et al. 2015). M-payment might

[1] PhD, Associate Professor, Babeș-Bolyai University, Faculty of Economics and Business Administration, e-mail: monika.alt@econ.ubbcluj.ro.

[2] PhD, Associate Professor, Corvinus University of Budapest, e-mail: irma.agardi@uni-corvinus.hu.

occur through various technologies such as short text messages (SMS), using near-field communication (NFC), or QR codes (Ramos de Luna et al. 2019).

The diffusion of m-payment has been studied extensively, with many researchers using mainly the technology acceptance approach. Technology acceptance models predict the attitude toward and intention to use m-payment based on several factors, such as perceived ease of use, perceived usefulness, and social influence (Karsen et al. 2019). Recently, some studies started to test other behavioural outcomes like actual use (Pal et al. 2015), continued use (Liébana-Cabanillas et al. 2019), and resistance to using (Pitari et al. 2020) m-payment. Moreover, a few researchers included loyalty-based independent variables, such as the intention to recommend m-payment (Oliveira et al. 2016) and loyalty toward m-payment providers (Yuan et al. 2020), into the mobile payment acceptance model. However, these studies neglected the fact that consumers use mobile payment solutions in retail stores. Although studies revealed that m-payment usage intention had a positive effect on the intention to recommend m-payment (Oliveira et al. 2016), there is no evidence that the availability of m-payment at retailers POS will increase customer loyalty toward retailers. Loyal customers are critical assets for retailers because they tend to make more repeat purchases and recommend the store to peers (Lee–Yang 2013).

Therefore, this paper aims to study whether mobile payment acceptance at retailers' POS will increase loyalty toward retailers. Thus, the specific m-payment technology acceptance model was extended with the loyalty toward retailers. Primary data were collected from Hungarian and Romanian customers in 2019. The data was analysed using the Structural Equation Modelling (SEM) method.

Our research adds to existing mobile payment literature by extending the technology acceptance model to a third party. Since mobile payment is used in retail environments, it has an impact on the retailer as well. Therefore, we provide evidence that the availability of m-payment positively affects consumers' loyalty toward the retailer.

The paper is structured as follows: first, the concept and influencing factors of consumer loyalty are presented. Next, we outline the research concept and hypothesis development related to m-payment. Afterwards, the research methodology is explained, followed by the research findings and discussion. The final section includes the main findings, theoretical and managerial implications, research limitations, and future research directions.

The concept and influencing factors of store loyalty

Dick and Basu (1994) defined the concept of loyalty as a two-dimensional model, whereby loyalty is "the relationship between the relative attitude toward an entity (such as a brand, a service, a store or a vendor) and patronage behaviour" (Dick–Basu 1994. 102). Based on this definition, several researchers used the concept of loyalty in different research contexts. For example, specific loyalty definitions were developed for services because of service intangibility (Gremler–Brown 1996; Zeithaml et al. 1996), for B2B markets (Lam et al. 2004) and for stores (Bloemer–Ruyter 1997). Other authors have outlined the consumer loyal behaviour in spite of competitors' presents (Watson et al. 2015) or their marketing activities (Oliver 1999). The main definitions of loyalty are summarised in Table 1.

Table 1. Synthesis of the main definitions of loyalty

Authors	Definition
Dick–Basu 1994. 102	"The relationship between the relative attitude toward an entity (brand/service/store/vendor) and patronage behaviour."
Gremler–Brown 1996. 173	"Service loyalty is the degree to which a customer exhibits repeat purchasing behaviour from a service provider, possesses a positive attitudinal disposition toward the provider, and considers using only this provider when a need for this service arises."
Zeithaml et al. 1996. 34	"Loyalty may be manifested in multiple ways; for example, by expressing a preference for a company over others, by continuing to purchase from it, or by increasing business with it in the future."
Bloemer–Ruyter 1997. 500	"The biased (i.e., non-random) behavioural response (i.e., revisit), expressed over time, by some decision-making unit with respect to one store out of a set of stores, which is a function of psychological (decision making and evaluative) processes resulting in brand commitment."
Oliver 1999. 34	"A deeply held commitment to rebuy or repurchase a preferred product or service consistently in the future despite situational influences and marketing efforts having the potential to cause switching behaviour."
Lam et al. 2004. 294	"Customer loyalty is a buyer's overall attachment or deep commitment to a product, service, brand, or organization."
Rundle-Thiele 2005. 494	"The state or quality of being loyal, where loyal is defined as a customer's allegiance or adherence towards an object."
Watson et al. 2015. 793	"Loyalty represents a collection of attitudes associated with a series of purchase behaviours that systematically favor one entity over competing entities."

Source: Own research

Taking into consideration that the present study focuses on retailers, the definition of loyalty related to stores and chains serves as a guideline. Loyalty toward retail stores is considered "the biased (i.e., non-random) behavioural response (i.e., revisit), expressed over time, by some decision-making unit with respect to one store out of a set of stores, which is a function of psychological (decision making and evaluative) processes resulting in brand commitment" (Bloemer–Ruyter 1997. 500).

