Determinants of involvement in mobile commerce. The moderating role of gender


Abstract

Mobile phones are one of the latest marketing tools that consumers are using to make their purchases, a fact that entails a revolution in the way firms are relating to their clients. It therefore becomes essential to understand the driving forces behind consumer involvement in this purchase channel; an aspect that has not been previously studied in the context of mobile commerce. In this pioneering work, we analyze the role that is played by perceived risk in mobile purchasing, permission marketing and consumer propensity towards new technologies as antecedents of consumer involvement. Based on the information gathered from a sample of 674 mobile users, our work highlights the importance of these variables as facilitators of involvement, as well as the need for firms to consider gender differences in the development of their strategies.

Key words: Mobile Commerce; Involvement; Risk; Permission-based Marketing; Personal innovativeness in the domain of information technology innovativeness; Gender.

JEL code: M31.

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1. Introduction
One of today’s commercial challenges is the possibility of mobile commerce, now that Internet commerce has to some extent consolidated its presence in our society. Even though communication is the primary function of the mobile phone, in recent years firms have added numerous functions, as they are aware of its marketing potential, thanks to its ubiquitous, interactive qualities, ease of personalization and convenience. The penetration of mobile phones in society is undeniable, borne out by the constant increase in the numbers of mobile phone users in the world and their growth forecast.

The development of the mobile phone as a new marketing tool is recent and it presents enormous possibilities as a purchasing channel. As this channel is at an early stage of development, it is essential that firms understand the factors that might involve consumers in its expansion: in other words, a classification of the determinants of their involvement. Along these lines, Bloch (1981) and Houston and Rothschild (1978) propose grouping the determinants of involvement into: personal characteristics of the consumer (personal innovativeness with information technology); attributes of the product (which reflect the perceived risk) and the context of the purchasing situation (permission marketing).

We are aware of studies that have analyzed the moderating role of gender in the use of new technologies and in the context of on-line sales (Mittal and Kamakura, 2001; Floh and Treiblmaier, 2006) and of some works that treat the moderating role of gender in the context of mobile commerce (Jayawardhena et al. 2010). Thus, we present a parsimonious model that includes three determinants of involvement in mobile commerce and of gender as a moderating factor.

Our work has a two-fold general objective: on the one hand, we wish to determine the roles played by perceived risk, permission marketing and personal innovativeness with information technology and their influence on involvement in mobile commerce and, on the other hand, the extent to which gender differences are present in the role played by these three determinants in involvement, underlining their moderating role.

To achieve our objective, the second section describes a theoretical framework using the model’s variables: involvement as the dependent vari-
able, and perceived risk, permission marketing and personal innovativeness with information technology as the independent variables. Likewise, the third section is concerned with studying the moderating role exercised by gender in the relations between the aforementioned variables. Having proposed the hypotheses and laid out the global model, we move on to the fourth section that centres on the details of the empirical study. Finally, the fifth section contains the principal conclusions, professional implications, limitations and future lines of research.

2. Involvement in mobile commerce. Conceptualization and determinants

2.1. Involvement in mobile commerce

In recent decades, involvement has been considered one of the explanatory variables of individual behaviour. In a transactional context, individuals facing the same purchase decision are expected to behave in different ways according to the degree of their involvement (Dholakia, 2001). For example, an implicated consumer gathers information beforehand and evaluates the available information in a more critical way (Celsi and Olson, 1988; Clarke and Belk, 1979). Equally, individual involvement determines the duration, the intensity and the complexity of the purchasing decision-making process (Howard and Shet, 1969) and the purchasing experience (Wakefield and Baker, 1998).

The conceptualization of involvement has been an important and controversial theme in marketing research (Andrews et al. 1990) and we can find multiple definitions (see Chérif, 2001). Zaichkowsky (1985, p. 32) defines involvement as “a person’s perceived relevance of the object based upon inherent needs, values, and interests”; for Celsi and Olson (1988, pp. 211) “involvement is said to reflect the degree of personal relevance of the decision for an individual in terms of basic values, goals and self-concepts”. Taking the proposals of Celsi and Olson (1988) and Zaichkowsky (1985) as a reference, we define individual involvement in mobile purchasing in this research as a stable and long-lasting state of personal relevance and interest in the (mobile) channel used for the purchase. As a
result, we do not consider so-called situational involvement applicable as
defined by Bloch (1981), given that it refers to a concrete, time-bound sit-
tuation, applied to a specific context, the character of which is provisional
and that will diminish when the objective of purchasing a particular prod-
uct or service has been achieved.

