

# CAN UBIQUITY MODERATE M-BANKING RESOURCE-RELATED NEGATIVE EFFECTS?

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## RESUMEN

*El objetivo de este estudio es explorar la influencia de los inconvenientes de la banca móvil relacionados con la falta de recursos en la satisfacción de los clientes, su disposición a recibir marketing móvil de permiso y la emisión de boca-oreja. Analizando una muestra de 1429 usuarios de banca móvil, determinamos que la satisfacción de los clientes influye en su disposición a recibir marketing móvil de permiso y emitir boca-oreja, mientras que la disposición a recibir marketing móvil de permiso tiene un efecto positivo sobre la emisión de boca-oreja. Siendo la ubicuidad un atributo distintivo de la banca móvil, observamos su papel moderador, identificando que hay clientes que consideran la ubicuidad como una característica importante de la banca móvil, mientras que otros no la consideran relevante. Este estudio propone recomendaciones para mejorar el uso de los servicios de la banca móvil, evitando o disminuyendo los efectos negativos de sus inconvenientes.*

## Palabras Clave:

Banca móvil; inconvenientes; satisfacción; boca-oreja; marketing de permiso; marketing móvil; ubicuidad.

## ABSTRACT

*The objective of this study is to explore the influence of m-banking resource-related inadequacies on clients' satisfaction with the banking services, their permission-based mobile marketing tendencies and word-of-mouth emission actions. Analysing a sample of 1429 users of mobile banking services, we determined that clients' satisfaction influences their willingness to receive permission-based mobile marketing and to emit word-of-mouth, while the willingness to receive permission-based mobile marketing has a positive effect on the word-of-mouth emission. In order not to overlook the ubiquity as a distinguishing attribute of m-banking services, we observe its moderating role, identifying clients who consider ubiquity as an important m-banking characteristic and others who do not consider it relevant. Hence, attending the opinion of actual m-banking clients, this study proposes suggestions for improving the use of m-banking services by avoiding or lessening the negative effects of m-banking resource-related inadequacies.*

## Keywords:

Mobile banking; inadequacies; satisfaction; WOM; permission-based marketing; mobile marketing; ubiquity.

## 1. Introduction

Nowadays, the new technology that is increasingly implemented by most of the banks is mobile banking (m-banking). This channel has captured the attention of clients and companies because it can provide the same traditional services such as money transfer, checking deposit or paying bills, but it even introduces new electronic services, like virtual personal banking consultant and services that enable to transfer and withdraw money to automated teller machines (ATMs) without a card. M-banking is characterised by convenience, speed, and ease of use (Lu et al., 2014) and has been considered an innovative channel because of its use of mobile devices for accessing banking services to complete commercial or non-commercial banking transactions, without time and place constraints (Wei, 2011).

The continuous upgrade of the electronic banking channels has become essential for generating a competitive advantage and maintaining clients satisfied, starting with ATM services, followed by Internet banking, the nowadays popular m-banking and potentially the QR codes (Makarem et al., 2009). M-banking, with its ubiquity attribute, is positioning itself as a wireless service delivery channel creating added value to banking transactions (Dzoghbenuku, 2013). The literature alludes to the importance of customer adoption, satisfaction and behaviour in m-banking as the most important aspects of the Relationship Marketing approach (Berry, 2002), necessary for achieving m-banking continuous usage and creating a long-term B2C relationship (Lu et al., 2014). Moreover, satisfaction drives clients to participate in further actions, such as word-of-mouth (WOM) and marketing activities, which additionally stimulates a loyal relationship (Roy and Butaney, 2014). Precisely for the Spanish market, the mobile channel has been recognised as an important business opportunity in the banking sector (Aldás et al., 2011; Liébana-Cabanillas et al., 2014).

Besides, Laukkanen (2007) argues that the attributes of the service and the delivery channel are those that create value for clients and influence clients' experience and preference of the same. This is likewise postulated in the Signalling Theory, in particular for the services industry. Precisely, since the quality of the service can only be evaluated after clients have experienced the service by themselves (Nelson, 1970), companies use a variety of signals that are supposed to mitigate the information asymmetry and the resulting uncertainty for clients (Kirmani and Rao, 2000). However, it is not always a positive encounter, since there are some incidents that the clients have been experiencing with the entities since the new technologies introduction in the banking sector (Bitner et al., 2000). This fact could happen as a result of a negative reaction by a customer to a chosen signal. Although signals are meant to improve the communication of the features of the service, sometimes they are perceived negatively by clients (Boulding and Kirmani, 1993). Consequently, a negatively perceived signal by clients is followed by negative behavioural responses. Therefore, we consider important to research the negative effect that some m-banking characteristics might have on the clients' behavioural intentions and assure that a close and steady customer-company relationship will be fostered.