Store loyalty is influenced by store image, merchandise assortment, services, and pleasantness of shopping (Dick–Basu 1994). In general, store loyalty determinants were widely studied (Sivadas et al. 2000; Wallace et al. 2004; Ruiz-Molina–Gil-Saura 2008; Clottey et al. 2008; Vijayakumar et al. 2018; Yoon–Park 2018; Channa et al. 2020). However, special attention was also given to loyalty programmes (Gyulavári 2013). An extensive literature review revealed seven key determinants of customer loyalty: customer satisfaction, perceived value, trust, corporate image, service quality, loyalty programmes, and switching costs (Goutam et al. 2018).

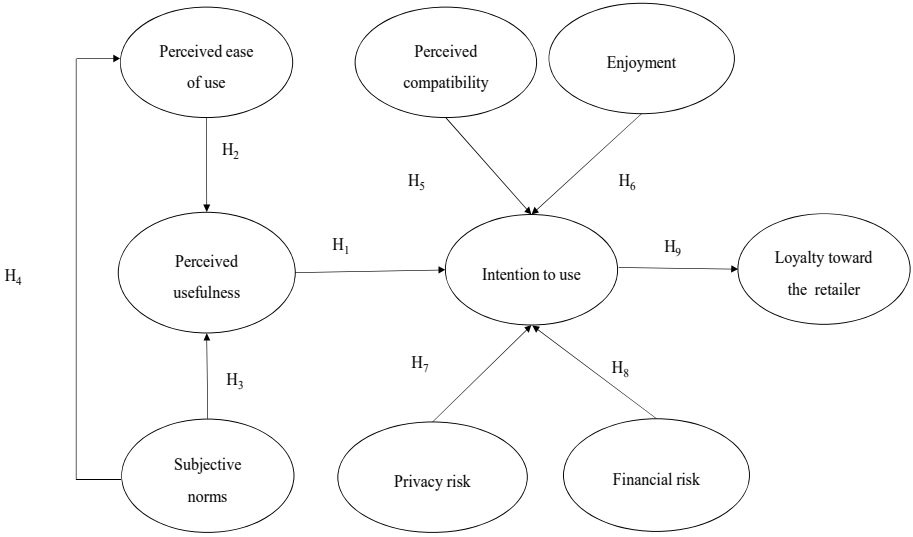
Several studies outlined the importance of service quality for customer loyalty (Sivadas–Baker-Prewitt 2000; Clottey et al. 2008). Therefore, the most important determinants of store service quality could also be considered influencing factors of loyalty. Store service quality is measured in the literature using the service quality measurement based on Parasuraman's scale (Sivadas–Baker-Prewitt 2000). This model measures services as a whole looking at several dimensions, including technological aspects such as securities in the transaction and up-to-date equipment (Sivadas & Baker-Prewitt, 2000).

However, the role of technology in store loyalty development is not outlined. Using new technology during the customer journey could increase service quality and store loyalty. Mobile payment facilitates the purchase transaction at the retail checkout, therefore, it is a new way to increase store service quality and store loyalty.

Conceptual model and hypothesis development

Based on the technology acceptance model developed by Davies (1989), a specific mobile payment technology acceptance model is proposed with the following constructs: perceived usefulness (Liébana-Cabanillas et al. 2018a), perceived ease of use (Dutot 2015), subjective norms (Liébana-Cabanillas et al.

2017), compatibility (Schmidthuber et al. 2020) enjoyment (Oliveira et al. 2016) and privacy and financial fraud (Dahlberg et al. 2015). This study extends previous models with a new variable, loyalty toward retailers (Figure 1). In the following pages, the hypothesis development is presented in detail.



Source: Own research

Figure 1: Research concept

Perceived usefulness

Consumer technology acceptance models define perceived usefulness or performance expectancy as "the degree to which using a technology will provide benefits to consumers in performing certain activities" (Venkatesh et al. 2012. 159). Technology acceptance models assume that perceived usefulness positively affects the intention to use (Davis et al. 1989; Venkatesh et al. 2003). Thus, perceived usefulness might provide benefits such as a useful, easier, and quicker checkout process when paying by mobile phone. Several researchers (Liébana-Cabanillas et al. 2017; Liébana-Cabanillas et al. 2018a; Luna et al. 2019) showed that perceived usefulness had a strong, positive impact on intention to use mobile payment. Therefore, the following hypothesis was formulated:

H_1: Perceived usefulness has a positive impact on the intention to use NFC mobile payment in retail stores.

Perceived ease of use

Perceived ease of use is defined as "the degree to which a person believes that using a particular system would be effortless" (Davis et al. 1989. 320). Thus, perceived ease of use refers to how complicated the consumer thinks it is to pay by a mobile phone. Earlier research revealed that perceived ease of use positively impacts perceived usefulness (Liébana-Cabanillas et al. 2017; Chen–Chang 2013). Hence, perceived ease of use creates confidence and a positive attitude toward the technology, increasing the perceived usefulness of the new technology (Yang–Jolly 2008). Therefore, the following hypothesis is proposed:

H_2: Perceived ease of use has a positive impact on the perceived usefulness of NFC mobile payment in retail stores.

