

We are IntechOpen, the world's leading publisher of Open Access books Built by scientists, for scientists

6,900

Open access books available

186,000

International authors and editors

200M

Downloads

Our authors are among the

154

Countries delivered to

TOP 1%

most cited scientists

12.2%

Contributors from top 500 universities



WEB OF SCIENCE™

Selection of our books indexed in the Book Citation Index
in Web of Science™ Core Collection (BKCI)

Interested in publishing with us?
Contact book.department@intechopen.com

Numbers displayed above are based on latest data collected.
For more information visit www.intechopen.com



Examining Merchants' Refusal to Adopt Mobile Payment Systems in Spain

Francisco Liébana-Cabanillas,
Francisco Muñoz Leiva and Juan Sánchez Fernández

Additional information is available at the end of the chapter

<http://dx.doi.org/10.5772/intechopen.70284>

Abstract

Over the past years, traditional company management has been undergoing major changes regarding the adoption, implementation, and development of new technologies. Even if Internet commerce has the potential to revolutionize consumer behavior and the way merchants communicate with their customers, it is true that several activities related to the new technologies are still in the early stages of development or implementation. The main purpose of this study is to assess the determinants of m-payments from the point of view of merchants through an exploratory and qualitative analysis (literature review, focus groups, and in-depth interviews) in order to find the drivers and deterrents influencing the use of mobile payment systems in retail business. In order to properly approach the proposed research, a theoretical review of the actual situation of the different mobile payment systems across the different markets was carried through several personal interviews with merchants in the first place and, secondly, surveying over 151 retail companies in Spain. Conclusions and implications are discussed from the data and results drawn from this research, suggesting strategies to overcome some of the identified barriers and deterrents while also proposing some suggestions for future research opportunities.

Keywords: mobile payment, m-payment, merchant, adoption, barriers

1. Introduction

Development, adoption, implementation, and acceptance of the latest technologies are critical factors which have largely influenced business administration and management. Companies regard electronic commerce, or simply e-commerce, as the tool with the highest potential nowadays to revolutionize customers' purchasing habits and patterns while also impacting

the different communication channels for merchants and their customers. However, some other business activities related to e-commerce are still in an early implementation stage or already maturing, the latter being the case of mobile business and mobile payment [64].

In recent years, mobile devices such as smartphones, personal digital assistants (PDAs), tablets, and laptops have been increasingly approached as means to transmit and receive all kinds of different data. In this sense, these devices have also seen an increase in their use as tools to facilitate the payment of different goods and services using their data transmission and reception capabilities; these payment systems are known as *mobile payments* or, simply, *m-payments*. m-Payment can thus be described as the completion of a financial transaction or purchase between individuals or other entities using a fast, convenient, easy, and secure tool anywhere from a mobile device. These new payment systems enjoy some proven advantages for both merchants and customers over other alternative payment systems such as the electronic point of sales (EPOS). Some of the aforementioned advantages would be (1) high level of adaptability and flexibility when taking into account the large amount of mobile phones and other mobile devices in the market, (2) fast transactions, (3) higher level of comfort and convenience resulting in a time-saving process, (4) possible classification and profiling of the different customers enabling custom strategies for the sale of goods and services, (5) lower cost of operations with reduced discount rates, etc. In the case of customers, the best regarded advantages of these payment systems are (a) the higher level of security of the involved economic transactions thanks to the use of technologies such as Global System for Mobiles (GSM), Universal Mobile Telecom System (UMTS), and, also, the Subscriber's Identity Module (SIM) card of the mobile device allowing for an improved encryption of data transmitted and received during the different transactions; (b) improved reliability of the payment system; (c) improved availability and offering of the goods and services which can be paid with these new tools; (d) reduced queuing and waiting times at the points of sale; and (e) lower rate of occurrence of incorrect transactions [39].

Traditional, single-channel business activities have been continuously evolving into multichannel operations in multiple markets across the world [72], with new retail formats facilitating the interactions between merchants and customers while increasing revenues for the respecting business companies involved [53]. In this sense, the use of smartphones has blurred and even started to eliminate the differences between the online and offline interactions between customers and merchants. The so-called Information Society is seeing a rapidly increasing growth every year; according to a recent report issued by Fundación Telefónica España (2015), mobile telephony reached a level of penetration of 95.5 subscriptions per 100 inhabitants worldwide in 2014 (2.4% raise over 2013), establishing an astonishing figure of over 6.6 billion for the total number of mobile telephony subscribers in the world. In this regard, Europe is the continent with more mobile subscribers (120 subscriptions per 100 inhabitants). Respecting m-payments, according to a report regarding e-commerce issued by the Online Business School [56], 27% of the total of online purchases in 2013 had been completed using one of the mentioned devices; this means a 55% raise over 2013 in the Spanish market. On the other hand, a recent research proposed by PayPal and carried out by an independent marketing research company (IPSOS) [33] concluded that mobile phone commerce saw an estimated growth of around 48% in Spain during that year, a raise rate well above the rate forecasted respecting the growth of online transactions in Spain during the same period of time. This report also found the best regarded

features and characteristics that customers appreciate while purchasing goods and services through “smartphones” and “tablets”: fast payments (36% of users mentioned this feature as one of the most relevant advantages), not needing to carry a physical wallet (24%), simplification of the payment process (22%), innovativeness nature of the payment system (21%), immediate confirmation of valid payments (20%), easy to use (19%), and, finally, not needing to share personal financial data with the different merchants (16%).

On a side note, the use of mobile payments is also seeing a considerable growth as reported by Capgemini [7] in their World Retail Banking Report analysis. In this sense, it is worth noting that this report found “only” 1.3 billion credit and debit active accounts as opposed to the remarkable statistics identifying well over 5 billion active mobile telephony subscriptions. According to Omlis (a provider of mobile payment solutions), this is an ideal, relevant scenario for a potential and major application of mobile payments. Juniper Research predicted that the number of users of mobile payment systems in 2013 (245 million) would duplicate by 2017 seeing a total number of over 450 million of users of mobile payments. Respecting the value of the *m-commerce* market, the market research company Gartner estimated a total amount of \$507 billion accountable for mobile phone transactions in 2014. Therefore, all these studies show that the worldwide rate of adoption of mobile payments is also increasing rapidly, with some specific mediators influencing this increase such as the different tools available to consumers in order to access the new technologies, changes in lifestyle trends, and other economic factors.

From the perspective of the merchants and their offerings, according to a report issued by Tecnomcom [70] on the different trends regarding payment systems, this report affirms that after assessing the actual demand of users respecting the different electronic payment systems in the case of the Spanish market, the use of mobile phone payments did not manage to establish itself as a particular strong alternative to the use of other systems. The information collected through the aforementioned reports and research allows observing certain differences between the needs of the users/customers regarding their purchases and the speed at which the market is adapting to said needs. In light of all of these findings, the main purpose of this research is to assess and evaluate the different factors influencing mobile payment from the perspective of the merchants through an exploratory, qualitative, and quantitative analysis (including a comprehensive literature review and approaching, focus groups, and in-depth interviews) aimed to identify the drivers and barriers to the use of the different mobile payment tools at the points of sale. This study also incorporates a section discussing conclusions and implications drawn from the results in order to overcome some of the identified deterrents while also proposing suggestions for future research opportunities.

2. Adoption of mobile payments: drivers and barriers

Mobile payment is considered by many experts as one of the “killer” or “star” applications with the greatest potential in the mobile communication sector ([26, 32]; and [55]). In this sense, mobile payment can be defined as any type of individual or business activity involving an electronic device capable of connecting to a mobile network in order to successfully complete an economic transaction [39].