Accordingly, the *objective* of this study is to get deeper into m-banking characteristics and understand their influence on customer satisfaction, willingness to receive permission-based mobile marketing (PBMM) and WOM activity, while observing how the last three

variables are interrelated between each other. Having in mind that previous literature has paid significant attention to the positive characteristics or benefits of m-banking (Hanafizadeh et al., 2014), here we will try to fill a gap resulting from the lack of information related to clients' perception of m-banking resource-related inadequacies. Furthermore, it was recognised that companies would have to foresee clients' needs and anticipate some differential characteristics that would add value to m-banking compared with the rest of the banking channels. That is a reason to consider the substantial importance of carrying out a thorough research about the influence of the perceived m-banking resource-related inadequacies related to the resource absence, on clients' perceptions and behaviours. We will likewise look at ubiquity, being it an original m-banking characteristic, and the possible changes that the clients' perceptions regarding its importance in m-banking may generate in their behavioural intentions.

## **2. Theoretical background and proposed hypotheses**

Clients feel doubts, anxiety or uncertainty when they perceive that their expectations about a certain service are not fulfilled (Poon, 2007). Situations like this are explained with the lack of security and misuse of privacy policy, information unavailability, failure to update it and a dearth of credibility (Poon, 2007), which are perceived as negative elements of electronic banking services. When it comes to m-banking specifically, a negative influence on clients' adoption and use of this service are found to be the lack of understanding of the practicality of this channel, the difficulty of use because of incomplete information, the absence of personal interaction and advice or the unavailability of cash money (Shohag, 2013; Vyas and Raitani, 2014). Furthermore, Zhou et al. (2010) consider that clients' perception of m-banking characteristics will depend on the task they need to complete the action. Thus, if their task is not directly related to m-banking benefits (for instance, fast, convenient, and ubiquitous transaction), clients could not perceive m-banking as a useful channel with improved performance, and will opt for the adoption of other alternative service such may be Internet banking, ATMs or traditional office banking services. Hence it is important to study m-banking attributes that alter clients' m-banking usage.

To the extent of our knowledge, no any study deals with the issue of the negative causal effects of perceived resource-related inadequacies on m-banking usage. Nevertheless, the perceived barriers to m-banking services have appeared as a research line in few occasions (Alalwan et al., 2016). After a broad literature review, we focus on an aspect that embraces three of the main m-banking barriers previously portrayed in the m-banking literature, precisely m-banking resource-related inadequacies.

As Berry (2002) state, when clients perceive that their sacrifices are bigger than their benefits, they will no longer perceive the advantages but will recognise and focus on the inadequacies of the service. In the mobile technology literature, the intangible *resources* related to technology and people interaction are critical for companies in order to create an advantage (Peppard and Ward, 2004), converting the lack of resources in one of the most complained aspects of m-banking. Thus, perceived shortcomings about effort, delivery and contact dimensions related to a specific service usage, are negatively perceived by clients (Berry, 2002). Moreover, the deficiency of resources such as the lack of information about m-banking services, the absence of personal advice, and the unavailability of cash, have also been considered important inadequacies of m-banking (Shohag, 2013). Hence, the m-

banking shortcoming identified in this study is the resource absence, which describes money unavailability, lack of information and impossibility of advice.

By nature, individuals aim to keep their cognitive system in balance, and when inconsistencies in their opinions, attitudes or expectations appear, they tend to feel uncomfortable and involve in undesirable behaviours (Bauer et al., 2005) that may jeopardise the maintenance of the relationship with the company. Several authors have pointed out the necessity of studying the negative effect of m-banking barriers, as an essential aspect that once overcome will encourage a relationship between clients and m-banking entities (Mishra and Singh, 2015). Consequently, clients' perception of m-banking resource-related inadequacies might play a major role in the creation of clients' satisfaction, PBMM attitudes, and WOM activities, as some of the essential elements for achieving a durable relationship with m-banking users (Lu et al., 2014).

With the aforementioned in mind, following is offered the theoretical explanation regarding the relations proposed for the model variables.

### ***2.1. M-banking resource absence and its negative influence on clients' satisfaction***

In a mobile technology context, *satisfaction* can be seen as an emotional response, resulting in m-commerce related activities, and motivated by services, information and systems dimensions (Wang and Liao, 2008). Oliver (1997) defines satisfaction as the level of fulfilment that clients feel related to an overall consumption of a product or service. Jones and Suh (2000) consider that overall satisfaction is updated after every new transaction. Therefore, clients' satisfaction with m-banking services has to be considered as an evaluation of the fulfilment provided by m-banking performance.