Subjective norms

The concept of subjective norms is defined as "a perception that most people who are important to the person think the person should or should not use the system" (Venkatesh–Davis 2000. 187). Thus, significant others recognise the benefits of NFC mobile payment, and they would recommend it. Positive subjective norms can increase the perceived usefulness (Venkatesh–Bala 2008) and perceived ease of use of mobile payment technology (Liébana-Cabanillas et al. 2017; Luna et al. 2019). Therefore, the following hypotheses are proposed:

H_3: Subjective norms have a positive impact on the perceived usefulness of NFC mobile payment in retail stores.

H_4: Subjective norms have a positive impact on the perceived ease of use of NFC mobile payment in retail stores.

Compatibility

In the mobile payment literature, Schierz et al. (2010) studied the role of compatibility in accepting mobile payment. They conceptualised perceived compatibility as the reconcilability of innovation with existing values, behavioural patterns, and experiences (Schierz et al. 2010). If the perceived compatibility is high, it might speed up mobile payment adoption (Schmidthuber et al. 2020) because it overlaps with the user's lifestyle and payment habits (Pham–Ho 2015). Therefore, compatibility with NFC mobile payment positively influences the intention to use this payment solution (Pham–Ho 2015; Ramos-de-Luna et al. 2016). Therefore, the following hypothesis was formulated:

H_5: Perceived compatibility has a positive impact on the intention to use NFC mobile payment in retail stores.

Enjoyment

Besides functionality, consumers tend to have hedonic motivations, such as enjoyment, when adopting new technologies (Fred et al. 1992). Enjoyment is defined as "the fun or pleasure derived from using a technology" (Venatesh et al. 2012. 161). Thus, paying with the NFC mobile solution is supposed to be funny and joyful. Earlier studies proved the impact of hedonic motivation on the intention to use NFC payment technology (Slade et al. 2015; Liébana-Cabanillas et al. 2020a). Once consumers gain experience using various technologies, their technology anxiety will diminish, the consumer will feel enjoyment and playfulness using the technology (Venkatesh–Davis 2000). Therefore, the following hypothesis was formulated:

H_6: Enjoyment has a positive impact on the intention to use NFC mobile payment in retail stores.

Perceived risk

The perceived risk works as a barrier to technology acceptance since individuals who perceive risks will change their attitudes and behaviours to protect themselves (Rogers 1983). When using mobile payment, consumers have to deal with financial and privacy risks (Yang et al. 2015). On the one hand, financial risk refers to the perception of the monetary loss that may be caused by mobile payment usage. On the other hand, privacy risk is the perception of the potential exposure of private information, such as phone numbers, social security numbers, PIN codes, consumption locations, and shopping records (Yang et al. 2015). Both risks had a negative effect on the intention to use mobile payment (Pham–Ho 2015; Slade et al. 2015; Liébana-Cabanillas et al. 2018b; Liébana-Cabanillas et al. 2020b). The following hypotheses were formulated:

H_7: The perceived privacy risk has a negative impact on the intention to use NFC mobile payment in retail stores.

H_8: The perceived financial risk has a negative impact on the intention to use NFC mobile payment in retail stores.

Customer loyalty toward retailers

Retailers assume that new technology in a store will increase customer loyalty. Introducing a self-service technology (SST) in a store has a positive effect on retail patronage intention (Marzocchi–Zammit 2006; Lee et al. 2009; Lee–Yang 2013; Demirci et al. 2014; Fernandes–Pedroso 2017). Usually, retail patronage is determined by the perceived quality of SST and overall satisfaction (Fernandes–Pedroso 2017). In a technology acceptance model, the dependent variable is usually the intention to

use. Previous research revealed that those consumers who intend to adopt m-payment technology are willing to recommend it to their social network (Oliveira et al. 2016; Verkijika 2020). It was also found that m-payment recommendation is related to relative advantage, compatibility, complexity, and observability (Kaur et al. 2020). However, the effect of m-payment service availability on retail patronage has not been studied before. For that reason, the following hypothesis is proposed:

H_9: The intention to use NFC mobile payment is positively related to customers' loyalty toward retailers.

Research methodology

Our research aims to study the acceptance of NFC mobile payment technology related to loyalty toward retailers. The influencing factors of intention to use NFC mobile payment were measured based on five-point Likert scales applied in earlier studies. Perceived usefulness, perceived ease of use, compatibility, and subjective norms were assessed based on a multi-item scale used by Schierz et al. (2010) and Luna et al. (2019). Enjoyment was measured by the scale used by Venkatesh et al. (2012), perceived privacy and financial risks were quantified based on Yang et al. (2015). Finally, for the intention to use NFC mobile payment, we adopted the scale applied by Schierz et al. (2010) and we measured loyalty intention based on Lee–Yang (2013) (Table 3). The questionnaire was pretested, and the scales performed well in terms of reliability.

The research population consisted of Romanian and Hungarian citizens aged 16 to 55 and owning smartphones. This population is the most important target segment for m-payment service providers because of their potential of paying with a mobile phone. Cross-sectional data were collected between March and June 2019 online (with the Qualtrics software), using the non-probability sampling technique. After data cleaning, the final sample included 580 respondents, with the following gender distribution (Table 2): 34.82% male, 65.17% female; with an average age of 33.92 years (range 16–54, std. dev. 13.75 years).