Barriers to the adoption of mobile payments	Users' deficient knowledge of the new technology	No actual, real demand for this kind of payment system	Perceived trust/risk in the new payment system	Cost of adopting the payment system	Perceived lack of security	Technological issues and struggles
Chellappa and Pavlou [11]			x			
Claessens et al. [13]			x			
Begonha et al. [6]		x		x		
Pousttchi et al. [58]			x			
Siau and Shen [65]			x			x
Herzberg [31]			x			
Frolick and Chen [21]		x				
Wang and Cheung [74]		x				
Gebauer and Shaw [23]		x				
Misra and Wickamasinghe [51]			x			
Teo et al. [71]		x	x	x		
Mallat and Tuunainen [46]		x				x
Dewan and Chen [18]			x		x	
Liu et al. [44]			x			
Agarwal et al. [1]			x			
James and Versteeg [35]	x					
Chen [12]			x			
Balan et al. [3]						x
Islam et al. [34]			x			
Masamila et al. (2010)			x			
Wu et al. (2010)		x	x			
Islam et al. [34]	x					x
Saidi [63]	x					
Becher et al. [5]			x			
Little [43]	x					
Andreev et al. [2]			x			
Chang [9]			x			x
Chang [10]			x		x	
Slade et al. [68]			x			
Ramakrishna and Naik [59]			x			x

Barriers to the adoption of mobile payments	Users' deficient knowledge of the new technology	No actual, real demand for this kind of payment system	Perceived trust/risk in the new payment system	Cost of adopting the payment system	Perceived lack of security	Technological issues and struggles
Xin et al. [75]			x			
Slade et al. [67]			x			
Liébana-Cabanillas et al. [41]			x			
Ramos-de-Luna et al. [61]					x	
Ndege [54]			x	x		
Liébana-Cabanillas et al. [40]			x			
Ramos-de-Luna et al. [60]					x	
Komo et al. [37]				x	x	x
Liébana-Cabanillas et al. [42]			x			
Total	4	8	26	5	5	8
% total	7.14	14.29	46.43	8.93	8.93	14.29

Table 1. Barriers to the adoption of mobile payments.

As previously discussed, mobile payments constitute a recent innovation in its early stages of development and growth [77], yet they are widely extended in our society [28]. This marked presence generates an interest in finding the benefits and drawbacks for users of this new technology. With that purpose, this research reviewed the extant literature assessing different studies on this particular subject. After reviewing the scientific literature in this regard, this study found that the main barriers and deterrents to the adoption of mobile payments are the lack of trust in the new technology and the perceived risk when approaching it (see **Table 1**); 46.43% of users mentioned these factors during the survey process. Other relevant barriers that this study found are the lack of an actual demand for this type of services and the possible technological issues derived from their use (mentioned by 14.29% of respondents). Lastly, other variables such as the cost of adopting the new payment systems (8.93%), the perceived lack of security (also 8.93%), and the scarce knowledge users have regarding this new technologies (7.14%) are also mentioned as factors impacting to a lesser extent the intention to use. On the other hand, the main drivers for the adoption of mobile payments (see **Table 2**) are the convenience, comfort, and familiarity perceived by users when approaching the new technology through their smartphones (mentioned by 18.18% of respondents). Other significant drivers are attributes and characteristics such as ubiquity, personal nature, security, and the high penetration rate (13.64% across all these factors). Finally, this research also found less relevant drivers in variables such as mobility (9.09%) and compatibility (4.55%) [45].

Drivers for the adoption of mobile payments	Ubiquity	Personal nature	Mobility	Perceived security	Increased business operations and higher income	High penetration rate	Familiarity, convenience, and comfort	Compatibility
Clarke [14]	x							
Begonha et al. [6]		x			x			
Kreyer et al. [38]					x			
Frolick and Chen [21]	x		x					
Dourish [19]						x		
Mallat and Tuunainen [46]	x		x					
Teo et al. [71]		x						
Jarvenpaa and Lang [36]		x						
Heim and Sinha [30]						x		
Sahut [62]				x				
Meyer [50]						x		
Mallat et al. [47]								x
Chang [9]				x			x	
Ramakrishna and Naik [59]				x			x	
Chang [10]					x		x	
Tavilla [69]				x			x	
Total	3	3	2	3	3	3	4	1
% total	13.64	13.64	9.09	13.64	13.64	13.64	18.18	4.55

Table 2. Drivers for the adoption of mobile payments.

3. Methodology

The purpose of this study is to empirically evaluate the different factors influencing merchant adoption of mobile payment systems. In order to fulfill this purpose, our research approaches a sequential quantitative and qualitative analysis based on three different stages.

In the first stage of our research (carried out in the second fortnight of May in 2015), our research analyzed different databases of related scientific publications in order to evaluate an overview of the use of mobile payment systems in the market for daily commercial activities. Through a qualitative analysis based on two focus groups were established after this initial

process; one of the groups involved the managers of payment systems of five financial entities in Spain, while the other focus group incorporated managers of five different commercial establishments). Both groups were surveyed with a concise, clear questionnaire designed specifically for this research.

After the successful completion of the first stage, our study focused on the second stage which was carried out roughly around the same time. In this stage, our research assessed the situation regarding the new payment systems in 25 different commercial establishments through another qualitative analysis in order to examine the actual reliability of the questions which were designed in the first stage. After successful completion of the first and second stages, we modified the questionnaire employed in our research in order to incorporate more significant questions respecting the following variables: knowledge regarding the new payment systems, different types of mobile payments, the use of each of the different mobile payment technologies, main providers of mobile payment tools, perceived usefulness of the different mobile payment systems, drivers and barriers to the use of mobile payments, and, lastly, the intention to use of these new payment solutions.

In the final stage of our research, carried out in June and July in 2015, we performed a qualitative analysis after identifying and validating all related factors to our study in previous publications and checking every fit commercial establishment for the purpose of this research. In this third stage, we performed the personal interviews in the commercial establishments employing a questionnaire which would empirically assess other questions relevant to this research.

A total of 400 different merchants were initially identified as fit for the purpose of this research. These merchants were subsequently classified according to their business activity and their contribution to the GDP of Spain. It is worth mentioning that once we contacted all of these 400 establishments, only 151 decided to contribute to our full (qualitative and quantitative) research (37.75% of total merchants approached).

We performed a batch of semi-structured interviews with an average completion time of around 50–75 min; these interviews were then transcribed and coded for later use. After the personal interview, participants were surveyed through an additional questionnaire which aimed to further improve data collection in order to successfully achieve the purpose of the questions used during the interviews.

The different profiles of the merchants participating in our research can be found in **Table 3**. The vast majority of these companies were identified as microenterprises since they had a low number of employees (between 1 and 9). This assessment is consistent with the data gathered by the Spanish Statistical Office, which reports the presence of a high number of companies in Spain as opposed to the average figures in other countries in the European Union. The difference is the smaller size of these Spanish companies than those in other countries in the EU (i.e., 76.8% smaller in terms of the number of employees and with an average income 72.8% lower). Also, according to the same data from the Spanish Statistical Office, the most relevant sector contributing to the GDP of Spain would be the traditional sector (47.4% of the total contribution) followed by the restoration sector (25%). These findings identify the service sector as the main performer regarding Spanish GDP.

	Categories	Frequency	Percentage/interval
Sector	Digital means	4	2.6
	ICTs (computers, telecommunications, software, etc.)	9	5.9
	Traditional (newspapers, cinema, etc.)	4	2.6
	Retailers	72	47.4
	Mail order or sales on the Internet	3	2.0
	Restoration	21	13.9
	Others	38	25.0
Company employees	0–9	116	76.8
	10–49	13	8.6
	50–249	7	4.6
	250–499	5	3.3
	500 or more	10	6.6
Company income in 2014	Under 2 million Euro (microenterprises)	110	72.8
	Between 3 and 10 million Euro (small enterprises)	8	5.3
	Between 11 and 50 million Euro (medium enterprises)	5	3.3
	Over 50 million Euro (large companies)	7	4.6
	Unknown	21	13.9
Sales channel employed	Physical store	141	93.4
	Internet	4	2.6
	Other (mail order or direct sale)	6	4.0
Position of the interviewee in the company	Company owner	49	32.5
	Company senior management	6	4.0
	Company middle management	4	2.6
	Store manager	12	7.9
	Store expert	6	4.0
	Employee	74	49.0
Experience	Average years with traditional payment systems	12.8	0–35
	Average years with mobile payment systems	0.16	0–4

Table 3. Respondent companies.