Characteristics of the service impact clients' satisfaction with the service (Shirsavar et al., 2012). Companies' service and the level of communication efficiency affect customer satisfaction with m-banking (Song and Hollenbeck, 2015). Furthermore, a balanced implementation of people, technology and process components, such as human resource, information, and performance capabilities, will result in a more effective clients' decision making and satisfaction (Kim et al., 2010). Therefore, if clients need for personal attention and advice when using m-banking services is not pleased, it will have a negative effect on clients' adoption and satisfaction with the mobile service (Song and Hollenbeck, 2015). Consequently, lack of information and absence of personal advice and cash, are perceived as m-banking drawbacks that could influence clients' satisfaction.

In fact, clients' satisfaction in m-banking will depend on their perception of m-banking inadequacies regarding the B2C relation and the service (Sagib and Zapan, 2014). If clients perceive that the offer is inconvenient, it will decrease the generation of satisfaction (Choi et al., 2008). Therefore, we suppose that if clients perceive an inconvenient service resulting from resource absence, their satisfaction will be reduced. Thus, our first hypothesis is proposed:

***H1: Clients' perception of m-banking resource-related inadequacies negatively influences their satisfaction with m-banking services.***

## **2.2. *M-banking resource absence and its negative influence on clients' willingness to receive PBMM***

Since mass media cannot target clients with high precision and are not able to customise the offer (Krishnamurthy, 2001), companies employ *permission-based marketing* strategies, which by asking clients for permission to send marketing communications, allow them to focus on customer preferences and build a tailored interaction (Kent and Brandal, 2003). Permission-based marketing enables clients to express and specify their interest in receiving marketing communication and qualifies companies to use this information to maintain the interaction and to personalise advertising messages (Brey et al., 2007). Clients' perception of interaction positively influences attitudes in mobile communications (Song and Hollenbeck, 2015). The willingness to engage in PBMM refers to clients' intention to receive marketing communications related to a product or service on their mobile phone and is considered essential in developing clients' behavioural intentions regarding mobile phone services usage (Sultan et al., 2009).

Clients who appreciate a service show an increased propensity to engage in permission-based marketing actions (Tezinde et al., 2002). Clients' perception of the mobile channel and its services is a key determinant of their m-marketing attitude (Rohm et al., 2012). Moreover, information, the possibility for advice, schedule issues such timing and location, and convenience in the form of relevance and personalisation of the service, are likewise important motives for engaging in PBMM activities (Watson et al., 2013). Accordingly, if clients have concerns about the service provided, they will try to avoid marketing communication (Oger et al., 2015).

Clients' perception regarding the service is an important antecedent of their behavioural intentions in m-banking (Sagib and Zapan, 2014). If clients continuously notice interruption or unavailability of m-banking services, they will experience negative perceptions which will follow with negative attitudes in m-banking (Zhou, 2012). Clients' recognition of the service as loss-free will influence further attitude and behaviour with m-banking (Wang, 2014). Contrary, when clients' evaluation of the service provided is perceived as poor, they will show negative responses and behaviours, since poor service is a contributing factor to negative quality perception and unfavourable clients' behavioural intentions (Vyas and Raitani, 2014). Consequently, if clients perceive m-banking resources as inconvenient, their attitude and intentions towards it will not be positive. Thus, the next hypothesis assumes that:

**H2:** *Clients' perception of m-banking resource-related inadequacies negatively influences their willingness to receive PBMM from a bank entity.*

## **2.3. *The link between satisfaction, PBMM, and WOM in m-banking***

Clients' positive purchasing experiences and their satisfaction with the service, will influence their innovative services usage and their attitude towards m-banking (Moradi et al., 2012). Clients' perception of a service is an important antecedent of their behavioural intentions (Sagib and Zapan, 2014). If clients perceive positive outcomes of m-banking usage, they will engage in further m-banking related tasks.

The interest in *WOM* has been increasing in the marketing literature since it has been commonly identified as an important factor that influences customer behaviour, especially in the electronic intangible environment where it is more common for clients to rely on interpersonal communication. That is why the need to study what motivates clients to share *WOM* is amongst the important current research questions (Luarn et al., 2014). *WOM* has been observed as a critical factor for success in the services sector (Wagenheim and Bayón, 2004) and especially in the financial services (Sweeney et al., 2008). *WOM* is defined as spreading information about products, services or brands among individuals (Shirsavar et al., 2012).