Findings and discussion

The authors applied covariance-based structural equation modelling (SEM) to test the hypothesised relationships using maximum likelihood estimation methods with the IBM AMOS 25 software. The overall model revealed fit measures such as χ^2/df=3.298, RMSEA=0.055, SRMR=0.092, IFI=0,960, CFI=0.960, NFI=0.944 that suggest a good model fit (Bagozzi–Yi 2012).

Table 2. Demographic distribution of the sample (N=580)

Demographic variables	N	%
Gender		
Male	202	34.82%
Female	378	65.17%
Education		
High school	7	1.2%
Secondary school	222	38.27%
Vocational	60	10.34%
College	123	21.20%
University	150	25.86%
Post-graduate	18	3.1%

Source: Own research

The measurement model was assessed by construct reliability, convergent and discriminant validity of the constructs. First, we examined the main characteristics of the measurement model (Table 3). All items revealed high factor loadings (λ>0.8), and Cronbach alpha measures (α >0.8) proved the high internal consistency of the constructs. Second, composite reliability values indicated high construct validity (CR>0.7). Third, convergent validity was also supported since the average variance extracted (AVE) measures were greater than 0.5 for all constructs (Hair et al. 2017).

Table 3. Indicators of the measurement model

	Factor loadings	Cronbach alpha	Composite reliability	AVE
Perceived usefulness (Schierz et al. 2010)		0.893	0.903	0.756
The NFC mobile payment system at retailers' POS is a useful mode of payment.	0.839			
Using NFC mobile payment at retailers' POS makes the handling of payments easier.	0.889			
The NFC mobile payment system at retailers' POS allows quick use of mobile applications.	0.879			
Perceived ease of use (Schierz et al. 2010)		0.940	0.950	0.827
It is easy to become skilful at using the NFC mobile payment system at retailers' POS.	0.893			
Interactions with the NFC mobile payment system at retailers' POS are clear and understandable.	0.925			
It is easy to follow all the steps to use the NFC mobile payment system at retailers' POS.	0.920			

	Factor loadings	Cronbach alpha	Composite reliability	AVE
It is easy to interact with the NFC mobile payment system at retailers' POS.	0.900			
Subjective norms (Schierz et al. 2010)		0.932	0.937	0.832
People who are important to me would recommend using the NFC mobile payment system at retailers' POS.	0.906			
People who are important to me view the NFC mobile payment system at retailers' POS as beneficial.	0.934			
People who are important to me think it is a good idea to use the NFC mobile payment systems at retailers' POS.	0.872			
Compatibility (Schierz et al. 2010)		0.882	0.895	0.741
The use of the NFC mobile payment system at retailers' POS fits well with my lifestyle.	0.883			
The use of NFC mobile payment at retailers' POS is consistent with the way I like to buy products and services.	0.929			
I would appreciate using the NFC payment system over other kinds of payment systems at retailers' POS.	0.761			
Enjoyment (Venkatesh et al. 2012)		0.937	0.938	0.835
Using NFC mobile payment at retailers' POS is fun.	0.883			
Using NFC mobile payment at retailers' POS is enjoyable.	0.945			
Using NFC mobile payment at retailers' POS is very entertaining.	0.913			
Privacy risk (Yang et al. 2015)		0.894	0.897	0.688
The private information provided when using an NFC mobile payment system at retailers' POS could be misused, inappropriately shared, or sold.	0.854			
The personal information provided when using an NFC mobile payment system at retailers' POS could be intercepted or accessed.	0.673			
When using NFC mobile payments at retailers' POS, the payment information could be collected, tracked, and analysed.	0.855			
Privacy could be exposed or accessed when using NFC mobile payments at retailers' POS.	0.915			

	Factor loadings	Cronbach alpha	Composite reliability	AVE
Financial risk (Yang et al. 2015)		0.833	0.837	0.562
The use of NFC mobile payment at retailers' POS would cause the exposure of capital accounts and passwords.	0.734			
The use of NFC mobile payment at retailers' POS would cause malicious and unreasonable charging occurs.	0.800			
Careless use of NFC mobile payment at retailers' POS could lead to a surprising loss.	0.695			
The use of NFC mobile payment at retailers POS can cause financial risk.	0.766			
Intention to use (Schierz et al. 2010)		0.964	0.962	0.864
Given the opportunity, I will use an NFC mobile payment system at retailers' POS.	0.935			
I am likely to use an NFC payment system at retailers' POS in the near future.	0.923			
I am open to using an NFC mobile payment system at retailers' POS in the near future.	0.927			
I intend to use an NFC mobile payment system at retailers' POS when the opportunity arises.	0.933			
Loyalty towards the retailer (Lee–Yang 2013)		0.964	0.928	0.810
I would choose a retailer over other retailers if it offered an NFC payment system at POS.	0.908			
I would recommend a retailer to a friend if it offered an NFC payment system at POS.	0.912			
I would still shop at the same store if it offered an NFC payment system at POS.	0.880			

Source: Own research

Discriminant validity can be proved by the correlation matrix between constructs (Table 4). Similarly, AVE values indicated the discriminant validity of the constructs since their values exceeded the squared multiple correlations with other constructs (Fornell–Larcker 1981). Thus, the correlation coefficients between constructs were lower than the square root of AVE values of the constructs (Hair et al. 2017). Moreover, the construct items showed higher factor loadings in their own constructs compared to other constructs. Therefore, the model's constructs meet the criterion of discriminant validity (Hair et al. 2017).