Nuns (2005) highlights the importance of involvement in the management
of on-line client relations, arguing that the level of client involvement in
the purchase will have a considerable effect on the client’s desires to
establish communication with the firm, which will benefit from such com-
munication to the extent that it is able to identify each client’s level of
involvement and adapt the conversation accordingly.

Once involvement in the mobile purchase is defined and its importance
underlined, we then centre on the study of its three key determinants: per-
ceived risk related to the product and the channel; marketing permission
related to the firm; and personal innovativeness in the domain of information
technology related to the personality of the consumer. Thus, with regard to
the individual, we will consider two internal determinants – risk and propen-
sity to use technologies – and another external one – permission marketing.

2.2. Determinants of involvement in mobile commerce
Andrews et al. (1990) propose the existence of factors that are situational
or associated with the purchase decision, and personal factors as
antecedents to involvement. In line with this proposition, and in accordance
with the objectives of this research, we focus on the study of risk in mobile
purchasing as a determinant of involvement, and we also analyze how indi-
vidual profiles affect the involvement of purchasers in mobile commerce
through their personal innovativeness with information technology. Like-
wise, we include permission marketing as a further determinant that refers
to the selling firm. Our proposal follows the classification of determinants
of involvement that were previously suggested by Bloch (1981) and Hou-
ton and Rothschild (1978) grouping the determinants of involvement into
individual consumer characteristics (personal innovativeness with informa-
tion technology); product attributes (reflected in perceived risk) and the
context of the purchasing situation (permission marketing).
Perceived risk in mobile commerce

The theory of perceived risk has been used to explain the behaviour of the consumer ever since the 1960s (Taylor, 1974). Since the first investigations into risk, it is normal to use the probability of obtaining a negative result to conceptualize risk (Bauer, 1960; Taylor, 1974; Peter and Ryan, 1976). Perceived risk, seen as uncertainty with regard to results and the costs of the purchasing decision, is already used in the context of distance commerce (Campbell and Goodstein, 2001; Featherman and Fuller, 2002; Gefen et al., 2002).

It is acknowledged that consumers associate more risk with distance purchasing decisions than with purchases from a physical outlet (Tan, 1999; Cunningham et al., 2005). In the context of mobile marketing, it is also suggested that risk perception is greater in mobile banking than in traditional banking based on personal interaction (Kim et al., 2009; Koenig-Lewis et al., 2010). Distance purchasing entails greater negative results than traditional selling, because the difficulty of evaluating a product or service is greater, there are no tangible clues about product quality or face-to-face interaction and the purchase is affected by problems of security and privacy (Ha, 2004; Laroche et al., 2005; Li and Yeh, 2010).

One of the fields in which risk in mobile purchasing has been studied more than any other is banking. Its main types of risk are those related to privacy and security, the reliability of the tool used for the purchase (mobile telephone) and the control perceived by the individual when negotiating the use of a new technology (Laukkanen and Kiviniemi, 2010). Furthermore and in relation to mobile commerce, it has also been found that if a technology fails to provide the expected result, it will result in a loss for the consumer (Im et al. 2008; Laukkanen and Kiviniemi, 2010).

It should be pointed out that many works studying perceived risk in the context of mobile marketing treat it essentially as a fear of providing personal or banking data to a firm and of loss of privacy (Bauer et al., 2005; Gao et al., 2010; Riquelme and Ríos, 2010). However, we believe that the conceptualization of risk, based on concerns over privacy and security, made more sense at the start of electronic marketing, and for data transferred through impersonal mediums such as a computer. Risk considera-
tion, therefore, has changed since on-line transactions have become more popular, moving from greater concern over fraud to other types of risk related both to cognitive and to affective factors (Wu and Wang, 2005) and derived from product quality. In fact, the proliferation of social networks is an indicator of diminished concerns over privacy and security (Gao et al., 2010). Therefore, in this work we shall treat the risk that is related to the anxiety that a mobile purchase produces in the consumer jointly with the risk that the mobile purchase will not turn out as expected.

The literature indicates that perceived risk is a factor that affects in a significant and negative way the intention to use or the acceptance of mobile-telephone purchasing (Bauer et al., 2005; Meuter et al., 2005; Wu and Wang, 2005; Wessels and Drennan, 2010; Riquelme and Ríos, 2010); however, we have to point out that we are unaware of any study that measures and relates perceived risk with involvement in mobile-telephone purchasing.