Respecting the different sale channels approached by the merchants contributing to our research, it is worth noting that the traditional channel is still the channel of choice employed by the majority of the companies participating in this study, with a sizable advantage over

the different alternative channels. Our research also found that the average experience of respondents with traditional payment systems was an average of roughly 12.8 years. On the other hand, their average experience with mobile payment systems was significantly lower than that, not even amounting for a full year. This finding corroborates the relevance of our research when assessing the different determinant factors that might drive the acceptance and adoption of the new payment systems.

In order to complete the main questionnaire, other questions were incorporated regarding the level of knowledge of these new payment systems, their perceived trust and utility, and also some additional questions relevant to the nature of the different providers of mobile payment services.

4. Discussion and assessment of results

In order to properly assess results drawn from this research, a semantic analysis of the different questions used for the personal interviews was approached along with statistical quantitative analysis through SPSS v22 software.

4.1. Assessment of knowledge regarding mobile payment systems

The level of knowledge of the different mobile payment systems was found to be average (roughly 50%) after assessing the different respondent merchants. We found a variety of responses when participants were questioned about their knowledge respecting the different mobile payment systems; below some of the answers are included:

- *I know about mobile payment systems, but I do not use them.*
- *No, unfortunately I do not really know about mobile payment systems.*
- *I know they accept payments; I have seen a delivery person (of a shipping company) using them.*
- *I do not really know about mobile payment maybe that my smartphone can be used as a payment tool the same way as a credit card works; in our establishment we have a wireless point of sale.*
- *Yes, they are mostly contactless payment tools using apps installed in NFC-enabled smartphones.*
- *My knowledge is rather poor; I know a smartphone is required, but I have never used that payments.*
- *I only know mobile phone payment tools are some other ways to complete payments.*
- *I believe they refer to the services facilitating payments and collections using some apps for smartphones.*
- *Smartphones can be used in a similar way as credit cards.*
- *These payments allow using an app for smartphones to complete a payment.*
- *They are payments through a device connected to a network, especially smartphones. These payments are linked to credit accounts.*
- *I heard something on the news; they are new payment tools; we just need to place our smartphones in close proximity to the payment device in the establishment to complete a transaction.*

- *To be honest, I have never heard about mobile payment systems or how they would operate.*
- *Yes, mobile payment systems are employed in mobile devices which have been previously associated with a banking account; this is how payments are finally completed.*
- *They are a payment system using tools provided by the different banks, mostly a certain sticker you can attach to a mobile phone in order to complete payments involving amounts lower than 20 Euros (\$21 approx.) In this case, there is no need to use a PIN code or a digital signature. If the amount is higher than 20 Euros, then a validation is required by placing the device in close proximity to the payment terminal.*
- *I consider mobile payment systems as modern and convenient, but I still believe they are difficult to implement successfully even if they enable a fast tool for customers to pay comfortably.*
- *I only know mobile payments use some kind of contactless, scanning device on the data-phone terminal in the establishment.*

As the answers above show, we can classify merchants into two groups: those with the appropriate knowledge of mobile payment systems and have already adopted them and, on the other hand, merchants which are basically oblivious regarding these new payment tools. In light of these findings, especially with so many merchants ignoring mobile payment systems, providers of mobile payment services should encourage the development of information campaigns and strategies in order to drive the adoption and management of these payment services.

4.2. Typology of the different mobile payment systems

Respecting the different payment systems accepted in the establishments which this research assessed and interviewed, only 14.57% would confirm the adoption of a certain mobile payment system, specifically NFC payment systems (see **Figure 1**).

In light of these results, and as we stated above, providers should encourage information strategies which will positively influence the adoption of mobile payment systems.

4.3. Mobile payment providers

Regarding the providers of the payment systems available to customers of the different merchants participating in this research, the vast majority of the respondents favored payment systems provided and supported by their associated financial entities (60.93%). On the other hand, the rest of respondents were undecided. Some of them adopted payment systems provided by external technology providers (14.57%), whereas the remaining respondents were indifferent to this matter (24.50%). In light of these findings, financial entities can be considered as the main providers of the payment systems adopted by the merchants. Therefore, these entities are expected to invest to a great extent in the different information campaigns regarding the new payment tools (**Figure 2**).

4.4. Perceived usefulness of mobile payment systems

Regarding the perceived usefulness of these new payment systems, this research assessed the answers provided by the different merchants with the following results: 64.90% of

respondents did manifest a high perceived usefulness. On the other hand, one-quarter of the respondents (26.49%) did claim that the usefulness of these payment systems was minor and insignificant (**Figure 3**).

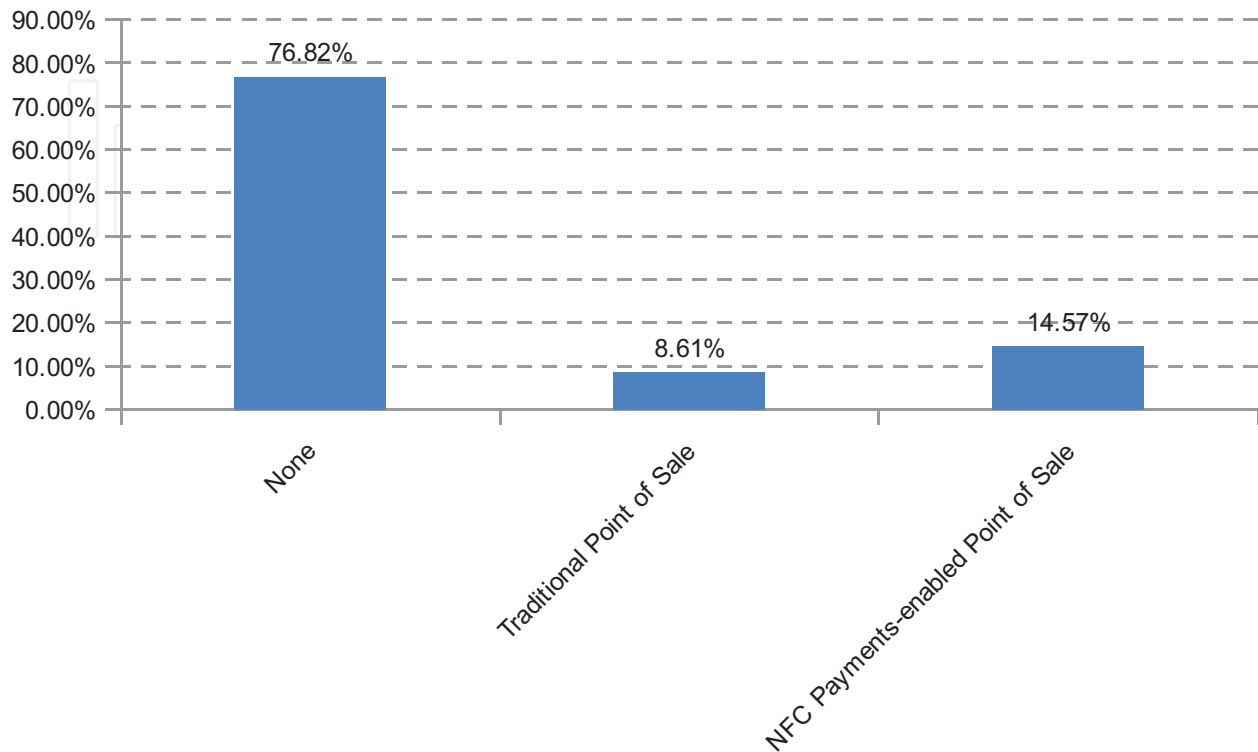


Figure 1. Typology of the different payment systems accepted by participating merchants.