Table 4. Correlation coefficients of the constructs

	SN	PEU	PU	COMP	ENJ	PR	FR	IU	LY
SN	*0.912*								
PEU	0.467	*0.910*							
PU	0.537	0.707	*0.869*						
COMP	0.666	0.297	0.358	*0.861*					
ENJ	0.654	0.291	0.351	0.753	*0.914*				
PR	-0.289	-0.129	-0.155	-0.378	-0.20	*0.829*			
FR	-0.238	-0.106	-0.128	-0.373	-0.265	0.799	*0.750*		
IU	0.628	0.398	0.516	0.794	0.687	-0.409	-0.402	*0.930*	
LY	0.456	0.288	0.374	0.576	0.498	-0.297	-0.291	0.725	*0.900*

Note: Bold values represent the square root of AVEs.

Source: Own research

The structural model was assessed by standardised regression weights, the corresponding standard errors, t-values, and significance levels (Table 5). The model resulted in high explained variances for endogenous variables such as perceived ease of use (19.9%), perceived usefulness (56.1%), intention to use (71.7%), loyalty toward the retailer (52.6%).

First, the perceived usefulness had a significant positive impact (ß=0.251, $p<0.001$) on the intention to use the NFC mobile payment technology. Therefore, H_1 is accepted. The more benefits respondents perceived regarding mobile payment, the higher was their intention to use it. Second, our research findings proved that the perceived ease of use increased the perceived usefulness of NFC mobile payment among respondents (ß=0.583, $p<0.001$). Thus, respondents perceived a much higher usefulness when they found NFC mobile payment easier to use. So, we accepted H_2. Our findings align with previous studies (Yang–Jolly 2008; Liébana-Cabanillas et al. 2017).

Moreover, subjective norms were assumed to affect perceived usefulness (H_3) and ease of use (H_4). In our sample, subjective norms had a significant positive impact on the perceived usefulness of mobile payment (ß=0.278, $p<0.001$). Thus, the positive view and recommendation of significant others improved the perceived usefulness of NFC mobile payment. Similarly, subjective norms positively influence the perceived ease of using NFC mobile payment (ß=0.446, $p<0.001$). This suggests that consumers perceive it easier to learn to use new technology when the family or peers think positively and recommend the use of mobile payment. The results are in line with earlier research (Venkatesh–Bala 2008; Liébana-Cabanillas et al. 2017; Luna et al. 2019).

Table 5. Standardised regression coefficients, standard errors, and t-values of the structural model

				Std. coefficient (ß)	Std.error	t-values
H_1	Usefulness	→	Intention	0.251	0.031	9.923**
H_2	Ease of use	→	Usefulness	0.583	0.034	16.503**
H_3	Subjective norms	→	Usefulness	0.278	0.032	8.506**
H_4	Subjective norms	→	Ease o fuse	0.446	0.037	12.251**
H_5	Compatibility	→	Intention to use	0.534	0.031	12.919**
H_6	Enjoyment	→	Intention to use	0.158	0.041	4.196**
H_7	Privacy risk	→	Intention to use	-0.043	0.052	-0.947^{ns}
H_8	Financial risk	→	Intention to use	-0.094	0.058	-1.977*
H_9	Intention to use	→	Loyalty intention	0.725	0.029	23.3**

n=772, **: p<0.001; *: p<0.05

Source: Own research

In line with the initial assumption (H_5), perceived compatibility exerted a strong positive effect on the intention to use NFC mobile payment (ß=0.534, p<0.001). Consequently, when respondents perceived high compatibility with m-payment, their intention to pay by mobile phone increased. This occurs because consumers find mobile payment consistent with their lifestyle, purchasing and payment habits. Previous research came to similar conclusions (Pham–Ho 2015).

According to H_6, enjoyment showed a positive impact on the intention to use the NFC mobile payment technology. Thus, respondents' intention to use this payment method increases slightly but significantly (ß=0.158, p<0.001) when they enjoy paying by mobile phone. Slade et al. (2015) and Liébana-Cabanillas et al. (2020a) found that hedonic motivations are important for consumers when accepting new technologies.