Risk relates to variations in the intensity of involvement, especially in the case of innovations or immature technologies, where consumers have no prior experience with the new product, service or type of purchase and perceive a high-risk situation (Wu and Wang, 2005; Laukkanen and Kiviniemi, 2010). Thus, the outcome of the adoption process can result in the rejection of innovation (Bauer et al., 2005). Consequently, in this work our first hypothesis proposes a negative relation between risk and involvement:

**H1: Perceived risk has a negative influence on consumer involvement in mobile commerce.**

**Permission marketing**

Not all advertising sent to the consumer is desired or voluntarily received and, in consequence, the concept of permission marketing is essential to achieve positive consumer attitudes towards the selling firm, which finally leads to a greater distance-purchasing intention (Reutteker and Walter, 2009). Permission marketing consists in stimulating bidirectional communications between the consumer and the marketing personnel of a firm
(Jayawardhena et al., 2009; Barwise and Strong, 2002). It implies the personalization of messages in the timing, localization and content of the information. In Europe, marketing managers have to request the express consent of the consumer, before they may be included in a programme of mobile marketing (Kautonen et al., 2007, cited in Jayawardhena et al., 2009). Specifically, in Spain, Law 29/2009, which entered into force on March 1, 2010, amended the legal regulations on advertising to improve the protection offered to consumers and users. This law regulates practices of “aggressive harassment”: “making unsolicited and repeated propositions by telephone, fax, electronic mail or other means of distance communication». It is especially opportune at this time to observe how permission marketing can benefit firms through the involvement of consumers.

The literature relating to privacy in the use of mobile telephones has studied “spam” and the invasion of privacy as central themes connected to the willingness of the consumer to accept mobile advertising (Barnes and Scornavacca, 2004; Grant and O’Donohoe, 2007; Leppaniemi and Karjaluoto, 2005; Gao et al., 2010). There are few empirical works on permission marketing, and even fewer that examine the context of mobile marketing (Jayawardhena et al., 2009). Hirose and Okazaki (2009) find that attitude towards mobile-telephone advertising influences the intention to ignore or delete messages, but that more favourable attitudes do indeed arise from permission marketing. In fact, we are unaware of any work that tests the relation between permission marketing and involvement. Even so, we consider that it is likely that permission marketing will produce a positive effect on the relevance given to the mobile telephone as the purchase channel. We therefore propose the second hypothesis:

**H2: Permission marketing positively influences consumer involvement in mobile commerce.**

*Innovativeness in the field of information technology*

Fiore *et al.* (2003) point out that purchasing experiences are individual and by nature subjective, and are determined by personal characteristics that
include the personality of the purchaser. This concept is defined as “a relative and durable set of psychological traits that people use to interact with their surroundings” (Scarr and Zanden, 1987:420).

Al–Gahtani et al. (2007) show that the attitude towards the use of technologies is a forerunner of the intention to use that technology and the literature indicates that greater personal exposure to new technologies entails a greater predisposition to purchase (Dholakia and Usitalo, 2002; Lohse et al., 2000). This will facilitate learning and the take up of new technologies. Besides, Goldsmith (2000) showed that the frequency of on-line purchases, as well as future purchasing intentions could be predicted by individual innovativeness and by a personal involvement in the Internet as a purchase channel.

Various studies have examined the impact of innovativeness in the acceptance of mobile services (June et al., 2003; Jong et al., 2006). In the context of mobile commerce, the idea of “personal innovativeness in the domain of information technologies” is considered a variable of individual personalities that reflect a favourable and proactive attitude towards the use of information technologies. This concept was introduced by Agarwal and Prasad (1998), who contend that a person whose personality harbours the characteristic of innovativeness in the field of new technologies will respond positively to the knowledge of those technologies, will seek to experiment with them when made aware of their existence, is usually the first of their reference group to try out such technologies, and will enjoy experimenting with them.

Jeong et al. (2009) demonstrated in the field of Radio Frequency Identification (RFID) purchases that personal innovativeness with information technology behaved as a moderating variable between perceived need and purchase intention. Thus, mobile users with high innovativeness in the field of information technology may need to experience less purchase necessity to reach the same level of purchase intention.