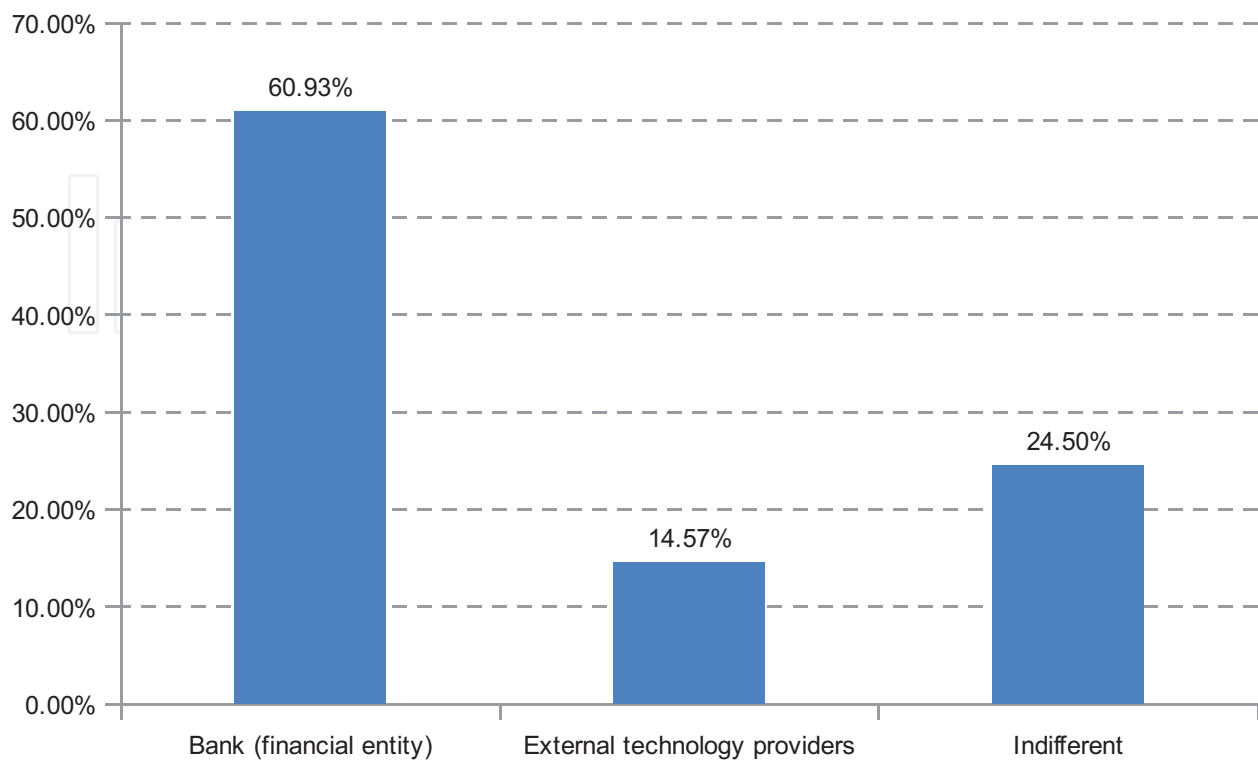


Figure 2. Preferred providers of mobile payment systems.

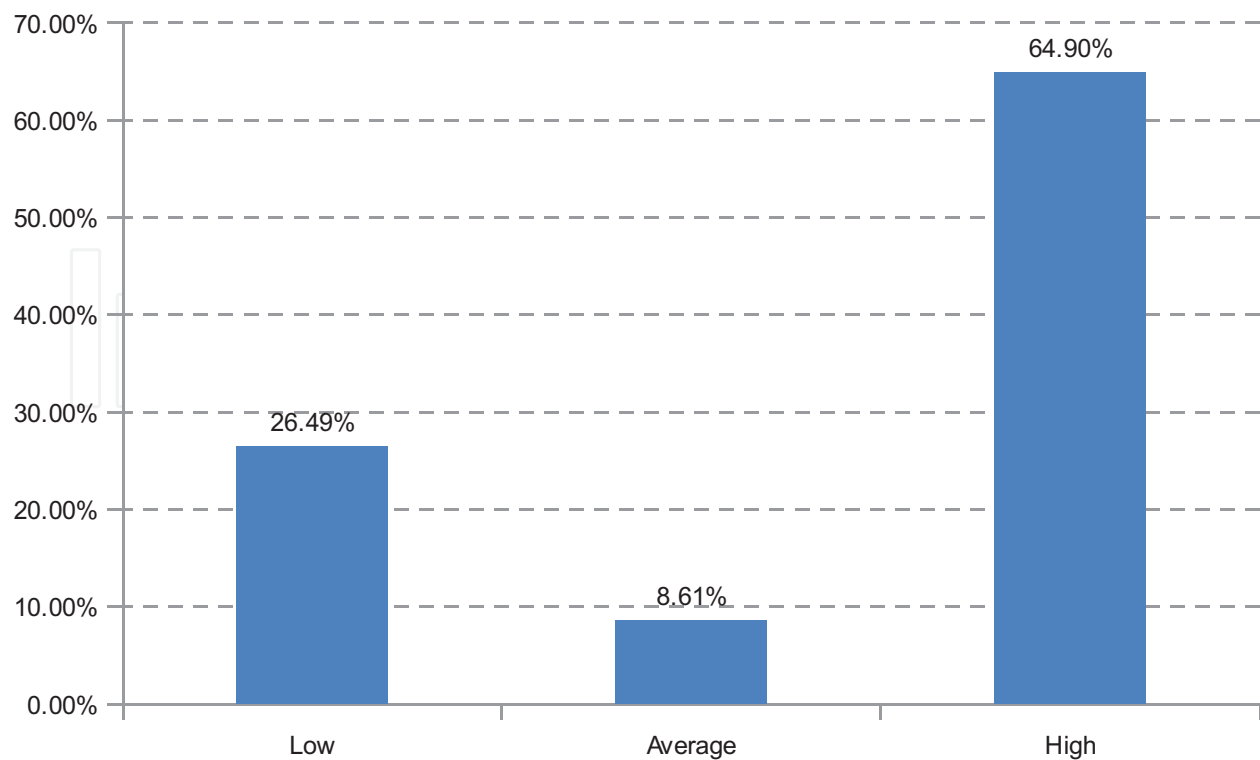


Figure 3. Perceived usefulness of the different mobile payment systems.

Relevant feedbacks from participating merchants were:

- *Mobile payments are rather useful allowing for instant payments anywhere.*
- *These new tools will be useful for me since I will be able to collect payments anywhere.*
- *Customers will benefit the most from the new payment systems; they will pay comfortably.*
- *This is a new trend and we have to adapt accordingly.*
- *These payments mean that cash is no longer necessary and transactions will be faster.*
- *They will facilitate the procedures and paperwork involved.*
- *They ensure a greater convenience for customers while the business transactions are clearer.*
- *Everyone has some kind of mobile phone; with these new payment systems, our customers have a permanent, convenient access to their money; maybe this will prevent the additional charges we pay for the different transactions.*
- *They might be useful in the future.*
- *I believe they could be rather useful and convenient.*
- *These new tools would allow a faster, easier payment process for our customers, but those willing to use them should be properly informed in the first place.*
- *These payment systems would be rather convenient for our customers.*

- *The usefulness of these payment systems depends on the age of the average customer. Regarding our elderly clientele, these tools would not be that useful.*
- *Additional payment tools always benefit customers, but our business would also benefit from the improved availability of different payment systems.*

In spite of the high perceived usefulness of these payment systems, this research proposes that those financial entities involved in these new payment systems should reinforce their communication and information strategies following the findings exposed earlier in this study.

4.5. Drivers and barriers

After reviewing the extant literature and assessing our respondents (**Figures 4 and 5**), we found that the most relevant factors negatively influencing the intention to use are the customer's lack of knowledge regarding the new technology (mentioned by 33.1% of respondents), followed by the scarce demand of a proper information on the new tools (18.5%), the level of perceived trust (10.6%), the cost of adoption (9.3%), the perceived lack of security (6%), and other technological issues (2.6%). It is worth mentioning that 11.9% of the respondents could not identify a single barrier or deterrent to the adoption of these new payment systems.

On the other hand, respecting the factors driving the intention to the use of mobile payment systems (**Figure 4**), it is worth noting factors such as the convenience and speed associated with these new tools (58.9%), merchants' perceived increase in security regarding the use of the new technology (14.6%), and improved sales turnover (9.3%), among other factors (4%).