Surprisingly, the privacy risk did not significantly affect the intention to pay by using an NFC mobile solution (ß=-0.043, p=0.344). Therefore, we had to reject H_7. Instead, respondents were slightly affected by the financial risk when using their mobile phones to pay for goods and services (ß=-0.094, p=0.048). Therefore, H_8 could be accepted. These results are in contrast with earlier findings (Yang et al. 2015; Liébana-Cabanillas et al. 2020b) that found a stronger negative relationship between perceived risk and the acceptance of mobile payment. Respondents seemed to have no concerns about the misuse of their personal data (privacy risk). Although consumers sensed more danger related to malicious charging or exposure of accounts and passwords (financial

risk), the negative effect of the financial risk was minimal. The controversial findings can be explained by the fact that the actual use of mobile payment was very low in our sample. Therefore, most respondents did not have experience paying by mobile phone in retail stores.

Finally, we analysed the relationship between intention to use NFC mobile payment and loyalty toward the retailer. The regression coefficient showed a strong positive relationship (ß=0.725, $p<0.001$). Therefore, we accept H_9. This finding suggests that the intention to use mobile payment in retail stores can create customer loyalty toward the retailer. Previous studies related to other technologies, such as self-service in stores, have also outlined a positive effect on retail patronage intention (Marzocchi–Zammit 2006; Lee et al. 2009; Lee–Yang 2013; Demirci et al. 2014; Fernandes–Pedroso 2017). The fact that our findings are similar to those of previous studies confirms that a new technology which enhances the shopping experience will increase customers' loyalty intention toward the retailer.

Conclusions

This paper studied the relationship between in-store mobile payment acceptance and loyalty intention toward the retailer. Indeed, our research findings proved that the intention to pay by m-payment increases consumers' loyalty toward the retailer to a substantial extent. Thus, m-payment as an in-store retail service can contribute to consumers' commitment. This finding also proves that acceptance of new technologies goes beyond the user effects and influences the members of technological ecosystems, such as retailers.

Regarding the mobile payment acceptance factors, we also found that compatibility is the most important factor which influences the intention to use m-payment at retailers' POS. This finding is in line with the previous research conducted by Schierz et al. (2010). Furthermore, the perceived usefulness (Liébana-Cabanillas et al. 2018a) and enjoyment (Liébana-Cabanillas et al. 2020a; Slade et al. 2015) increased the intention to pay by mobile phone. In addition, perceived usefulness had a positive impact on perceived ease of use and subjective norms. These findings suggested that the more useful consumers found the use of m-payment, the easier they perceived the technology and the more they valued the opinion of their significant others (Liébana-Cabanillas et al. 2017; Ramos-de-Luna et al. 2016; Schmidthuber et al. 2020). Finally, we found that consumers did not perceive privacy and financial risks in using m-payment. This finding is somewhat surprising and is not fully consistent with previous studies (Liébana-

Cabanillas et al. 2020b; Liébana-Cabanillas et al. 2018b; Pham–Ho 2015; Slade et al. 2015; Zhao et al. 2019). This could be explained by the assumption that consumers tend to trust their technology provider.

The originality of our study comes from the fact that we investigated the effect of mobile payment acceptance on loyalty intention toward the retailer before the pandemic. Hence, we found a strong positive effect of the intention to use NFC mobile payment on customer loyalty intention. The findings contributed to both mobile payment acceptance and retail loyalty research. This result is important because our loyalty concept includes not only the recommendation of the retailer (Oliviera et al. 2016; Verkijika 2020) but also the preference over other retailers and repeated purchases. Thus, we provided evidence that mobile payment options in retail stores can also reinforce behavioural loyalty.

The findings have significant managerial implications. First, they make retailers understand that m-payment services at POS have a positive impact at store level and will increase the loyalty intention of the customers. Second, they offer clear guidelines related to communication messages. Advertisements should emphasise the compatibility with consumers' lifestyle and the ease of use of m-payment.

This research has several limitations that provide future directions in studying NFC mobile payment acceptance. For example, moderator variables such as age, gender, or prior experience could be included in the model. This study is based on data collected before the COVID-19 pandemic, and it would be interesting to test the hypothesis in the pandemic context, as well. The research concept could be validated across time and different countries, or it could be extended to other in-store technologies.

References

Bagozzi, R. P.–Yi, Y. 2012. Specification, evaluation, and interpretation of structural equation models. *Journal of the Academy of Marketing Science* 40(1), 8–34.

Bloemer, J.–Ruyter, K. de. 1997. On the relationship between store image, store satisfaction and store loyalty. *European Journal of Marketing* 32(5/6), 499–513.

Channa, N. A.–Bhutto, M. H.–Bhutto, M.–Bhutto, N. A.–Tariq, B. 2020. Capturing customer's store loyalty through relationship benefits: Moderating effect of retail innovation. *European Business Review* 34(1), 20–40.

Chen, K. Y.–Chang, M. L. 2013. User acceptance of "near field communication" mobile phone service: an investigation based on the "unified theory of acceptance and use of technology" model. *Service Industries Journal* 33(6), 609–623.

Clottey, T. A.–Collier, D. A.–Stodnick, M. 2008. Drivers Of Customer Loyalty In A Retail Store Environment. *Journal of Service Science* 1(1), 35–48.

Dahlberg, T.–Guo, J.–Ondrus, J. 2015. A critical review of mobile payment research. *Electronic Commerce Research and Applications* 14(5), 265–284.

Davis, F. D. 1989. Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *Management Information Systems* 13(3), 319–340.

