

ARTICLE

## The firms benefits of mobile CRM from the relationship marketing approach and the TOE model



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### KEYWORDS

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**Abstract** Firms that achieve to establish reciprocal and successful relationships with their clients can obtain greater profitability in their relationship marketing inversions. This study adopts the TOE model to consider technological factors (technological competence), organizational factors (innovativeness and employee support) and environment factors (customer information management) to define the perceived benefits deriving from mobile CRM. The empirical study was performed with information obtained from 125 firms and analyzed with structural equation modeling. Results suggest that the firm perceives benefits from the m-CRM use if it is technologically competitive, shows propensity to innovativeness, manages customers' information and has employees' support. The main contribution is the simultaneous use of the TOE model and the relationship marketing approach to understand, from the Spanish firm perspective, the perception of the management of the relationship with customers through the mobile phone.

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### PALABRAS CLAVE

Beneficios del CRM;  
Móvil;  
Tecnología;  
Competencia;  
Empleados

### Los beneficios del CRM móvil para la empresa desde la perspectiva del marketing relacional y el modelo TOE

**Resumen** Las empresas que logran establecer relaciones recíprocas y exitosas con sus clientes pueden obtener mayor rentabilidad de sus inversiones en marketing relacional. Este estudio aplica el modelo TOE para contemplar factores del contexto tecnológico (competencia tecnológica), organizacional (propensión a la innovación y apoyo de los empleados) y del entorno empresarial (gestión de la información de los clientes) para determinar la percepción de los beneficios de la gestión de las relaciones con los clientes a través del móvil (m-CRM). El estudio empírico fue realizado con información proporcionada por directivos de 125 empresas

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españolas, y fue analizado mediante ecuaciones estructurales. Los resultados sugieren que la empresa percibe beneficios del uso de m-CRM siempre que se considere tecnológicamente competitivo, tienda a la innovación tecnológica, gestione la información de los clientes, y cuente con el apoyo de los empleados. La principal contribución de este estudio es la aplicación conjunta del modelo TOE y el enfoque del marketing relacional para entender, desde la perspectiva de la empresa española, la percepción de los beneficios de la gestión de las relaciones con los clientes a través del teléfono móvil.

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## Introduction

The use of mobile phones in Spain represents an outstanding business opportunity, considering that 9 out of 10 internet users have an intelligent device capable of connecting the client in a personal and direct way to the company (IAB Spain research, 2014). The capacity observed by companies in the fact that a mobile phone is a such a personal object, has enable mobile technology to enter the business world primarily as a marketing tool (Agrebi & Jallais, 2015; Riivari, 2005). Mobile marketing (m-marketing) is defined as the use of mobile devices to facilitate consumers with first-hand information and based on their location, with the main objective of promoting goods, services and ideas (Roach, 2009).

A large number of papers analyze the varied aspects of the consumers' perception with respect to m-marketing activities (Agrebi & Jallais, 2015; Chan & Chong, 2013; López-Catalán & San-Martín, 2013; Zhang, Chen, & Lee, 2013). However, it is necessary to extend on the perception of companies too. The main purpose of this paper is to study the degree to which companies consider that m-marketing positively contributes to establishing a relationship with clients and what this evaluation depends on.

We define relationship as the repetition and maintenance of solid interactions between both parties due to the existence of economic or social bonds with the purpose of achieving a common benefit, based on Morgan and Hunt's (1994) view of marketing of relations. This definition overcomes a large number of others which, like the, American Marketing Association (2013), describe marketing as the activity, institutional groups and processes to create, communicate, distribute, and exchange valuable offers to consumers, clients, partners and society in general, formally including the essence of the relationship marketing approach to the definition of marketing. When we talk about customer relationship management (CRM), we specifically refer to the business strategy that Reinartz, Krafft, and Hoyer (2004) identifies as the systematic process to manage initial, maintenance, and ending relationship with the customer through all windows of contact in order to maximize the value of the relationship. Riivari (2005) emphasizes the importance of m-marketing to better the management of relationships with clients in Europe, for both offering products and services as well as for identifying specific clients' needs. This fact represents a strategy companies must take advantage of in order to "collocate their brand in the pockets of consumers" at any time and at any place, and characterize it by an interactive communication (Riivari, 2005, p. 15). In 2013, 23% of Spanish companies used a

given kind of software to analyze customer information for marketing purposes, percentage that was not far from the leading countries (Finland and Austria) where 31% and 26% of the companies used similar software for CRM purposes (ONTSI, 2013). Awasthi and Sangle (2013) point out that empiric studies about CRM are rare, despite their multiple benefits to company management.