In marketing literature it is confirmed that positive experiences with a service usage drive clients to engage in *WOM* activities (Babin et al., 2005), especially encouraging clients to recommend (Fullerton, 2005). Precisely, clients' satisfaction with a the purchase of mobile services motivates their positive *WOM* activity and loyalty (Chu and Kim, 2011; San-Martín et al., 2015). In fact, for the m-banking sector, satisfaction is found to influence clients' intention to recommend a service delivered by this channel (Sagib and Zapan, 2014). Lastly, clients who feel satisfied with the service or with the service provider performance are prone to involve in m-marketing services with their provider (Deng et al., 2010). Additionally, clients' satisfaction has been extensively recognised as one of the fundamental determinants of clients' continuance intention and as a crucial factor in mobile communication services (Calvo-Porrall and Lévy-Mangin, 2015). Following those arguments above, the ensuing hypotheses are proposed:

**H3:** *Clients' satisfaction with the m-banking services positively influences their intention to emit WOM regarding these services.*

**H4:** *Clients' satisfaction with the m-banking services positively influences their willingness to receive PBMM from a bank entity.*

The permission-based marketing message is anticipated, personal and relevant since it is adapted to actual and expected clients' needs and preferences (Brey et al., 2007). It is seen as the most appropriate strategy for selling high-involvement services and influencing clients' behavioural intentions (Godin, 1999). Through the benefits of m-marketing interactivity, clients establish a direct relation with the company (Bauer et al., 2005). Permission-based mobile messages catch clients' attention and contribute to engendering clients' engagement with the firm (Watson et al., 2013). It is considered that m-marketing activities likewise improve communication among clients and among companies (Salo, 2012), besides the B2C communication. Clients' propensity to explore and use information designates their m-marketing attitude (Bauer et al., 2005). When clients show a tendency to involve in PBMM, it results in improved service and brand awareness, positive service and brand related attitudes, and increased the level of positive behavioural response (Barwise and Strong, 2002). Based on this, we propose that clients who are willing to engage in PBMM will be more prone to emit *WOM*. Accordingly:

**H5:** *Clients' willingness to receive PBMM from a bank entity positively influences their intention to emit WOM regarding m-banking services.*

#### 2.4. The role of ubiquity in the provision of m-banking services

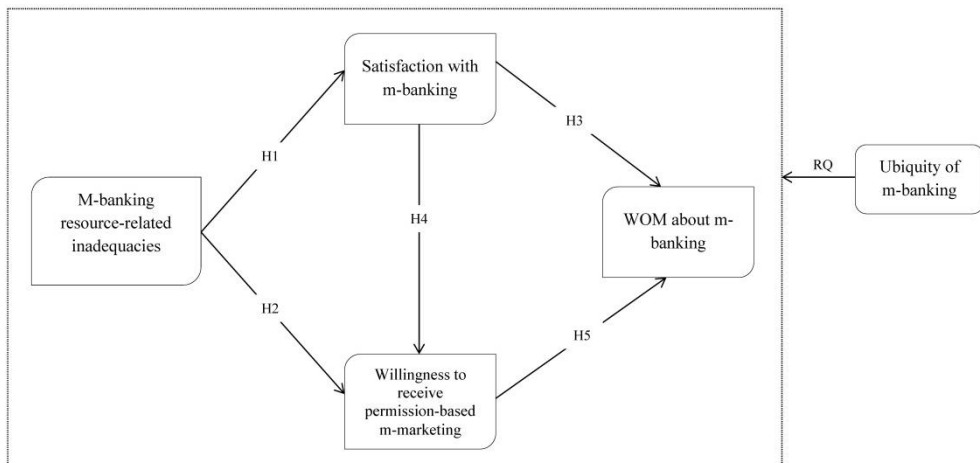
In the term mobile technology, mobile refers to the mobile devices characteristic that enables information, communication and transaction activities to be done in movement (Yuan et al., 2010). This specificity of mobile devices, determined as *ubiquity*, is found essential to the mobile services because it gives clients the possibility for executing a variety of tasks anywhere and anytime, without the need of a wired network (Huggard and Mc Goldrick, 2013). Ubiquity endows companies a continuous interaction with clients, and allow them to deliver personalised, timely and location-based offers, and to provide reliable and convenient payment services (Zhou, 2012). In m-banking literature, ubiquity has been considered the main advantage of the m-banking channel, removing spatial and temporal limitations, and allowing the carry out of ubiquitous m-banking services (Zhou, 2012).

Clients' perception of ubiquity helps them in the evaluation of the mobile services and shapes their m-commerce-related attitudes and intentions (Marinkovic and Kalinic, 2017). The location-free access to the service, the ability to react immediately to the emerging need and the time-saving opportunity describe the contribution of ubiquity in m-banking services (Laukkanen and Lauronen, 2005). Consequently, we propose the following research question (RQ) regarding the moderating effect of ubiquity in two different groups of clients, those that perceive the ubiquity of m-banking as an important characteristic and those that do not perceive it in the same manner. Consequently:

**RQ:** Does the ubiquity of m-banking services moderate the relations proposed in hypotheses H1 to H5?

Figure 1 presents the relationships proposed with the hypotheses and the novel RQ of this research.

FIGURE 1: Proposed Research Model.



### 3. Research methodology

#### 3.1. Sample and scales characteristics

For the purpose of this research data from 1429 Spanish m-banking clients was employed. Information about the data collection is given in Table 1.