Davis, F. D.–Bagozzi, R. P.–Warshaw, P. R. 1992. Extrinsic and Intrinsic Motivation to Use Computers in the Workplace. *Journal of Applied Social Psychology* 22(14), 1111–1132.

Dick, A. S.–Basu, K. 1994. Customer Loyalty: Toward an Integrated Conceptual Framework. *Journal of the Academy of Marketing Science* 22(2), 99–113.

Dutot, V. 2015. Factors influencing Near Field Communication (NFC) adoption: An extended TAM approach. *Journal of High Technology Management Research* 26(1), 45–57.

Fernandes, T.–Pedroso, R. 2017. The effect of self-checkout quality on customer satisfaction and repatronage in a retail context. *Service Business* 11(1), 69–92.

Goutam, D.–Gopalakrishna B. V.–Ganguli, S. 2018. Determinants of customer loyalty: A literature review. *Journal of Customer Behaviour* 17(1–2), 49–73.

Gremler, D. D.–Brown, S. W. 1996. Service loyalty: Its Nature, Importance, and Implications. *Advancing Service Quality: A Global Perspective* 1996(January), 171–180.

Gyulavári, T. 2013. A lojalitásprogramok menedzselés. *Vezetéstudomány/Budapest Management Review* 44(5), 16–26.

Hair, J. F.–Babin, B. J.–Krey, N. 2017. Covariance-Based Structural Equation Modeling in the Journal of Advertising: Review and Recommendations. *Journal of Advertising* 46(1), 163–177.

Karsen, M.–Chandra, Y. U.–Juwitasary, H. 2019. Technological factors of mobile payment: A systematic literature review. *Procedia Computer Science* 157, 489–498.

Kaur, P.–Dhir, A.–Bodhi, R.–Singh, T.–Almotairi, M. 2020. Why do people use and recommend m-wallets? *Journal of Retailing and Consumer Services* 56, 102091.

Lam, S. Y.–Shankar, V.–Erramilli, M. K.–Murthy, B. 2004. Customer Value, Satisfaction, Loyalty, and Switching Costs: An Illustration From a Business-to-Business Service Context. *Journal of the Academy of Marketing Science* 32(3), 293–311.

Lee, H. J.–Fairhurst, A. E.–Lee, M. Y. 2009. The importance of self-service kiosks in developing consumers' retail patronage intentions. *Managing Service Quality* 19(6), 687–701.

Lee, H. J.–Yang, K. 2013. Interpersonal service quality, self-service technology (SST) service quality, and retail patronage. *Journal of Retailing and Consumer Services* 20(1), 51–57.

Liébana-Cabanillas, F.–Carvajal-Trujillo, E.–Villarejo-Ramos, Á. F.–Higueras-Castillo, E. 2020a. Antecedents of the intention to use NFC mobile applications in tourism. *Journal of Hospitality and Tourism Technology* 11(2), 369–383.

Liébana-Cabanillas, F.–García-Maroto, I.–Muñoz-Leiva, F.–Ramos-de-Luna, I. 2020b. Mobile payment adoption in the age of digital transformation: The case of apple pay. *Sustainability (Switzerland)* 12(13), 1–15.

Liébana-Cabanillas, F.–Marinkovic, V.–Ramos de Luna, I.–Kalinic, Z. 2018a. Predicting the determinants of mobile payment acceptance: A hybrid SEM-neural network approach. *Technological Forecasting and Social Change* 129(February), 117–130.

Liébana-Cabanillas, F.–Molinillo, S.–Ruiz-Montañez, M. 2019. To use or not to use, that is the question: Analysis of the determining factors for using NFC mobile payment systems in public transportation. *Technological Forecasting and Social Change* 139(November), 266–276.

Liébana-Cabanillas, F.–Muñoz-Leiva, F.–Sánchez-Fernández, J. 2018b. A global approach to the analysis of user behavior in mobile payment systems in the new electronic environment. *Service Business* 12(1), 25–64.

Liébana-Cabanillas, F.–Ramos de Luna, I.–Montoro-Ríosa, F. 2017. Intention to use new mobile payment systems: A comparative analysis of SMS and NFC payments. *Economic Research-Ekonomska Istrazivanja* 30(1), 892–910.

Marzocchi, G. L.–Zammit, A. 2006. Self-scanning technologies in retail: Determinants of adoption. *Service Industries Journal* 26(6), 651–669.

Oliveira, T.–Thomas, M.–Baptista, G.–Campos, F. 2016. Mobile payment: Understanding the determinants of customer adoption and intention to recommend the technology. *Computers in Human Behavior* 61, 404–414.

Oliver, R. L. 1999. Whence consumer loyalty? *Journal of Marketing* 63(SUPPL.), 33–44.

Orel, F. D.–Kara, A. 2014. Supermarket self-checkout service quality, customer satisfaction, and loyalty: Empirical evidence from an emerging market. *Journal of Retailing and Consumer Services* 21(2), 118–129.

Pal, D.–Vanijja, V.–Papasratorn, B. 2015. An Empirical Analysis towards the Adoption of NFC Mobile Payment System by the End User. *Procedia Computer Science* 69, 13–25.