In this context, companies face the process of building and maintaining relationships that prove to be valuable for both customers and the company. Considering a proposal of integrating the TOE model (Technology–Organization–Environment) and the focus on relationship management applied to the m-marketing context, we asked what role technology, organizations, and the environment play in the strategy to manage relationships with potential customers according to companies and via mobile phones. In that sense, this research intends to contribute to the literature by adopting an original theoretical perspective which combines elements of the TOE model in order to understand how technological competence, innovativeness, employee support, and customer information management affect the perceptions on the benefits of m-CRM (mobile customer relationship management, mobile CRM) from the point of view of relationship marketing. It is important to point out that m-CRM investigation and practice are still in their preliminary stages (San-Martín and López-Catalán, 2013; Kim, Lee, Wang, & Mirusmonov, 2015). This fact justifies in a great manner the pertinence of papers that study this phenomenon within a solid preexisting framework. Thus, the objective of this work is triple: (1) to analyze the perception of the benefits of m-CRM, a construct that is scarcely embraced in previous literature. (2) To embrace, from the point of view of the theory of relationship marketing and the TOE model, the effect technological competence in a company, its innovativeness, employee support, and customer information management have on the benefits perceived from m-CRM. (3) To carry out an analysis that allows to contrast company practices with marketing theory. Keeping these objectives in mind, in section "Application of relationship marketing and TOE model to the study of m-CRM", the theoretical framework founds in an innovative form the TOE model in order to propose the hypothesis to be contrasted about the factors that positively contribute to the perception of the benefits of CRM. Later on, in section "Empirical study", the methodology of structural equations is used to obtain evidence on a still incipient phenomenon in practice and in the literature. Finally, sections "Conclusions and Limitations and future lines of investigation" are allocated to discuss the results and point out the weaknesses of this study, allowing at the same time to reveal multiple

future lines of research to enrich academic and practical knowledge in the area of m-CRM.

### Application of relationship marketing and TOE model to the study of m-CRM

From a marketing perspective, the success of relationships with customers begins with properly identifying customers and their needs continuously (Thomas & Sullivan, 2005). It is currently necessary to analyze a massive amount of information on each of the clients and making it essential to use sophisticated computer CRM tools, especially in a country like Spain, where the penetration of mobile technology (106.9%) has now exceeded to the use of the Internet (71.6%) (ITU, 2013). The CRM has been approached from different theoretical perspectives in literature, without a clear consensus to the conceptual framework that is most appropriate for its study (Garrido-Moreno & Padilla-Meléndez, 2011; Sin, Tse, & Yim, 2005; Zablah, Bellenger, & Johnston, 2004). CRM can be understood as a business strategy focused on the consumer and the value of relationships with clients for the company. The main objective of CRM is to maximize the value of the relationship with clients throughout the duration of the same relationship (Zablah et al., 2004).

In respect of the paradigm of relationship marketing, CRM would be the implementation of a strategy to maintain a positive relationship with customers and generate commitment and loyalty to increase the lifecycle of customers (Verhoef & Lemon, 2013). Relationship marketing suggests the importance of identifying the best customers in order to know their needs, satisfy these needs and establish a relationship that makes them be loyal to the company (Hunt, Arnett, & Madhavaram, 2006; Lee, Kim, & Pan, 2014; Morgan & Hunt, 1994; Thomas & Sullivan, 2005), recognizing that getting new customers is more expensive than retaining the existing ones (Reichheld, 1996). Companies establish reciprocal and successful relationships when investing on relationship marketing (Lee et al., 2014) and focusing business on the relationship with the customer, rather than strictly focusing on transactions (Tan, Lyman, & Wisner, 2002). As a result of this philosophy, the company expects to obtain benefits both for the client and the company (Sin et al., 2005).