TABLE 1: **Fact sheet.**

<b>Characteristics</b>	<b>Questionnaire</b>
<b>Population statistics</b>	Bank users of both genders, from 25 to 70 years old, residents of municipalities with over 10.000 inhabitants.
<b>Geographical field</b>	Spain
<b>Sample size</b>	1429 m-banking clients
<b>Sampling error</b>	±2.59% (confidence level of 95.5%, $p=q=0.5$ , for the case of maximum uncertainty)
<b>Execution period</b>	October – November 2013

The average m-banking clients are men, mainly at the age from 25 to 44 (79.9%) years. Most of the clients have a university degree (72.2%) and are employed (83.3%). The most common income is higher than 1800€ per month (31.9%). There is a balance in the usage and non-usage of m-banking services ubiquitously, either at home, at work, in public transport or other places. The demographic and socio-economic profile of the sample is described in detail in Table 2.

TABLE 2: **Sample characteristics.**

<b>Demographical characteristics</b>		<b>%</b>
<b>Gender</b>	Men	<b>57.5</b>
	Women	<b>42.5</b>
<b>Age</b>	25-34	<b>46.9</b>
	35-44	<b>33.0</b>
	45-54	<b>15.2</b>
	55-70	<b>4.9</b>
<b>Education</b>	Basic studies or less	<b>1.7</b>
	High school	<b>7.0</b>
	Associate degree	<b>19.1</b>
	University degree	<b>72.2</b>
<b>Occupation</b>	Employed	<b>83.3</b>
	Unemployed	<b>16.7</b>



<b>Demographical characteristics</b>		<b>%</b>
<b>Monthly income</b>	< 900€	<b>16.7</b>
	900 to 1200€	<b>20.1</b>
	1201 to 1500€	<b>18.5</b>
	1501 to 1800€	<b>12.8</b>
	> 1800€	<b>31.9</b>
<b>Connects to m-banking ubiquitously</b> (at least three places were chosen between “home”, “work”, “public transport” or “other places”)	Yes	<b>48.6</b>
	No	<b>51.4</b>

The measurement scales employed to test the proposed model in this chapter contain one item for each considered variable: clients’ satisfaction (“Level of satisfaction with m-banking”), their willingness to receive PBMM (“Interest in personalised advertising regarding the products and services offered by the banking entity through m-banking”) and WOM emission (“Degree of probability of recommending to others the m-banking as a shopping channel”), measured with 5-point Likert scales. Three dichotomous items were used to measure m-banking resource-related inadequacies. To measure m-banking ubiquity, clients were asked the following question: “In which places do you normally connect to the banking entity via m-banking?”, having the possibility to answer through a multiple choice, with “home”, “work”, “public transport” or “other places”. Based on the valid answers, further, two different groups of clients were defined (i.e. ‘ubiquitous clients’ and ‘non-ubiquitous clients’).

### **3.2. Analyses and results**

According to guidance by Hair et al. (2014) at the beginning, the reliability and internal consistency of the scales had to be tested. Therefore, at first, it was confirmed the direct relation between the items of the m-banking resource-related inadequacies construct, presenting significant values at a confidence level of 95% ( $t > 1.96$ ) in all cases (Table 3)<sup>1</sup>. The Cronbach  $\alpha$  and composite reliability (CR) coefficients demonstrate reliability and internal consistency of the scales, represented with values higher than 0.7 and 0.6 respectively (Bagozzi and Yi, 1988). The AVE with measures superior than 0.5 shows an adequate global quantity of variance for each item that is explained by the latent constructs (Bagozzi and Yi, 1988). Consequently, the convergent validity was confirmed.

<sup>1</sup> Indicators with outer loadings between 0.40 and 0.70 should be considered for removal only if their deletion leads to an increase in the CR and AVE (Hair et al., 2014). Since, in the case of this study, the CR and AVE values don’t increase with the deletion of the indicator with a value lower than 0.708, we decided to keep the precise indicator.

TABLE 3: Measurement Model Estimation<sup>2</sup>.

Variable	Item	Loadings $\lambda$ (t Value)	Cronbach $\alpha$	CR	AVE
M-banking resource-related inadequacies	Money unavailability	.825 (56.114)*	0.7	0.8	0.5
	Lack of information	.552 (13.257)*			
	No advice	.875 (132.365)*			

Note: \* $p < 0.01$ .