The personal characteristics of consumers determine their level of involvement towards the medium (Andrews et al., 1990). Consequently, and taking earlier works as a reference, we consider that personal innovativeness in the domain of information technology is an important person-
ality trait to win consumer involvement in mobile-phone purchasing, hence we propose such a relation in the following hypothesis:

**H3: Personal innovativeness in the domain of information technology has a positive influence on consumer involvement in mobile commerce.**

### 3. The role of gender as a moderator of mobile purchasing

Earlier studies have considered that certain socio-demographic and contextual characteristics such as age (Yalch and Spangenberg, 1990), education (Gattiker et al., 2000; Tamimi and Sebastianelli, 2007), income level (Dawson et al., 1990), gender (Zhang et al., 2007; Kolsaker and Payne, 2002), purchase motivations (Eroglu and Machleit, 1990), knowledge (Sirygy et al., 2000), cultural values (Overby et al., 2004) and other people’s opinions are factors that influence the purchasing experience. Gattiker et al. (2000) affirmed that personal characteristics influence and interact with mental processes such as perception, reasoning, making judgments and decision taking. Socio-demographic characteristics can be moderators of variables that influence distance purchasing behaviour and the acceptance and implementation of new information technologies (Zhang et al., 2007). The literature therefore considers personal characteristics as variables that moderate the relation between a stimulus and a response. Thus, Goldsmith and Flynn (2004) found that neither age nor income but gender is related to on-line purchasing of clothes (women buy more clothes on-line than men).

Gender differences have been investigated in various empirical studies related to the acceptance of Internet purchasing technology, the use of electronic mail and on-line banking (Lichtenstein and Williamson, 2006; Chang and Samuel, 2004; Rodgers and Harris, 2003; Luo et al., 2006; Flavián et al., 2011). Gefen and Straub (1997) affirmed that, although technology such as electronic mail may be used to a similar extent by both sexes, the perception of service is different between men and women. It is interesting to highlight this point, as it should be taken into account in the advertising models that firms apply, adding this variable to other aspects such as cultural variables, for example.
In the context of mobile-telephone commerce, works have been published that study the role of gender in its acceptance. Yang (2005) affirms that gender as a variable measures the relation between the perceived utility of purchases by mobile telephone and ease of use, in such a way that this relation is stronger for men. Jun Zhang (2009) also analyzes the influence of gender in the two key variables of the Technology Acceptance Model (TAM) (usefulness and ease of use) and ratifies the greater effect of these variables in the acceptance of mobile commerce in China. However, Ha (2007) shows that ease of use, in the specific case of mobile games, is more important with regard to enjoyment in the case of women rather than men. For communication tools such as mobile chat, Nysveen et al. (2005) proved that the intention to use chat revealed, in the case of men, motives such as usefulness and, surprisingly, expressivity. In the case of female users, they highlighted social norms and perceived enjoyment to a greater extent.

Divergent evidence exists on the importance of gender in the use of information technologies as the purchasing channel. In fact, various authors have defended the utility of inquiring into behavioural differences of the buyer according to gender (Bauer et al., 2005; Gao et al., 2010). Some studies affirm that as penetration and acceptance of technologies increase, the moderating effect of gender will diminish (Zhou et al., 2007). Other studies have demonstrated that men and women respond in different ways in either an on-line (Gattiker et al., 2000) or in a mobile context (Jayawardhena et al., 2010). Thus, Ranganathan et al. (2006) found that faced with the same circumstances, men experienced a greater propensity to change mobile service providers than women. All of the above, linked to the predominantly male profile of the Mobile Internet user in Spain (62%) (Nielsen, 2010), leads us to think that possible differences have to be contemplated in the marketing strategies of the firms that wish to enter this channel. Thus, implicit in the earlier affirmations is the need to conduct in-depth studies that examine the true value of gender as a moderating variable of various stimuli or factors linked to mobile purchasing decisions.

Previous studies mention specific differences, establishing that women are usually more implicated in purchase activities (Slama and Tashlian,
1985), pay more attention to sellers (Gilbert and Warren, 1995), show more concern over risk and privacy, and place greater value on relations and personal contact (Citrin et al., 2003). Men show greater interest in the information and the personalization of the product, whereas women place a higher value on purchase delivery and post-sales services (Burke, 2002). In the context of mobile commerce, men take purchasing decisions in a more decisive way (Denis et al., 2005) and their enjoyment of the mobile-telephone marketing experience will be guided by the desire to satisfy certain expectations of experiences. Jayawardhena et al. (2009) even go so far as to suggest that mobile marketing is a functional activity destined more for men, allowing them to be more decisive and increasing their perceived control.