Marketing literature states that a beneficial or successful m-CRM can be influenced by different company resources, such as technological, economic, and human ones (e.g. employees and managers), as well as by its capacity and/or competence (Sarmaniotis, Assimakopoulos, & Papaioannou, 2013). According to the innovation diffusion theory, the decisions to adopt new technology are preceded by the will to reach a comparative advantage, own acceptable complexity and usability, be compatible with the activities and resources of the company and provide observable results (Shirish & Teo, 2010; Wang, Wang, & Yang, 2010). Some studies apply the TOE model (Technology–Organization–Environment) by Tornatzky and Fleischer (1990) to explain the factors that affect the adoption of new technology. This model does not concretely propose the constructs applied to each of the three contexts that affect the adoption of technology, but it is considered

a good starting point to understand the decision-making process that affects the adoption of technological innovation, such as a mobile phone (San Martín, López-Catalán, & Ramón-Jerónimo, 2012; Wang et al., 2010).

The TOE model identifies three contextual groups related to the adoption of a complex technology by a firm: the technological, the organizational and the environmental (Kuan & Chau, 2001; Swanson, 1995). The technological context refers to technologies (internal and external) to the company. The organizational context considers all the factors related to the company. Finally, the environmental context refers to the industrial framework, the relationship of the company with its stakeholders and/or competitors (Kuan & Chau, 2001; Low, Chen, & Wu, 2011). The three contextual groups of the TOE model have been mentioned in the literature to determine factors that influence the benefits of CRM to adopt technology (Internet or mobile) in business activity (Abdul-Muhmin, 2012; Awa, Nwibere, & Inyang, 2010; Kimiloglu & Zarali, 2009).

Previous literature on CRM emphasizes the degree of integration of technology in companies as a factor of the technological context (Chang, Liao, & Hsiao, 2005), the role of employee support in the adoption of new technologies and the innovativeness as organizational factors in the adoption of m-marketing (Gangwar, Date, & Ramaswamy, 2015). In addition, it is undeniable that the current environment is characterized by a massive amount of data that must be managed by companies that welcome new technologies in their business. Only in 2014, 1570 terabytes of information were transferred per minute (Maroto, 2015). Thus, one of the biggest benefits of m-CRM may be to facilitate the processing of data in order to generate value for the company.

In short, previous literature has highlighted the positive influence of the adoption of m-marketing over a CRM strategy and has pointed out a contextual framework for studying the factors involved in its adoption. It is important to point out the contribution of this study being a pioneer in integrating the TOE model and the relationship marketing approach to determine what some of the factors are that increase the perception of the CRM benefits in the mobile context by Spanish companies. Continuing with this line of argument, the following sections will discuss the perception of the benefits of m-CRM and the technological, organizational, and environmental factors that cause it.

### m-CRM and its benefits from the point of view of relationship marketing

m-CRM has been defined as the communication, bilateral or unilateral, that is related to marketing activities via mobile phone in order to build and maintain relationships between the consumer and the company (Kim et al., 2015). For this purpose, a combination of strategy, technology, and human resources is required (Chang et al., 2005). The literature clearly recognizes the business benefits of m-CRM and highlights the crucial role of technological, organizational and market factors (Croteau & Li, 2003; Gebert, Geib, Kolbe, & Brenner, 2003). However, knowledge of the determinants of success in the use of m-CRM is still scarce; furthermore, the studies that stand out are those that indicate the absence of previous work that establish the determinants of success in

the implementation of CRM in companies (Rigby, Reichheld, & Scheffer, 2002; Rowley, 2002; Xu & Walton, 2005). Sin et al. (2005) and Chang et al. (2005) suggest the need to consider CRM beyond a technological tool, and integrate diverse theoretical perspectives to determine what factors allow the company to benefit from the management of the relationships with its customers.

There are two perspectives to understand CRM in the context of new technologies. On the one hand, from the perspective of technology, m-CRM is seen as a technological tool applied to marketing in order to reduce costs and increase the efficiency of the processing information between buyer and seller. On the other hand, from the strategic perspective and relationship marketing, m-CRM is seen as a long-term management approach that companies or organizations carry out via mobile channels in order to get very different benefits (i.e. financial, social or market) (Nguyen & Waring, 2013). In the first perspective, the benefits of the m-CRM are the result of the application of mobile technology to the management of relationships with customers (Gefen & Ridings, 2002; Ranjan & Bhatnagar, 2009; Schierholz, Kolbe, & Brenner, 2007; Xu, Yen, Lin, & Chou, 2002). While in the second perspective, the one we will be using in this article, establishing and maintaining of mutually profitable and long-lasting relationships between the company and its customers through mobile channels the benefits of m-CRM (Awasthi & Sangle, 2013; Camponovo, Pigneur, Rangone, & Renga, 2005; Nguyen & Waring, 2013; Schierholz et al., 2007).