After the measurement model validation, we proceeded with the estimation of the proposed hypotheses. In this sense, it was required to confirm that  $R^2$  of the dependent variables were greater than 0.1, as suggested in the literature (Falk and Miller, 1992). The values of  $R^2$  for clients' satisfaction, willingness to receive PBMM and WOM variable fulfilled the requirement, showing values of  $R^2=0.178$ ,  $R^2=0.562$ ,  $R^2=0.478$ , respectively. Furthermore, to detect the influence that independent variables have on the dependent variables, it was necessary to estimate the changes that arise in  $R^2$ , measuring the  $f^2$  (Wong, 2013). Following the indications by Cohen (1988), small, medium and large effect sizes are represented with the following values  $f^2 \geq 0.02$ ,  $f^2 \geq 0.15$  and  $f^2 \geq 0.35$ , respectively. The results show that m-banking resource-related inadequacies have a medium effect on satisfaction and a large effect on willingness to receive PBMM ( $f^2=0.216$  and  $f^2=0.447$ , respectively); the willingness to receive PBMM is substantially influenced by satisfaction ( $f^2=0.299$ ), and it shows higher effect size on WOM ( $f^2=0.285$ ) in comparison with satisfaction effect on WOM ( $f^2=0.096$ ).

Therefore, through the estimation of the causal model, all the proposed hypotheses were confirmed. Thus, m-banking resource-related inadequacies negatively influence clients' satisfaction (H1) and their willingness to receive PBMM (H2). Both previously mentioned variables positively influence clients' intention to engage in emitting WOM (H3 and H5). Additionally, clients' satisfaction likewise has a positive impact on their willingness to receive PBMM (H4). All these results are summarised in Table 4.

TABLE 4: Causal Model Estimation.

Hypothesised relations	Coefficient $\beta$ (t Value)
H1: M-banking resource-related inadequacies $\rightarrow$ Satisfaction	-.422 (27.357)*
H2: M-banking resource-related inadequacies $\rightarrow$ Willingness to receive PBMM	-.488 (45.650)*
H3: Satisfaction $\rightarrow$ WOM	.281 (8.554)*

<sup>2</sup> Since single item variables are handled, indicator's reliability, internal consistency and convergent validity of satisfaction, willingness to receive PBMM and WOM cannot be determined. Being single item constructs, the estimation of the loadings, t Value, AVE, CR and Cronbach  $\alpha$  is not applicable, as well as the calculation of the discriminant validity. Moreover, the predictive relevance of the constructs in the model ( $Q^2$ ) is likewise not considered pertinent (Hair et al., 2014).

Hypothesised relations	Coefficient $\beta$ (t Value)
H4: Satisfaction $\rightarrow$ Willingness to receive PBMM	.399 (30.809)*
H5: Willingness to receive PBMM $\rightarrow$ WOM	.484 (20.976)*

Note: \* $p < 0.01$ .

Subsequently, the differences in the influence that m-banking ubiquity could produce on the relationships proposed in the model were estimated (Figure 1). With the purpose of detecting if there were differences between distinct groups of clients, a multi-group analysis was carried out following guidelines by Hair et al. (2014), creating two groups of clients. The first group consists of 691 (48.6%) individuals who indicated at least three of the proposed options to connect to m-banking (home, work, public transport or other places), and are considered as clients who perceive ubiquity as a clear important m-banking characteristic (from now on referred to as ubiquitous clients). The second group involves 738 (51.4%) individuals who specified one or two options as an answer, and are treated as clients who do not consider ubiquity as an important m-banking characteristic (non-ubiquitous clients).

The ubiquity was confirmed as a moderator for 4 out of 5 relations in the model. According to the Welch-Satterthwait Test (comparing the means of the two groups of clients, without assuming equal variances), the values for the 4 relations were significant at a confidence level of 95% ( $t > 1.96$ ) (Table 5). Therefore, the proposed research question (RQ) regarding the moderating role of ubiquity is responded. Accordingly, m-banking ubiquity increases the negative influence of m-banking resource-related inadequacies on satisfaction, for the case of ubiquitous clients. Contrary, for non-ubiquitous clients those relations are weaker.

Furthermore, m-banking ubiquity moderates the positive impact of satisfaction on PBMM and WOM, and the impact of PBMM on WOM. Hence, it can be concluded in general that m-banking ubiquity stimulates the proposed positive relations and weakens the negatives ones, for the non-ubiquitous clients, those who do not perceive ubiquity as an important m-banking characteristic. The exception is the relation between willingness to receive PBMM and WOM, where the positive relation is stronger for ubiquitous clients. In Table 5 the results can be observed in detail.

TABLE 5: Multi-group Analysis of Ubiquitous and Non-ubiquitous Clients.

Hypothesised multi-group relations	Ubiquitous clients $\beta$ (t Value)	Non-ubiquitous clients $\beta$ (t Value)	Welch-Satterthwait Test
H1: M-banking resource-related inadequacies $\rightarrow$ Satisfaction	-.529 (22.990)*	-.076 (7.609)*	18.067*
H2: M-banking resource-related inadequacies $\rightarrow$ Willingness to receive PBMM	-.428 (16.171)*	-.392 (7.975)*	0.652
H3: Satisfaction $\rightarrow$ WOM	.099 (2.537)**	.435 (10.684)*	5.934*
H4: Satisfaction $\rightarrow$ Willingness to receive PBMM	.367 (11.774)*	.523 (20.073)*	3.839*
H5: Willingness to receive PBMM $\rightarrow$ WOM	.500 (13.038)*	.266 (8.540)*	4.735*

Note: \* $p < 0.01$ , \*\*  $p < 0.05$ .