4.6. Benefits derived from the use of mobile payment systems

In regard of merchants' perceived benefits when adopting the new payment tools, this research detected two different profiles clearly distinguished from each other; 29% of respondents could not identify any benefit whatsoever when using the new payment systems in a real-world environment, whereas, on the other hand, the remaining 71% of respondents could indeed perceive significant advantages and benefits such as the following: convenience, speed, improved time management, and lower cost of operation. We especially remark these factors since they are precisely the drivers, which the reviewed scientific literature suggests as the most relevant in this field. In order to improve the adoption of these new payment systems, this research identified again the need of proper information campaigns especially designed for the different merchants in order to divulge the benefits and advantages associated with the use of the new tools.

4.7. Intention to use mobile payment systems

Finally, after assessing respondents' intention to use new mobile payment systems, this research found a patent intention to use them in only 17.88% of the total respondents, reflecting the incipient penetration of this new technology regarding the majority of merchants in Spain. On the other hand, 82.12% of respondents did show no interest whatsoever in adopting the new payment systems.

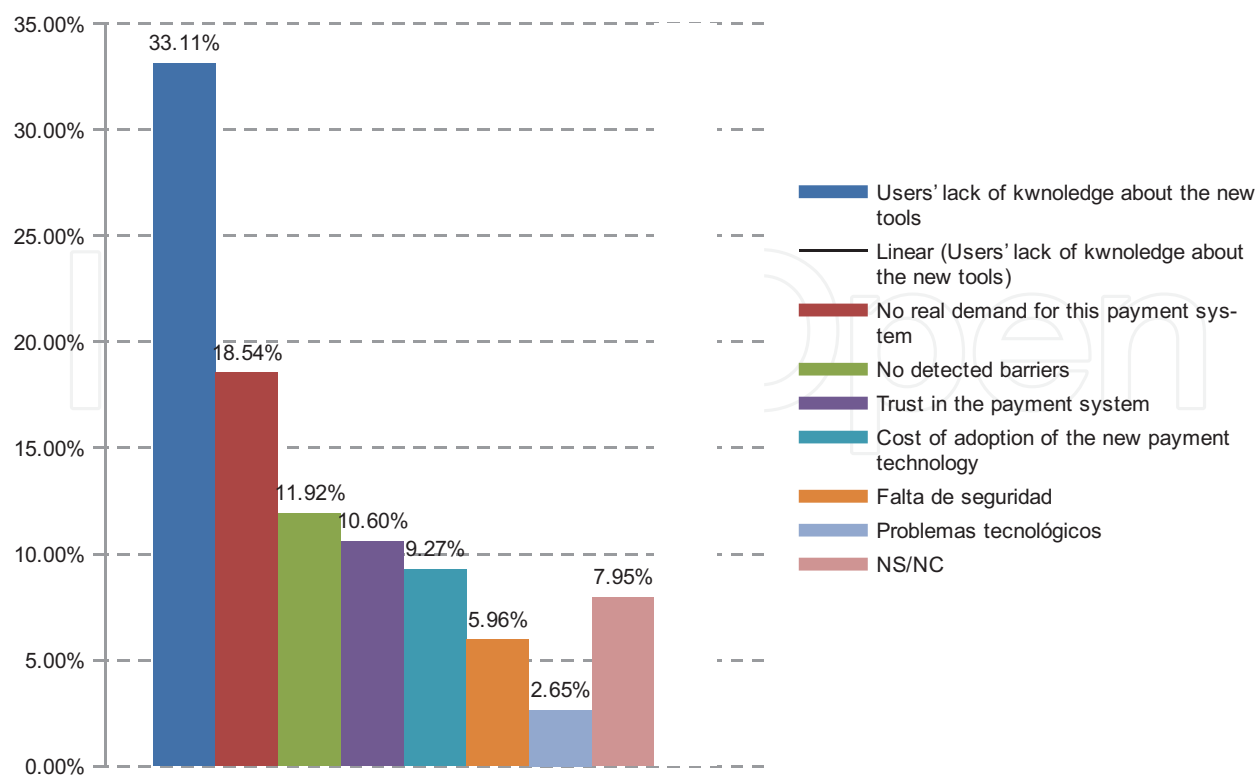


Figure 4. Barriers to the adoption of mobile payments.

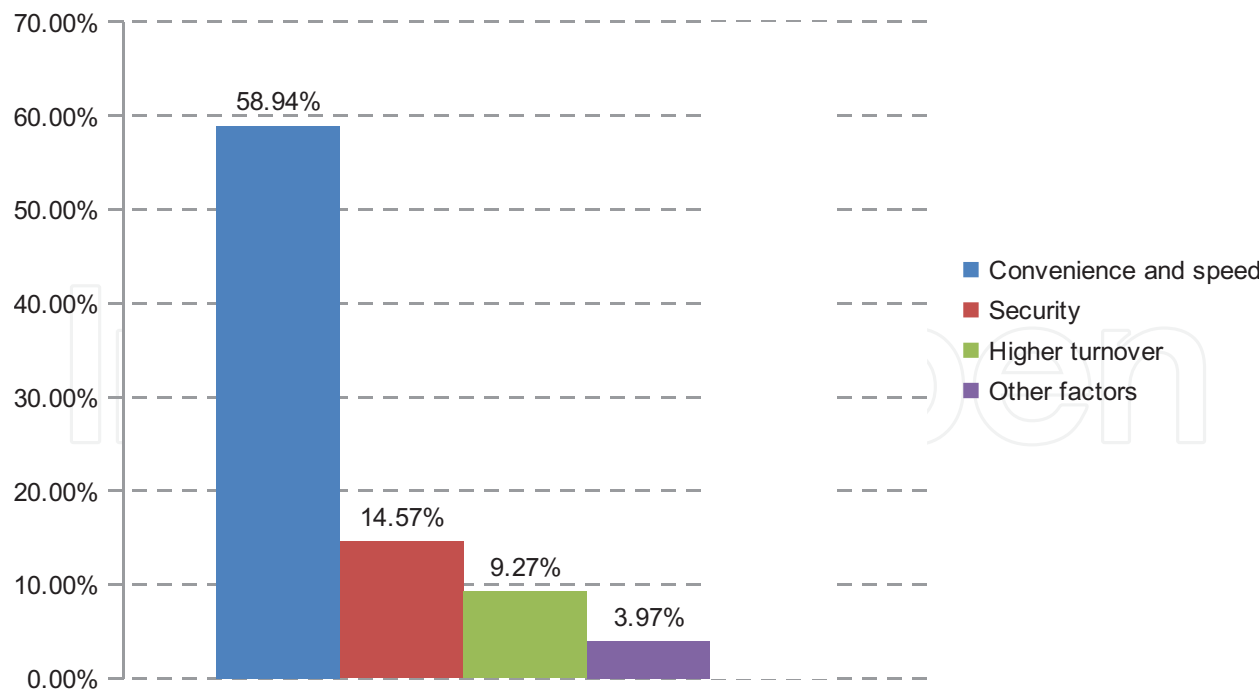


Figure 5. Drivers influencing the adoption of mobile payments.

5. The importance of trust and perceived risk

In the case of this research, both trust and perceived risk are significant drivers for merchant's adoption of mobile payment systems; thus they're thoroughly assessed.

In recent decades, research performed in the field of marketing has stressed the importance of trust among the different involved parties as a driver for the continuity and durability of a relationship. This is of great significance at a business level [22].

Trust was described by Singh and Sirdeshmukh [66] in the context of B2C e-commerce as "the psychological state leading to accept the vulnerability of a trustor, based on positive expectations of the trustee's actions." In this sense, Van Der Heijden et al. [73] reported that trust in the ambit of online purchasing could be defined as "the willingness of one of the parties (the purchaser) to be vulnerable to the actions of a virtual establishment, based on the expectations that this virtual establishment will carry out an important action for the customer or purchaser, regardless of his or her ability to conduct or control the virtual establishment."