As Li and Mao (2012) emphasize, the use of CRM has multiple impacts on the company and there is little evidence yet that allows to determine all the possible benefits of using this strategic marketing activity. However, previous literature has pointed out that in addition to the traditional financial benefits, we must also take into account the benefits generated by the loyalty and commitment of customers during their lifecycle with the company (Brown, 2000; Wang & Feng, 2012). In fact, when companies learn how to build relationships with customers, many benefits are generated in terms of brand awareness, loyalty, increased sales, cost reduction, word-of-mouth effect, lower price sensitivity, increase in revenue, more lasting relationships with customers, greater control of the activities of marketing and improvement in rates of retention of employees (Kim et al., 2015; Li & Mao, 2012; Nguyen & Simkin, 2013; Payne & Frow, 2005; Zeithaml & Bitner, 1996).

The realization of expected benefits has been widely exhibited in the literature, sometimes in an attempt to clarify the metrics needed to evaluate the efforts of improving the relationship with customers through CRM (Ryals, 2005). Ramón-Jerónimo and Flórez-López (2013) differentiate two types of measures that reflect the results obtained by the companies. They distinguish financial measurement, such as the sales volume and profitability of the company; and customer marketing measurement, related to the assessment of the product (such as the improvement of the service and customization), the assessment of the brand (which includes the reputation) and the assessment of the relationship (as the customer loyalty). Karakostas, Kardaras, and Papathanassiou (2005) and Kellen (2002) suggest that the benefits of CRM increase brand capital, customer capital, the value of information and the future value of the company (i.e. CRM generates benefits for the company). For this,

we have considered the perceived financial and marketing benefits of CRM for the company, considering that the literature highlights them as the main signs of improving business results by using a strategy of management of relations with clients (Table 1).

We identify the mobile phone retail channel as a powerful relationship marketing tool which enables the creation of a link with the customer through personalization (services based on location, applications capable of designing the product interactively through the device); and it allows to increase sales (reaching new customers thanks to mobile advertising through BIDI, RFID, bluetooth, QR codes, or loyalty of newcomers through mobile applications that provide access to products and services from mobile phones). This link facilitates to improve service, reinforce the reputation in the market, contribute to generate customer loyalty, promote an increase in sales, and improve the overall profitability of the business. Due to these facts, we have studied the value provided by the use of mobile phones in the management of relations with customers, as well as four factors that are considered essential, from the point of view of the TOE model, to achieve benefits of CRM (technological competence, employee support, innovativeness and customer information management) (Maroto, 2015; Chang et al., 2005; Gangwar et al., 2015).

## The TOE model applied to m-CRM

### Technological context

*Technological competence.* When a company assesses the benefits generated by particular technology (such as mobile technology), technological competence plays a very important role. In fact, several authors have highlighted the importance of the technological orientation by the company in order to successfully adopt e-commerce (Trainor, Rapp, Skinner, & Schillewaert, 2011). Technological competence encompasses both the preparation of the company in terms of infrastructure, as well as level of knowledge relating to such technology, in addition to companies' willingness to get involved in the familiarization of such activity (Zhu, Draemer, & Xu, 2006). In the field of mobile commerce (m-commerce), San Martín et al. (2012) showed that the expected performance of mobile commerce activities is higher in companies with greater technological competence. Therefore, companies with a greater technological competence and knowledge of m-marketing are expected to be in a better position to assess the benefits of CRM. Thus we propose the following hypothesis:

H1. The technological competence of companies (in terms of mobile technology) positively affects the perceived benefits of m-CRM.