#### 4. Conclusions and implications

In the past two decades, the use of self-service technologies in the banking sector has generated relevant changes in the way banking entities communicate with their clients (Haytko and Simmers, 2009). Starting with ATMs, followed by Internet banking and continuing with m-banking, nowadays banking clients have a variety of possibilities to complete the desired tasks. M-banking can be considered a natural evolution of Internet banking that allows the execution of financial transactions or any other kind of banking services that are not only related to money transfers (Lin, 2013). However, as a consequence of mobile phone limitations, such as small screens and low resolution<sup>3</sup> (Yan and Yang, 2014), clients have not chosen their mobile phones as the primary tool to access banking information or complete a transaction. They accordingly prefer to receive the information in a concise way, getting the most useful data. In this way company's communication with clients is improved and benefits are perceived by the clients (Ansari and Sanayei, 2012).

Taking into account the slow m-banking adoption in times of the fast improvement of this channel and that the lack of awareness of the benefits is the main factor affecting m-banking adoption, we considered that it would be important to pay attention to the perceived m-banking resource-related inadequacies (Akturan and Tezcan, 2012). Therefore, it was proposed in this study to research in more detail the influence of m-banking drawbacks related to the possible resource absence on the relationship development. The m-banking resource-related inadequacies effect was contemplated on clients' satisfaction, their willingness to receive PBMM and their WOM emission, observing the interrelations between the last three variables meanwhile. Up till now, we are not aware of the existence of any study like this one, with such a large database of Spanish actual m-banking users, which explores m-banking resource-related inadequacies and that analyses for the first time their negative influence on clients' satisfaction, willingness to receive PBMM and WOM activity in this sector. Likewise, the moderating effect of ubiquity is studied, as it is probably the most important characteristic that distinguishes the m-banking channel from Internet banking, ATMs and traditional office banking. Thus, by achieving the objectives of this study, we add value to the body of knowledge regarding the m-banking services provision, especially for the case of the Spanish market.

Following IAB (2016) data, m-advertising investments continue to increase, as m-advertising revenues grew by 66-76% during the last two years, also testifying the relevancy of the PBMM, in accordance with previous literature (Shankar et al., 2010). If the m-marketing message is not considered important by clients, or has lost the personal B2C interaction, it is very probable that clients will not give the permission for m-marketing activities. This is firstly corroborated with our results, affirming that m-banking resource-related inadequacies have a negative influence on clients' willingness to receive PBMM. Secondly, clients' satisfaction with m-banking services indicates the banking entity performance and its offer (Ting and Cunlin, 2013), which is why it is so important to assure satisfied m-banking clients. As this research confirmed, clients perceiving m-banking

<sup>3</sup> Although mobile phones' screens and resolution are nowadays improved, there are still clients who use older models of mobile phones, presenting characteristics that may act as limitations for accessing m-banking services.

resource-related inadequacies are likewise less satisfied with the service. Consequently, unless companies transform the perceived resource absence of their m-banking services in order to improve the service and convert them in m-banking strengths, clients' satisfaction and their propensity to PBMM will be reduced and furthermore will negatively affect the emission of WOM. In addition, in accordance with the literature (Ranaweera and Menon, 2013), it was supported in this research that clients with higher satisfaction with m-banking services will be more willing to engage in PBMM activities and will emit WOM regarding these services to a greater extent. As already highlighted in this study, the achievement of those relations will be followed by a long and strong relationship with the bank.

Finally, ubiquity is shown to be a noteworthy sway, making a difference between clients who perceive it as an important m-banking attribute and those who do not. Ubiquity strengthens the negative effects of m-banking resource-related inadequacies for ubiquity clients. As a matter of fact, when clients perceive m-banking resource-related inadequacies, adding a service which will further emphasise the resource absence, will provoke a reduced satisfaction. For example, if clients need for advice, information or cash in a precise moment is not fulfilled, independently on the possibility to use the services ubiquitously, this need would persist. This means that depending on the situation they are in (ex. abroad for a business trip), the ubiquity could make even more difficult the carrying out of the wanted transaction. In the case of the willingness to receive PBMM, the ubiquity plays an important role for the ubiquitous clients, because they already have the need for further contact with the entity, unable because of the resource absence. PBMM reception involves the actual usage of the mobile device for accessing this m-marketing service. Accordingly, clients' better communication with the entity is closely related to their understanding of the performance of the desired task (D'Urso and Rains, 2008), necessary when clients perceive difficulties with the service usage. This argument explains the influence of clients' willingness to receive PBMM on the WOM emission.