Trust has traditionally involved two key dimensions: cognitive and behavioral. Dwyer et al. [20] approached the cognitive dimension of trust in order to describe it as "one party's expectation that the words or promises of the other party are reliable and that the other party will fulfill his or her obligations in a relational exchange." Regarding the cognitive approach, we detected in the extant literature three different moderating factors for beliefs: competence, integrity, and benevolence. These variables exhibit psychometric properties which are fit for the measurement scale approached [8]. On the other hand, Mayer et al. [48] and McKnight et al. [49] examined predictability (the capacity to predict someone else's behavior in any situation) as an additional moderating variable [52].

From a behavioral point of view, trust can be described as "the willingness of a trustor to be vulnerable to the actions of a trustee, based on the expectation that the trustee will perform a particular action important for the trustor, regardless of the capacity of the trustor to survey or control the trustee" [48], referring to the willingness to behave following a certain behavioral pattern. Multiple studies examine this variable in order to identify the acceptance success rate of new technologies [76] such as e-commerce.

Following a different approach, Bauer [4] carried out an analysis on perceived risk based on two different variables: Firstly, uncertainty, which can be defined as the lack of knowledge that consumers show when they are actually involved in the process of purchasing, and, secondly, the lack of information on the potential negative consequences of purchases. In this sense, this author also posited that consumer behavior is always connected to a certain risk; behavioral patterns involve effects that cannot be predicted with any certainty [4]. In this sense, Gupta and Kim [29] described perceived risk as "consumers' perception about the uncertainty and the adverse consequences of a transaction performed by a seller," while Gefen et al. [24] reported "the consequence of a decision reflecting the variation of its eventual

results.” Finally, the literature also includes the definition of perceived risk by Gerrard and Barton Cunningham [25], described as “the possibility that the use of an innovation could not be safe.”

6. Managerial implications regarding the adoption of mobile payments

The use of payment tools has been related to our species since ancient times. In spite of this long established relationship, the adoption (involving implementation and use) of the new, modern payment systems in our current economic environment has greatly influenced the business scenario. Mobile phone payments can be considered as the most significant tool among the recent payment systems introduced in the market due to the relevance of wireless devices in our society, their simple accessibility, and the constant improvements in the technology associated with these new payment tools both for online contexts (mainly the Internet and social media) and traditional, “offline” applications such as swipe card readers, POS machines, etc.

In the past decades, the swift increase in the level of competitiveness and technological improvements involved in all commercial sectors, as factors which are becoming equally significant, has led to the development of a new communication strategy for companies and customers; this new channel evolved into a practical application known as e-commerce. In this sense, companies have been catering appropriately according to the respective demands of their business sector. Mobile commerce and the new mobile payment systems are relevant actors with a key role in the evolution of the market due to the widely extended use of mobile devices, especially smartphones, with the prospect of a high penetration rate in our society. For all these reasons, the business prospect for this particular sector is truly promising.

As observed from the data discussed earlier in this study, certain countries might not follow the general trends of the market; this appears to be the case regarding the market in Spain. Our research aims to identify the reasons for this situation from the perspective of the merchants. Research assessing the adoption and acceptance of the mobile payment systems is rather scarce and might improve future conceptions and prospects for the market of these new payment tools. According to the results obtained in this empirical analysis, we have outlined and proposed an appropriate research framework for merchant adoption of mobile payments. This is depicted in **Figure 6**.

In our opinion, on the basis of the results obtained from this research, the lack of information on the new payment tools significantly hinders their adoption. The development of proper information campaigns in this regard would help to overcome the barriers while also reinforcing the drivers affecting the final intention to use of mobile payment systems. This information should approach each and every one of the elements in the framework of mobile payment. In this sense, Dahlberg et al. [16] proposed that the relevance of mobile payments should be analyzed through Porter’s Extended Rivalry Model [57] and the Generic Contingency Theory. With this in mind, we consider that the sources of this critical information should involve the

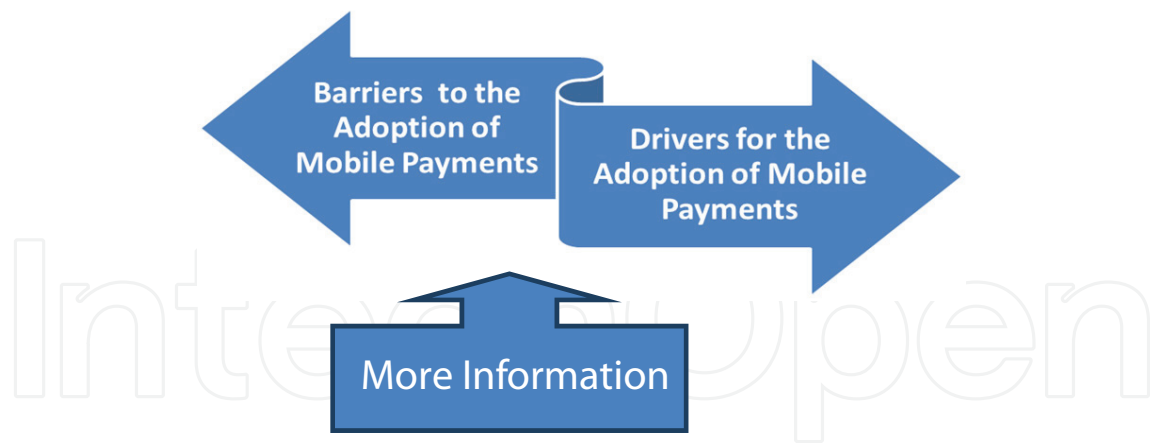


Figure 6. Managerial implications derived from the adoption of mobile payments.

main providers of mobile payment system and also, to a great extent, merchants interested in the new technology.

As for the companies providing mobile payment services (banks, financial entities, and external technology providers), they need:

- a. To properly inform merchants through online (websites and social media) and traditional communication channels on the different mobile payment tools.
- b. To offer joint promotions where the cost of the transactions would be partially borne by the financial entity or provider of the mobile payment tool, for instance, offering flat-rate plans for a certain period of time after the initial adoption of the new technology.
- c. To advertise the benefits and advantages derived from the use of mobile payment systems.
- d. To enforce and develop robust security systems for all consumer transactions made through these electronic payments in order to reinforce users' perceived trust.
- e. To provide merchants new and modern point-of-sale terminals in order to speed up and facilitate in-store purchases.
- f. To reinforce security systems in commercial establishments in order to increase merchants' perceived trust in the new technology.
- g. To include launch promotions to facilitate the adoption of mobile payment systems by both merchants and final users.

As for merchants interested in the adoption of mobile payment systems, they need:

- a. To properly inform customers on the different existing mobile payment tools through online (websites and social media) and traditional communication channels.
- b. To advertise the benefits and advantages derived from the use of the new mobile payment tools.
- c. To offer in-store promotions in order to encourage the use of mobile payment tools.

7. Final discussion, limitations, and future research opportunities

7.1. Discussion of results

Recent studies in the literature have thoroughly analyzed users' behavior in the adoption of the new mobile payment systems [27, 42, 67]. These studies have found and assessed the most significant barriers and drivers influencing the adoption of mobile payments. However, the focus of these research efforts was placed on consumers with no evaluation whatsoever from the perspective of the merchants. In addition, it is worth mentioning that most mobile payment adoption initiatives have failed before reaching consumers and merchants [15].

Even if a significant number of consulting firms are elaborating and delivering key, successful forecast studies predicting the future and potential behavior of customers toward the new mobile payment systems, real-world results show that these new payment tools have not yet really taken off and are actually in a difficult, serious situation derived from the conflict of interests of the different involved actors and the respective payment contexts.

In light of these findings, the aim of our research is to analyze the most significant barriers and drivers regarding the adoption of the new payment systems from the perspective of the merchants. In order to achieve this goal, this research approaches a qualitative and quantitative analysis carried out after a comprehensive literature review with the purpose of finding and examining the aforementioned factors affecting the use of mobile payment tools. As mentioned earlier in our study, research in this specific field of knowledge is scarce even if it could lead for brighter prospect regarding the future adoption of mobile payments.

This research corroborates the idea that the new technology is rather appealing for all actors involved in the respective market [17]. However, in terms of the benefits and advantages for the merchants, we believe that the new mobile payment tools would speed up the actual purchases while improving the security of the transactions at the same time, optimizing sales turnover and enabling new marketing strategies aimed toward smartphones. However, before reaching this point in the development and adoption of mobile payment systems, merchants need to overcome the different barriers and deterrents detected in this research.