With regard to the impact of gender on the determinants of involvement that are contemplated in our work, perceived risk has a greater effect on mobile-phone purchasing for the female gender. Igbara and Chakrabarti (1990) and Chiu et al. (2005) defend the idea that women show higher levels of anxiety and value the convenience of physical purchases more than men. The study carried out by Luo et al. (2006) suggests that women seek elements that help them to reduce risk in on-line purchasing. Tamimi and Sebastianelli (2007) also analyze the differences between groups segmented by gender, age, income level and education in the perception of trust in Internet and find that women attach greater relevance to the elements that mitigate privacy and security in the use of new information technology (Garbarino and Strahilevitz, 2004; Bartel-Sheehan, 1999). For all those reasons, the studies suggest that women experience greater psychological and functional risk in mobile-telephone purchasing, and we understand that risk will reduce involvement even more in the case of men. As involvement is more important for women than for men (Slama and Tashlian, 1985), it is expected that the negative determinant that we consider in our work (risk) will reduce their involvement even more than in the case of men. In consequence:

**H4. In the case of women, the effect of perceived risk on involvement in mobile commerce is greater than it is in the case of men.**
Gurau and Ranchhod (2009) find gender differences with respect to the intention to accept mobile marketing, because women react in a more emotional way if there is an abuse of privacy, whereas men are more mistrusting towards the mobile-telephone marketing environment; they do not wish to participate in promotional programmes or want to control the use of personal information in detail.

Jayawardhena et al. (2009) find significant differences between men and women with respect to permission marketing because women give permission according to their previous experience with mobile marketing campaigns, whereas permission marketing influences perceived control to a greater extent in men. According to these authors, men will not link their decision to give marketing permission to their past experience, owing to their impatience when taking decisions with the mobile. These authors propose that the better the experience of mobile marketing, the better the receptivity to permission marketing. Likewise, women value personal contact more, whereas permission marketing is more impersonal (Gilbert and Warren, 1995; Citrin et al., 2003).

Okazaki (2004) found no relation between gender and attitudes towards advertising on mobile web-sites. However, Karjaluoto et al. (2006) showed that although no gender differences were noted in mobile-“push” marketing, women are more active in mobile “pull” marketing.

In our case, it is to be expected that men will be more receptive to permission marketing, as we are considering a type of purchase that is not very consolidated in Spain, where men have more experience of purchasing with new technology. We therefore propose that permission marketing will be more important in the case of men than it will in the case of women to achieve involvement in mobile commerce.

**H5. In the case of men, the effect of permission marketing on involvement in mobile commerce is greater than it is in the case of women.**

Venkatesh and Morris (2000) observed that men value perceived utility more for decision-taking, whereas women value perceived ease more when accepting a technology. Pijpers et al. (2001) also found that demo-
graphic characteristics predicted the acceptance of information technologies.

Bouwman et al. (2008) demonstrated, through a longitudinal study on the use of mobile-telephone services in Finland, that the use of those services differed in accordance with gender and attitudes towards innovation, and as a consequence of the latter, the possession of advanced mobile devices. This effect is indirectly made clear through the use of mobile Internet. Men are more frequent users than women and this slows down the possibility of familiarizing themselves with the latest advantages of mobile Internet. Additionally, Bowman affirms that women with a greater personal propensity towards innovation are also more inclined to use the mobile services on offer, which leads us to think that they will develop greater levels of involvement than men. In consequence, we propose the following hypothesis:

H6. In the case of women, the effect of personal innovativeness in the domain of information technology is greater than it is in the case of men.

At this point, we move on to test the model presented below in Figure 1, which summarizes in graphic form all the hypotheses: H1, H2 and H3 for the three determinants of involvement in mobile commerce and H4, H5 and H6 on the moderating effect of gender in relation to these determinants of involvement in mobile commerce.

Figure 1. Proposed model and moderating hypotheses
4. Empirical study
An empirical study was conducted to test the proposed hypotheses on an empirical basis, the results of which we shall discuss in the present section. In the first place, we detail the scope of the study and characterize the sample selected for analysis; subsequently, we present the scales of measurement for each of the variables and their validation and, finally, we comment on the results of the estimation of the proposed models.

4.1. Study scope and sample
The data were collected through personal interviews during February 2010. The interviewees were selected by considering the representation of each group in the population using data from the Instituto Nacional de Estadística (Spain’s National Institute of Statistics). Finally, a sample was gathered of 674 individuals from the Spanish population. Insofar as the purpose of this work was to conduct correlation-based analyses, a varied sample was gathered in which all the groups of individuals that describe the population were present, as proposed by Blair and Zinkhan (2006). The descriptives of the demographic variables in the sample may be found in table 1.