### Organizational context

*Innovativeness.* The propensity for innovation is defined as "the ability of a firm to undertake an innovation, that is, the introduction of new processes, products, or ideas within the organization" (Hult, Hurley, & Knight, 2004, p. 429). A high propensity to innovate in the field of new technologies leads to experimenting with these technologies (Agarwal & Prasad, 1998), and it is an important determinant of the

**Table 1** Company's perceived benefits from CRM and mobile marketing contribution.

CRM results	Description of results	Mobile marketing contribution	Authors
Financial results	Increasing sales and firms' transactions	To get new customers through the mobile advertising (bluetooth, BIDI code, SMS)	Xu et al. (2002), Lee and Jun (2007), Valsecchi et al. (2007), Schierholz et al. (2007), Ranjan and Bhatnagar (2009, 2011), Abdul-Muhmin (2012), Jain and Singh (2002), Wang and Feng (2012), Almunawar, Susanto, and Anshari (2013), Castelló (2011), Buil, Martínez, and Montaner (2012), Rigby et al. (2002), Godfrey, Seiders, and Voss (2011), Schiffman and Kanuk (2010), Lai et al. (2013) and Kim et al. (2015)
	Improving the profit of the firm	To decrease the marketing cost. To facilitate the segmentation. To improve the channels of communication.	
Marketing results	Increasing the market notoriety	To reinforce brand image through the mobile channel.	
	Refining the personalization	One-to-one marketing. Location-based service.	
	Improving customer attention and service	Interactivity in relationships. To increase the satisfaction.	
	To increase the customer loyalty	To make easier the repurchase, the maintenance of clients and constant attention through electronic channels.	

perceived performance of the company (Cooper, 2000). Specifically in the context of m-marketing, Awasthi and Sangle (2013), Camponovo et al. (2005), Schierholz et al. (2007), Valsecchi, Renga, and Rangone (2007) suggest that mobile technology is a means to increase the perceived benefits of CRM for companies, enabling them to offer customized services to better identified segments. Rhee, Park, and Lee (2010) show that there is a relationship between companies market orientation and the innovativeness that precede the expected performance of the company. It is expected, therefore, that innovative firms perceive that innovation is a source of benefits for the company in CRM. Based on the above, we propose that:

**H2.** Companies' innovativeness positively affects the perceived benefits of m-CRM.

*Employee support.* The success of the implementation of a CRM strategy does not depend exclusively on the technological competence of the company, or on the strategy or processes involved in the project. As in the implementation of all information systems, employee support, their interest and involvement with the project, in addition to the knowledge of the technology involved in it, are key elements for a project to be successful; and on the contrary, the main reason for failure in the implementation of information systems is the lack of employee support, as in cases of resistance to change (Laudon & Laudon, 2012). In the same sense, Krauss (2002), Brown (2000), and Horne (2003) indicate that the greatest difficulty in achieving success in a CRM model is not the technology, but the people. Truly, employees are those who build the relationship with the customer (Sin et al., 2005). Therefore, we propose the following hypothesis:

**H3.** The employee support positively affects the perceived benefits of m-CRM.

#### Environmental context

*Customer information management.* Nowadays many consumers use different channels to contact companies and

make purchases. Both *offline*, and more than ever, *online* contacts generate a large amount of customer data. This "multi-channel" information, used properly, makes it possible to track the customers, establish a dialog with them and monitor possible changes in order to adapt to customer needs (Nguyen & Mutum, 2012). Sarmaniotis et al. (2013) claim that CRM provides benefits to those organizations that obtain and process a lot of information about their customers.

For companies competing in industries that incorporate new technologies in the process of marketing their products and services, the industrial environment is characterized by continuous and massive data generation. The information generated in each of the activities done by individuals (including searches for products or services, purchase processes, what they like or what they share) are part of the massive amount of data generated through devices connected to the Internet, including mobile phones (Marz & Warren, 2015). These data provide information on consumers, their likes, their purchases, their location, their lifestyle or their personality. In a report on Big Data, Maroto (2015) highlights that information management has become an aspect that is capable of generating profits for the company by improving the customer experience. As suggested by Lee et al. (2014), CRM is an instrument to build long-term relationships with customers; and an appropriate database allows using CRM to offer personalized attention adapted to each customer, which, in turn, motivates reciprocal behaviors favorable to the company and the customer. According to Barnes and Scornavacca (2004) and Lee et al. (2014), m-marketing fosters relationships with customers through customization and adaptation of messages to the customers.