Besides, the positive relations between satisfaction and willingness to receive PBMM and WOM are stronger for clients who believe that ubiquity is not important in m-banking. This probably occurs because clients value more their self-experience with m-banking services than other influencing attributes such as ubiquity. For instance, when clients' experience satisfaction with the services, they may not feel the need for other benefits from the banking entity in order to maintain the relationship (Ngugi, 2014). That is the reason why for WOM emission clients will be influenced by their satisfaction with the service, not by the ubiquity of the service, which will, as well, bring an additional interest in PBMM activity. The satisfaction will be a sufficient and principal element for them to involve in m-banking activities.

Regarding the *managerial implications*, as established in this research and accordance with the literature is the fact that companies have to raise clients' awareness of m-banking attributes as a way towards efficient, flexible and accessible services and an improved communication (Malviya and Sharma, 2013). Therefore, providing a convenient and practical service, countervailing the lack of personal contact will engender clients' satisfaction with the service and their willingness to engage in PBMM communication with their bank entity. The same outcome will be achieved when companies improve their resources, diminishing money unavailability issues and advising difficulties. Additionally,

clients' increased satisfaction and willingness to receive PBMM will make them more prone to share WOM about the m-banking services and their providers. Since all this leads towards a stable B2C relationship, companies have to make an effort in encouraging clients to communicate their satisfaction by the m-banking services and to participate in PBMM activities. It could be enabled through the use of promotions that would be beneficial for the clients who share opinions about the entity's actions and activities. In this way, other individuals would be informed about m-banking services, and they might even become a potential future customer.

Furthermore, appearing to be one of the fundamental m-banking characteristic, ubiquity benefits, and utility in the m-banking channel have to be better communicated to clients. Therefore, for clients who perceive ubiquity as an essential m-banking attribute, it would be recommendable to provide some new apps that will increase their perceived usefulness, improving the already existing services for its ubiquitous use and giving other service possibilities that would substitute those that are still not accessible in the m-banking. Thus, an m-banking app that would provide personalised and interactive communication, including geolocalisation technology and offering several alternative options for its obtainment, will make the service available and achievable for clients at the moment when and at the place where their need emerges. Through geomarketing, companies could likewise anticipate clients' needs or even stimulate them to involve in impulsive transactions. Opposite are the clients who perceive that ubiquity is not an important m-banking characteristic. Therefore, in order to increase their awareness of the contribution of ubiquity, it would be useful to introduce a guided explanation of the m-banking app usage, a life chat for any possible problem, doubt or need for advice, or promote some new tools that would allow a practical, fast and secure use of m-banking services. Activities that would help both ubiquitous and non-ubiquitous clients to perceive better the m-banking ubiquitous services would be, for instance, a bank's active social media presence and a chat app, maintaining a constant contact with its clients and making the communication between them possible. In this way, the benefits from the viral effect of mobile phone and social networks messages can be certainly noticed. For instance, sharing a video format recommendation or personal experience by clients who enjoy ubiquity, will benefit all users of the entity's m-banking services. Another possibility for emphasising the utility of m-banking ubiquity would be an m-banking app that would give clients the opportunity to sign banking related documents, to consult their virtual manager and even better, to pay without carrying any payment card or filling out any form.

The previous goals can be likewise reached with the usage of QR codes, which permit a fast and easy scanning of the identification code of a product or service offer and an electronic transaction done with the mobile phone. Equally, this initiative can be especially useful in neighborhoods of unbanked clients, who do not have a near bank branch, because they live in a small and/or poorly populated area. It is as well recommended for banking entities to include gamification in the delivery of m-banking services and m-banking marketing so that clients could recognise a more entertaining, appealing and engaging setting of the banking services distribution. These are possible ways to reduce the negative perception of m-banking resource-related inadequacies, and in this manner, companies would provide banking services that increase clients' satisfaction and their willingness to engage in PBMM and WOM activities. Lastly, creating a personalised mobile content and services

that could promote utility and engagement of the mobile channel will enable the maintenance of loyal clients who appreciate the channel benefits (Chiem et al., 2010).

As the main *limitation* of this study, we consider the fact that only a limited number of m-banking characteristics were considered as inadequacies. Besides, the database used for the study consists of Spanish m-banking users only, which limits the generalisation of the results. Therefore, a future study could contemplate the influence of several more factors that are negatively perceived by clients, such as for example may be the lack of trust in the mobile channel, the lack of control using it or perceived risks. Additionally, the negative WOM could be addressed, exploring if the same m-banking inadequacies or PBMM would influence the emission of negative WOM. It would be as well enriching to implement CHAID (Chi-square Automatic Interaction Detection) technique to detect the differences in the way the responses of the two groups of clients (ubiquitous and non-ubiquitous) to certain variables would affect the rest of the variables (Kass, 1980).

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