This research has proven the importance of a certain set of deterrents and drivers affecting merchant adoption of mobile payment systems. Regarding the different barriers, the intention to use will definitely improve as long as users' knowledge of the new technology is also reinforced. For mobile payments to actually succeed in the current situation of the market, the following goals need to be achieved: (a) a real demand for this type of payments, (b) a higher perceived trust regarding the operation of the new technology, (c) optimizing and sharing the costs derived from the adoption of these payment systems, and (d) an enhanced security infrastructure to overcome possible technological issues related to the use and nature of mobile wireless devices. Finally, this research also found that perfecting the convenience, speed, security, and merchants' sales turnover associated with the use of the new payment systems leads to a considerably higher intention to use them.

7.2. Limitations and future research opportunities

Despite its contributions, this research also shows some limitations which provide fruitful avenues for future research. In the first place, as a preliminary study, this research only approached a basic statistical analysis. In this regard, researchers are currently developing a theoretical model aiming to examine the adoption of mobile payments by merchants across different countries. This model will also be contrasted and tested using structural equation modeling. This process should provide detailed results useful for researchers and users that could be projected to other markets. In addition, the sample employed in this research consisted only of Spanish merchants; in this regard, half of the actual respondents were employees of the different companies with no decision-making powers related to the adoption of the new payment technologies. In this sense, future research should approach the individuals in charge of this type of operations. In addition, an analysis following a longitudinal approach should facilitate the evaluation of the actual adoption instead of focusing solely on the behavioral intention. This type of analysis would also detect changes in the identified drivers and barriers over the continuous use of the mobile payment tools.

Author details

Francisco Liébana-Cabanillas*, Francisco Muñoz Leiva and Juan Sánchez Fernández

*Address all correspondence to: franlieb@ugr.es

University of Granada, Granada, Spain

References

- [1] Agarwal S, Khapra M, Menezes B, Uchat N. Security issues in mobile payment systems. *Computer Society of India*. 2007:142-152
- [2] Andreev P, Pliskin N, Rafaeli S. Drivers and inhibitors of mobile-payment adoption by smartphone users. *International Journal of E-Business Research (IJEER)*. 2012;8(3):50-67
- [3] Balan RK, Ramasubbu N, Prakobphol K, Christin N, Hong J mFerio: The design and evaluation of a peer-to-peer mobile payment system. In: *Proceedings of the 7th International Conference on Mobile Systems, Applications, and Services ACM*. 2009. pp. 291-304.
- [4] Bauer RA. Consumer behavior as risk taking. In Hancock R, editor. *Proceedings of 43rd Dynamic Marketing for a Changing World*. Chicago, IL: American Marketing Association. 1960. pp. 389-398.
- [5] Becher M, Freiling FC, Hoffmann J, Holz T, Uellenbeck S, Wolf C. Mobile security catching up? Revealing the nuts and bolts of the security of mobile devices. In *2011 IEEE Symposium on Security and Privacy (SP)*. IEEE. 2011, May. pp. 96-111.

- [6] Begonha DB, Hoffman A, Melin P. M-payments; hang up, try again. *Credit Card Management*. 2002;**15**(10):40-44
- [7] Capgemini (2015). World Retail Banking Report 2015. Available in <https://www.worldretailbankingreport.com/>
- [8] Castañeda JA. El comportamiento del usuario de Internet: Análisis de los antecedentes y consecuencias de la fidelidad. [Tesis Doctoral]. Departamento de Comercialización e Investigación de Mercados: Universidad de Granada; 2005
- [9] Chang TK. A secure cloud-based payment model for M-commerce. In 2013 42nd International Conference on Parallel Processing (ICPP). IEEE. 2013. pp. 1082-1086.
- [10] Chang TK. A secure mobile bill payment (MOBILL) service for M-commerce. A secure operational model for mobile payments. *The Scientific World Journal*. 2014
- [11] Chellappa RK, Pavlou PA. Perceived information security, financial liability and consumer trust in electronic commerce transactions. *Logistics Information Management*. 2002;**15**(5/6):358-368
- [12] Chen L. A model of consumer acceptance of mobile payment. *International Journal Mobile Communications*. 2008;**6**(1):32-52
- [13] Claessens J, Dem V, De Cock D, Preneel B, Vandewalle J. On the security of today's online electronic banking systems. *Computers & Security*. 2002;**21**(3):253-265
- [14] Clarke I III. Emerging value propositions for m-commerce. *Journal of Business Strategies*. 2001;**18**(2):133
- [15] Dahlberg T, Guo J, Ondrus J. A critical review of mobile payment research. *Electronic Commerce Research and Applications*. 2015;**14**(5):265-284
- [16] Dahlberg T, Mallat N, Ondrus J, Zmijewska A. Past, present and future of mobile payments research: A literature review. *Electronic Commerce Research and Applications*. 2008;**7**(2):165-181
- [17] Dennehy D, Sammon D. Trends in mobile payments research: A literature review. *Journal of Innovation Management*. 2015;**3**(1):49-61
- [18] Dewan SG, Chen LD. mobile payment adoption in the US: A cross-industry, crossplatform solution. *Journal of Information Privacy and Security*. 2005;**1**(2):4-28
- [19] Dourish P. What we talk about when we talk about context. *Personal and Ubiquitous Computing*. 2004;**8**(1):19-30
- [20] Dwyer FR, Schurr PH, Oh S. Developing buyer-seller relationships. *The Journal of Marketing*. 1987:11-27
- [21] Frolick MN, Chen L. Assessing M-commerce opportunities. *Information Systems Management*. 2004;**21**(2):53-61

- [22] García N, Santos ML, Sanzo MJ, y Trespalacios JA. (2008). El papel del marketing interno como antecedente de la capacidad de innovación de la PYME. Efecto sobre los resultados empresariales. XXII Congreso anual AEDEM. Salamanca, 18, 19 y 20 de Junio de 2008.
- [23] Gebauer J, Shaw MJ. Success factors and impacts of mobile business applications: Results from a mobile e-procurement study. *International Journal of Electronic Commerce*. 2004;**8**(3):19-41
- [24] Gefen D, Rao V, & Tractinsky N. Conceptualization of trust, risk and their relationship in electronic commerce: The need for clarifications. In: *Proceedings of the 36th Hawaii International Conference on IS*. 2003.
- [25] Gerrard P, Barton Cunningham J. The diffusion of internet banking among Singapore consumers. *International Journal of Bank Marketing*. 2003;**21**(1):16-28
- [26] Ghezzi A, Renga F, Balocco R, Pescetto P. Mobile payment applications: Offer state of the art in the Italian market. *Info*. 2010;**12**(5):3-22
- [27] Guillén A, Herrera LJ, Pomares H, Rojas I, Liébana-Cabanillas F. Decision support system to determine intention to use mobile payment systems on social networks: A methodological analysis. *International Journal of Intelligent Systems*. 2016;**31**(2):153-172
- [28] Guo X, Zhao Y, Jin Y, Zhang N (2010). Theorizing a two-sided adoption model for mobile marketing platforms. *ICIS 2010 Proceedings*, Paper 128, 1-16.
- [29] Gupta S, Kim HW. Value-driven Internet shopping: The mental accounting theory perspective. *Psychology & Marketing*. 2010;**27**(1):13-35
- [30] Heim GR, Sinha KK. Service product configurations in electronic business-to-consumer operations: A taxonomic analysis of electronic food retailers. *Journal of Service Research*. 2005;**7**(4):360-376
- [31] Herzberg A. Payments and banking with mobile personal devices. *Communications of the ACM*. 2003;**46**(5):53-58
- [32] Hu X, Li W, Hu Q. Are mobile payment and banking the killer apps for mobile commerce? In *Proceedings of the 41st Annual Hawaii International Conference on System Sciences*. IEEE. 2008. pp. 84-84.
- [33] IPSOS (2015). Los medios de pago, un paisaje en movimiento. Disponible en <https://www.pwc.es/es/publicaciones/financiero-seguros/assets/medios-pago-paisaje-movimiento.pdf>
- [34] Islam MA, Ahmad TSB, Khan MA, Ali MH. Adoption of M-commerce services: The case of Bangladesh. *WORLD*. 2010;**2**(1):37-54
- [35] James J, Versteeg M. Mobile phones in Africa: How much do we really know? *Social Indicators Research*. 2007;**84**(1):117-126