Table 1. Sample description

<table>
<thead>
<tr>
<th>Gender</th>
<th>Age</th>
<th>Education</th>
<th>Monthly income</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men</td>
<td>45.9%</td>
<td>&lt; 18</td>
<td>1.8%</td>
</tr>
<tr>
<td>Women</td>
<td>54.1%</td>
<td>18-24</td>
<td>47.3%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>25-34</td>
<td>24.3%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>35-44</td>
<td>16.2%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>45-54</td>
<td>5.93%</td>
</tr>
<tr>
<td></td>
<td>&gt; 54</td>
<td>3.71%</td>
<td>&gt; €2000</td>
</tr>
</tbody>
</table>
4.2. Measurement of the research variables

Five-point Likert scales were used for the measurement of the proposed variables. These scales were adapted to the context of the study, on the basis of the indicators proposed in the literature. The design process and the references used for the scales are detailed below.

Table 2. Reliability and validity of the measures

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>C. E. (t-value)</th>
<th>EC.</th>
<th>VE.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permission Marketing (MP)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MP1</td>
<td>- I wish to share my mobile telephone number with firms that carry out mobile marketing.</td>
<td>0.86</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MP2</td>
<td>- I don’t mind sharing personal information with firms that carry out mobile marketing.</td>
<td>0.792 (15.01)***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MP3</td>
<td>- I wish to participate in mobile marketing activities.</td>
<td>0.798 (16.47)***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk (R)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R4</td>
<td>I am concerned that the product/service that I buy will not turn out as expected</td>
<td>0.877</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R5</td>
<td>The idea gives me a feeling of anxiety</td>
<td>0.739 (5.48)***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal Innovativeness in the domain of Information Technology (PIIT)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PNT1</td>
<td>If I hear about a new information technology, I will look for ways of experimenting with it</td>
<td>0.678</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PNT2</td>
<td>Among my friends, I am usually the first to try out new information technologies</td>
<td>0.69 (10.52)***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PNT4</td>
<td>I like to experiment with new information technologies</td>
<td>0.675 (9.41)***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Involvement in Mobile Purchasing (IMP)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IMP1</td>
<td>I think that I would be the first of my friends/family to know where/how to buy by mobile telephone</td>
<td>0.765</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IMP2</td>
<td>I think that I would be the first of my friends/family to buy by mobile-telephone</td>
<td>0.854 (17.78)***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IMP3</td>
<td>I think that I know more about mobile commerce than my circle of friends</td>
<td>0.725 (14.40)***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IMP4</td>
<td>I would buy by mobile telephone even though I do not know anybody that has done so.</td>
<td>0.53 (10.56)***</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

S.L. = Standardized Loading C.R. = Composite Reliability; V.E. = Variance Extracted. 
*** Significant to 1%.

Measures of goodness of fit of the measurement model: χ² = 97.297 degrees of freedom = 48 p-value < 0.01; B ² = 80.5946 p-value < 0.01; CFI= 0.982; NFI= 0.957; IRI= 0.982; GFI= 0.968; AGFI= 0.948; RMSEA= 0.038; RMR= 0.046; RMR standardized= 0.037.
We took the scales used by Stone and Gronhaug (1993) and Laroche et al. (2005) and Cunningham et al. (2005) for the measurement of perceived risk, considering functional risk (the product did not turn out as expected) and psychological risk (anxiety perceived in the purchase) (Jacoby and Kaplan, 1972). Thus, we should point out that it is difficult to differentiate in an effective way between the dimensions of risk from the consumer’s point of view (Koenig-Lewis et al., 2010), especially when there is limited experience, as is the case for mobile purchases. Other works on mobile-phone marketing have used one or two general indicators to measure risk (Wu and Wang, 2005).

Involvement was measured through the scale proposed by Keaveney and Parthsarathy (2001) and Zinkhan and Locander (2001) and is considered especially appropriate for technology-related areas, such as the mobile telephone. This scale includes specific items of involvement, interest and skill or capability in relation to the product or situation.

The permission marketing scale was prepared with reference to Bauer et al. (2005) and Reutterer and Walter (2009). Finally, the scales of Rodriguez et al. (2009) and Goldsmith and Hofacker (1991) were used for the measurement of information technology innovativeness.

4.3. Validation of the measurement scales
The first step was to guarantee the validity and reliability of the scales, for which purpose we used the EQS 6.1 statistical software package. It was necessary to eliminate some items, in order to guarantee the convergent validity shown in the Confirmatory Factorial Analysis (CFA) goodness-of-fit measurements for each of the proposed factors. The standardized loadings of the indicators that were finally used to test the hypotheses are shown in table 2. As may be seen in that table, all the standardized loadings present values of over 0.6, the only exception being the fourth indicator of involvement that was maintained as it presented a significantly different value from zero and so as not to lose content validity. Maintaining this indicator, the Variance Extracted (V.E.) continued to be above 0.5, guaranteeing its convergent validity. Furthermore, personal innovativeness with information technology presented a lower V.E. value of 0.464, which
may be considered sufficient to guarantee the convergent validity. In consequence, considering the measures of goodness of fit of the measurement model, the standardized values of the factorial loadings and the V.E. (all this information can be found in table 2), we may consider the convergent validity of the measurements acceptable. The measurements also present reliability, given that the values of composite reliability are above the recommended value of 0.7.