Pham, T. T. T.–Ho, J. C. 2015. The effects of product-related, personal-related factors and attractiveness of alternatives on consumer adoption of NFC-based mobile payments. *Technology in Society* 43, 159–172.

Pitari, D. F.–Gayatri, G.–Furinto, A.–Assauri, S. 2020. Integration of intention and resistance in adopting near field communication-based mobile payment innovation. *International Journal of Scientific and Technology Research* 9(4), 857–866.

Ramos-de-Luna, I.–Montoro-Ríos, F.–Liébana-Cabanillas, F. 2016. Determinants of the intention to use NFC technology as a payment system: an acceptance model approach. *Information Systems and E-Business Management* 14(2), 293–314.

Ramos de Luna, I.–Liébana-Cabanillas, F.–Sáncze-Fernández, J.–Munoz-Leiva, F. 2019. Mobile payment is not all the same: The adoption of mobile payment systems

depending on the technology applied. *Technological Forecasting & Social Change* 146(August), 931–944.

Rogers, E. M. 1983. *Diffusion of innovation* (Third ed.). New York, NY: The Free Press.

Ruiz-Molina, M.-E.–Gil-Saura, I. 2008. Perceived value, customer attitude and loyalty in retailing. *Journal of Retail & Leisure Property* 7(4), 305–314.

Rundle-Thiele, S. 2005. Exploring loyal qualities: Assessing survey-based loyalty measures. *Journal of Services Marketing* 19(7), 492–500.

Schierz, P. G.–Schilke, O.–Wirtz, B. W. 2010. Understanding consumer acceptance of mobile payment services: An empirical analysis. *Electronic Commerce Research and Applications* 9(3), 209–216.

Schmidthuber, L.–Maresch, D.–Ginner, M. 2020. Disruptive technologies and abundance in the service sector - toward a refined technology acceptance model. *Technological Forecasting and Social Change* 155(June), 119328.

Sivadas, E.–Baker-Prewitt, J. L. 2000. An examination of the relationship between service quality, customer satisfaction, and store loyalty. *International Journal of Retail & Distribution Management* 28(2), 73–82.

Slade, E.–Williams, M.–Dwivedi, Y.–Piercy, N. 2015. Exploring consumer adoption of proximity mobile payments. *Journal of Strategic Marketing* 23(3), 209–223.

Taylor, E. 2016. Mobile payment technologies in retail: a review of potential benefits and risks. *International Journal of Retail and Distribution Management* 44(2), 159–177.

Venkatesh, V.–Bala, H. 2008. Technology Acceptance Model 3 and a Research Agenda on Interventions. *Decision Sciences* 39(2), 273–315.

Venkatesh, V.–Davis, F. D. 2000. A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Fields. *Management Science* 46(2), 186–204.

Venkatesh, V.–Morris, M. G.–Davis, G. B.–Davis, F. D. 2003. User Acceptance of Information Technology: Toward a Unified View. *MIS Quaterly* 27(3), 425–478.

Venkatesh, V.–Thong, J. Y. L.–Xu, X. 2012. Consumer acceptance and use of information tehnology: extending the unified theory of acceptance and the use of technology. *MIS Quarterly* 36(1), 157–178.

Verkijika, S. F. 2020. An affective response model for understanding the acceptance of mobile payment systems. *Electronic Commerce Research and Applications* 39(August), 100905.

Vijayakumar, J.–Babu, H.–Venkatesh, B. R.–Sureshkumar, M. A. 2018. Impact of Retailer Brand Equity on Customer Loyalty with Customer Satisfaction in Selected Retail Outlets in Bangalore City. *Journal of Management* 5(5), 23–31.

Wallace, D. W.–Giese, J. L.–Johnson, J. L. 2004. Customer retailer loyalty in the context of multiple channel strategies. *Journal of Retailing* 80(4), 249–263.

Watson, G. F.–Beck, J. T.–Henderson, C. M.–Palmatier, R. W. 2015. Building, measuring, and profiting from customer loyalty. *Journal of the Academy of Marketing Science* 43(6), 790–825.

Yang, K.–Jolly, L. D. 2008. Age cohort analysis in adoption of mobile data services: Gen Xers versus baby boomers. *Journal of Consumer Marketing* 25(5), 272–280.

Yang, Y.–Liu, Y.–Li, H.–Yu, B. 2015. Understanding perceived risks in mobile payment acceptance. *Industrial Management & Data Systems* 115(2), 253–269.

Yoon, S.–Park, J. E. 2018. Tests of in-store experience and socially embedded measures as predictors of retail store loyalty. *Journal of Retailing and Consumer Services* 45(August), 111–119.

Yuan, S.–Liu, L.–Su, B.–Zhang, H. 2020. Determining the antecedents of mobile payment loyalty: Cognitive and affective perspectives. *Electronic Commerce Research and Applications* 41(January), 100971.

Zeithaml, V. A.–Berry, L. L.–Parasuraman, A. 1996. The behavioral consequences of service quality. *Journal of Marketing* 60(April), 31–46.