- [36] Jarvenpaa SL, Lang KR. Managing the paradoxes of mobile technology. *Information Systems Management*. 2005;**22**(4):7-23
- [37] Komo L, Kyando E, Ngare P. Determinants of consumers' adoption of mobile parking payment services in Kenya. *Journal of Emerging Trends in Economics and Management Sciences (JETEMS)*. 2016;**7**(1):1-12
- [38] Kreyer N, Pousttchi K, Turowski K. Standardized payment procedures as key enabling factor for mobile commerce. In *International Conference on Electronic Commerce and Web Technologies*. 2002. pp. 400-409. Berlin Heidelberg: Springer.
- [39] Liébana-Cabanillas, F. (2012). The role of payment systems in new electronic environments [doctoral dissertation]. Marketing and Markets Research Department, University of Granada.
- [40] Liébana-Cabanillas F, Herrera LJ, Guillén A. Variable selection for payment in social networks: Introducing the Hy-index. *Computers in Human Behavior*. 2016;**56**:45-55
- [41] Liébana-Cabanillas F, Muñoz-Leiva F, Sánchez-Fernández J. Behavioural model of younger users in M-payment systems. *Journal of Organizational Computing and Electronic Commerce*. 2015 just-accepted
- [42] Liébana-Cabanillas F, Muñoz-Leiva F, Sánchez-Fernández J. A global approach to the analysis of user behavior in mobile payment systems in the new electronic environment. *Service Business*. 2017:1-40
- [43] Little AD. (2011). Global M-Payment Report 2011. Available in www.adlittle.com
- [44] Liu Y, Cao X, Dang L. *Mobile Payment in Enabling Technologies for Wireless E-Business*. Berlin Heidelberg: Springer; 2006. p. 233-252
- [45] Mallat N, Dahlberg T. Consumer and merchant adoption of mobile payment solutions. In: *Managing Business in a Multi-channel World: Success Factors for e-Business*. 2005. p. 32
- [46] Mallat N, Tuunainen, VK. Merchant adoption of mobile payment systems In *International Conference on Mobile Business*, 2005. ICMB 2005. 2005. pp. 347-353. IEEE.
- [47] Mallat N, Rossi M, Tuunainen VK, Öörni A. The impact of use context on mobile services acceptance: The case of mobile ticketing. *Information Management*. 2009;**46**(3):190-195
- [48] Mayer RC, Davis JH, Schoorman FD. An integrative model of organizational trust. *Academy of Management Review*. 1995;**20**(3):709-734
- [49] McKnight DH, Cummings LL, Chervany NL. Initial trust formation in new organizational relationships. *Academy of Management Review*. 1998;**23**(3):473-490
- [50] Meyer A. Cell phone banking will bring a microfinance revolution. *Tech for Change*. 2007:1-2
- [51] Misra SK, Wickamasinghe N. Security of a mobile transaction: A trust model. *Electronic Commerce Research*. 2004;**4**(4):359-372

- [52] Muñoz F. La adopción de una innovación basada en la Web [Tesis Doctoral]. Departamento de Comercialización e Investigación de Mercados, Universidad de Granada; 2008
- [53] National Retail Federation (2011). Mobile Retailing Blueprint. A Comprehensive Guide for Navigating the Mobile Landscape. Available in www.nrf.com/mobile
- [54] Ndege MD. Modelling uptake of mobile payments by MSMEs in Kenya [doctoral dissertation]. University of Nairobi; 2015
- [55] Ondrus, J, Lyytinen, K, Pigneur, Y. Why mobile payments fail? Towards a dynamic and multi-perspective explanation. In 42nd Hawaii International Conference on System Sciences, HICSS'09. IEEE. 2009. pp. 1-10.
- [56] Online Business School (2014). El Comercio Electrónico 2014. Available in <http://www.obs-edu.com>
- [57] Porter M. Competitive Strategy. New York, NY: Free Press; 1998
- [58] Pousttchi, K, Turowski, K, Weizmann, M (2003, April). Added value-based approach to analyze electronic commerce and mobile commerce business models. In Andrade RAE, Gómez JM, Rautenstrauch C, Rios RG, editors. International Conference of Management and Technology in the New Enterprise. La Habana. pp. 414-423.
- [59] Ramakrishna PG, Naik MC. A Secure Mobile Bill Payment (MOBILL) Service for M-Commerce. International Journal of Science and Research (IJSR). 2014;3(9):2234-2237
- [60] Ramos-de-Luna I, Montoro-Ríos F, Liébana-Cabanillas F. Determinants of the intention to use NFC technology as a payment system: An acceptance model approach. Information Systems and e-Business Management. 2016;14(2):293-314
- [61] Ramos-de-Luna I, Montoro-Ríos F, Liébana-Cabanillas F. Determinants of the intention to use NFC technology as a payment system: An acceptance model approach. Information Systems and e-Business Management. 2015:1-22
- [62] Sahut JM. Electronic wallet in danger. Journal of Internet Banking and Commerce. 2006;11(2)
- [63] Saidi E. Towards a faultless mobile commerce implementation in Malawi. Journal of Internet Banking and Commerce. 2010;15(1):1-13
- [64] Sharma A, Sheth JN. Web-based marketing: The coming revolution in marketing thought and strategy. Journal of Business Research. 2004;57(7):696-702
- [65] Siau K, Shen Z. Building customer trust in mobile commerce. Communications of the ACM. 2003;46(4):91-94
- [66] Singh J, Sirdeshmukh D. Agency and trust mechanisms in consumer satisfaction and loyalty judgments. Journal of the Academy of Marketing Science. 2000;28(1):150-167
- [67] Slade EL, Dwivedi YK, Piercy NC, Williams MD. Modeling consumers' adoption intentions of remote mobile payments in the United Kingdom: Extending UTAUT with innovativeness, risk, and trust. Psychology & Marketing. 2015;32(8):860-873

- [68] Slade EL, Williams MD, Dwivedi YK. Devising a research model to examine adoption of mobile payments: An extension of UTAUT2. *The Marketing Review*. 2014;**14**(3):310-335
- [69] Tavilla E (2015). *Transit Mobile Payments: Driving Consumer Experience and Adoption*.
- [70] Tecnom (2014). *Trends in Payment Instruments 2014*. Available in http://www.tecnocom.es/documents/10181/27549/Tecnocom2014_ingles.pdf
- [71] Teo E, Fraunholz B, Unnithan C (2005, January). Inhibitors and facilitators for mobile payment adoption in Australia: A preliminary study. In *International Conference on Mobile Business, ICMB 2005*. pp. 663-666. IEEE.
- [72] Torrent-Sellens J, Castillo D, Gabaldón P, Ruiz E, Sainz J. *Hacia la bancamulticanal*. Madrid: ESIC; 2010
- [73] Van der Heijden H, Verhagen T, Creemers M. Understanding online purchase intentions: Contributions from technology and trust perspectives. *European Journal of Information Systems*. 2003;**12**(1):41-48
- [74] Wang S, Cheung W. E-business adoption by travel agencies: prime candidates for mobile e-business. *International Journal of Electronic Commerce*. 2004;**8**(3):43-63
- [75] Xin H, Techatassanasoontorn AA, Tan FB. Antecedents of consumer trust in mobile payment adoption. *Journal of Computer Information Systems*. 2015;**55**(4):1-10
- [76] Yang MH, Lin B, Chandlrees N, Chao HY. The effect of perceived ethical performance of shopping websites on consumer trust. *Journal of Computer Information Systems*. 2009;**50**(1):15-24
- [77] Zhu Y. *A new architecture for secure two-party mobile payment transactions [thesis]*. Department of Mathematics and Computer Science, University of Lethbridge; 2010