Finally, the model’s discriminant validity was tested using the considerations of Fornell and Larcker (1991): none of its constructs presented a V.E. below the table of correlations (see correlations in table 3). Therefore, it may be concluded that the proposed model is sufficiently robust.

4.4. Results

The hypotheses were proven thanks to a structural model in which involvement was the dependent factor that was related with three exogenous factors, permission, risk and personal innovativeness with information technology. Thus, as may be observed from the coefficients shown in table 4, the three proposed hypotheses in our study are upheld, as the three parameters are significant and present the expected sign. Equally, the model presents an acceptable fit, all of which leads us to consider that the results are valid.
It was necessary to divide the sample into two groups in order to test the hypotheses referring to gender differences: group 1 was made up of 310 men while group 2 was made up of 364 women. The difference of means and the correlations matrices were tested in both groups, as well as compliance with the conditions of metric invariance (Steenkamp and Baumgartner, 1998) and the convergent and the discriminant validity (Fornell and Larcker 1991) necessary to validate the measurements. The results of the structural model are presented in table 5. As we may see from that table, the coefficients corresponding to each of the hypotheses in the majority of cases present the expected values, fulfilling the two first hypotheses but not the third, where significant differences do not exist between both parameters.

<table>
<thead>
<tr>
<th>Independent/Dependent</th>
<th>Involvement R²=,329 Coefficient (t-value)</th>
<th>Hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk</td>
<td>-.138 (-2.382)***</td>
<td>H1 Accepted</td>
</tr>
<tr>
<td>Permission Marketing</td>
<td>.159 (3,297)***</td>
<td>H2 Accepted</td>
</tr>
<tr>
<td>Personal Information Technology Innovativeness</td>
<td>.654 (6.96)***</td>
<td>H3 Accepted</td>
</tr>
</tbody>
</table>

NB: Non-standardized coefficients are used.  
*** Significant to 1%.

Measures of goodness of fit: $\chi^2= 97,297$ degrees of freedom = 48 p-value < 0.01; S-B $\chi^2= 80,5946$ p-value < 0.01; CFI= 0.982; NFI= 0.957; IFI=0.982; GFI= 0.968; AGFI=0.948; RMSEA= 0.038; RMR= 0.046; standardized RMR = 0.037.
Different hypotheses were proposed. The first three make reference to the effect of the variables proposed for involvement. The following hypotheses are upheld: the greater the perceived risk, the lesser the involvement (H1); the more the individual is willing to participate in mobile-marketing campaigns and the greater the propensity to accept new technologies (H2 and H3 respectively), the greater the individual’s involvement. As expected, this process of generating involvement presents gender differences. In the case of men, permission marketing has a greater impact on involvement than it does on women (for whom it is not even significant, a finding which in consequence supports H4). Risk, for its part, acts as an inhibitor in the appearance of involvement for women and not for men, thereby providing support for hypothesis 5. Finally, contrary to what was proposed in hypothesis 6, personal information technology innovativeness in men and women has a similar effect on involvement.

5. Conclusions
We can point to the different contributions of this study within this framework. Firstly, our work is pioneering in the study of involvement in mobile purchasing, a key variable in the establishment and maintenance of relations with the client, which has not been extensively studied in this con-
text. We have proposed a model in the course of the study that seeks to explain the formation of involvement in mobile purchasing by considering three aspects: individual characteristics of the consumer (personal information technology innovativeness); attributes of the product (which are reflected in perceived risk) and the context of the purchasing circumstances (permission marketing) that is intended to gather individual attitudes towards mobile marketing and the way in which consent is given to form part of the mobile-marketing programme.

The second contribution is the analysis of the model, taking the moderating effect of gender into account. As Broderick and Mueller (1999) suggest, involvement is a complex construct that requires continuous critical analysis to be understood. Wessels and Drennan (2010) maintain that firms involved in mobile sales should try to modify the attitudes of potential mobile consumers and to do so it is necessary to increase their involvement in this type of purchase/purchase channel.

The results are supported by a detailed sample carried out through personal surveys, the objective of which is to achieve greater control over the composition of the sample. A large number of responses and the composition of the sample that is broken down by age, educational level, and profession reflects the universe of mobile users, redressing a recurrent weakness of many of the existing studies in the literature (Wessels and Drennan, 2010).

The results provide insight into the importance of perceived risk as an inhibitor of involvement, a question previously envisaged by Laukkanen and Kiviniemi (2010) when proposing perceived risk as a resistant barrier to the acceptance of mobile-telephone marketing, which is difficult to breakdown even when the firm provides information.

*Marketing permission* behaves as a facilitator of involvement, making it clear that, by providing consent, the consumer is expressing some sort of favourable attitude towards the channel (consents to provide the requesting firm personal data, such as a telephone number, or even other more private information), and in addition, feels involved in the relation insofar as there is some acceptance to participate in mobile-phone activities.

As may be expected, the results suggest that *personal innovativeness with information technology* positively influences the appearance of
involvement. This is explained because the propensity to accept new technologies in the field of mobile commerce facilitates perceived utility and ease of use, which will lead to greater individual interest towards the channel that, maintained over time, will generate involvement in mobile commerce.

Consideration of gender differences has made the need to treat men and women in different ways quite clear, if the intention is to involve them in mobile commerce. This is because, on the basis of their gender, individuals will respond in different ways due to external stimuli. In the case of permission marketing as an external stimulus, men present greater sensitivity than women, which may be because they wish to exercise more detailed control over the use of personal information and may lead us to think that male consent will be more likely to develop involvement than the consent of a woman. Likewise, perceived risk acts as an inhibitor of the emergence of involvement in the case of women and shows no significant effect for men. In the case of women, this perceived risk translates into greater uncertainty in the purchasing process, and greater anxiety towards the medium, as they value the convenience of physical purchasing more than men, based on the greater tangibility of the conventional channel.

Personal information technology innovativeness is shown to be a relevant factor for the formation of involvement regardless of the gender of the consumer, forming a specific characteristic of the individual involved in mobile purchasing.

There are more than a few implications for management that may be drawn from our study. It is worth highlighting, in the first place, the growing volume of mobile purchases in Spain, which implies a sales channel with a future, the size of which should be the subject of theoretical and empirical study, with the aim of gathering useful knowledge for firms.

Initially, and as a consequence of this study, we propose the following indications that relate to the three dimensions under study: firms that decide to enter mobile commerce should bear in mind that a reduction in perceived risk is an important way of winning individual involvement, and it can contribute to mitigate perceived risk through signals of reliability in the purchase process and security in the channel, to diminish anxiety.
Moreover, the firm should use permission marketing in compliance with legal provisions in Spain, but has to bear in mind that it is an opportunity to personalize communication with its target population and to encourage participation in the channel. This too, if well used, can become a differentiating feature in the face of competition and a strategy that manages to satisfy consumers, by adapting itself to their preferences.

With reference to purchaser profiles, it is also important for firms to generate a climate that fosters the acceptance of new technologies by their clients, participating in communication campaigns that try to explain to the client the advantages of the channel (perceived utility) and its ease of use, to attract clients that are less inclined to use new technologies.

In an effective segmentation, firms have to contemplate gender differences insisting on those attributes that facilitate permission marketing in the case of products targeted at men, and on those aspects that help to mitigate perceived risk for marketing campaigns that target women.

With regard to the limitations of this work, the fact should be mentioned that the information was only collected in Spain, which prevents the generalization of the model to other geographical and cultural areas. Besides, we have centred on mobile users without distinguishing the degree of experience that they have with mobile purchasing.

Finally, there are various future research lines now open to us. It would be interesting to study the influence of culture and geographic scope because of the differences they produce in individual perceptions, attitudes and behaviours with regard to mobile purchasing (Gurau and Ranchhod, 2009). For example, Gurau and Ranchhod (2009) found that consumers from different countries are more or less receptive to intrusive, unsolicited publicity. It would also be convenient to inquire into the possibilities of comparing the model for individuals that purchase with the mobile-telephone and those that abstain or for those that make mobile purchases and those that use the Internet or even in relation to offline purchasers. By doing so, it would be possible to speculate on the complementarities between both sales contexts. There are authors that indicate that it is risky to reproduce off-line strategies in virtual environments (Vrechopoulos et al. 2004). Although we have especially centred on three variables in this
work as determinants of involvement in mobile commerce, there are other aspects that could be analyzed, such as trust and seller reputation. Equally, it would be interesting to include the influence of the group in the involvement of potential purchasers through variables such as social risk and the subjective norm (Riquelme and Ríos, 2010). Moreover, we consider that research needs to continue into involvement in mobile commerce and the role that involvement plays in individual behaviour.

References