It is expected that companies that base their decision-making processes on customer information and that use the database as an essential business tool, have a marked orientation toward customers (Ranjan & Bhatnagar, 2009). For this reason, we understand that these companies will notice that m-marketing, as a tool capable of recording personalized customer information (e.g. hours of connection, geo-referencing, personalized advertising, location-based

services), improves CRM, as it will enrich the value of customer data, which are an essential factor in the mobile phone business. Therefore, we propose the following hypothesis:

**H4.** Appropriate management of customer information positively affects the perceived benefits of m-CRM.

## Empirical study

### Sampling

Telephone surveys were done in April 2011 in order to obtain information to carry out the empirical study. These surveys were directed to executives from Spanish companies who are familiar with the use of information and communications technologies, since few companies have adopted m-marketing and m-commerce in their commercial activities. The selection of the sample was carried out through quota sampling using the database of Spanish companies registered in *AC Nielsen España*. The companies in the sample had to have presence on the Internet with their own web page and belong to different sectors.<sup>1</sup> We obtained a valid sample of 125 surveys. The ratio between the number of respondents and parameters to be estimated in this study meets the criteria indicated by [Hair \(2001\)](#) of a minimum ratio of 5 surveyed per parameter. The sampling error is 8.8% in the worst case and a trust level of 95%.

The company *AC Nielsen España* responsible for collecting the sample, guaranteed representation of all sectors and the variety and the balance of the sample. The profile characteristic of the sample responds to small and medium sized businesses (71.6%) of various sectors in the following percentages: commercial (27.9%), industrial (24.6%), technological services (22.1%) and non-technological services (25.4%). More than half of the companies in the sample have internet sales (54.4%) and most participated in that sector from 1 to 20 years (61.3%). The characteristic of the companies in the sample profile is similar to the profile of the Spanish companies: small and medium sized companies (99.9%) in the following sectors: commercial (24.2%), industrial and construction (21.2%) and services (54.6%, including technological and non-technological) according to the [Ministry of Industry, Energy and Tourism \(2011\)](#).

### Variables and measurement scales

All items used are listed in the appendix. The scales used were five-point Likert-type (from completely agreeing to completely disagreeing). We conducted a pre-test with five companies that specialize in the implementation and development of technological businesses in order to check the clearness and adaptation of the scales used. We asked each of the company representatives, through a spontaneous

memory question, to mention the factors that were considered essential for the proper development of marketing activities through the use of mobile technology. All five companies agreed on technological competence, innovativeness, employee support, and customer information management as the main aspects. This fact represented the starting point to analyze different technological, organizational, and environmental factors in companies with empirical data.

Validated scales were taken from previous literature in order to comply with content validity and the appropriateness of using short scales and a similar number of items within the different constructs ([Steenkamp & Baumgartner, 1995](#)). Specifically, the works of [Abdul-Muhmin \(2012\)](#) and [Harrigan, Ramsey, and Ibbotson \(2009\)](#) were considered for the variable of benefits of m-CRM. The scale of [Wang et al. \(2010\)](#) was used mainly for the measurement of technological competence; the scales used by [Trainor et al. \(2011\)](#) and [Goldsmith and Hofacker \(1991\)](#) for the variable of innovativeness; the reference indicators proposed by [Harrigan et al. \(2009\)](#) were our reference for the customer information management; and the scales proposed by [Trainor et al. \(2011\)](#) and [Liang, Huang, Yeh, and Lin \(2007\)](#) were used to measure employee support with respect to mobile activity. Following the recommendation of [Jarvis, MacKenzie, and Podsakoff \(2003\)](#), the specification of the model must be conditioned by theoretical reflection on its measurement. In this regard, [Li and Mao \(2012\)](#) suggest that the use of CRM has multiple benefits in the company. Thus, from a conceptual perspective, we understand that for there to be a perception of benefits of performing a marketing activity (in this case m-CRM), there has to be an improvement in various indicators of business performance. Although there is no consensus in the measurement of the variable 'perceived benefits of CRM' in previous literature ([Chang et al., 2005](#)), there are various studies that highlight the financial and marketing benefits ([Abdul-Muhmin, 2012](#); [Awasthi & Sangle, 2013](#); [Harrigan et al., 2009](#); [Lai, Chou, & Cheung, 2013](#); [Wang & Feng, 2012](#)), as it has been previously justified (recall [Table 1](#)). In this sense, we understand the perceived benefits of m-CRM as a formative variable.

## Analyses and results

The descriptive statistics of the variables and the results of the exploratory factorial analysis (EFA) and confirmatory factorial analysis (CFA) are shown in [Tables 2 and 3](#). First, we performed an EFA of the main axes with varimax rotation, which confirmed the existence of five factors (m-CRM benefits, technological competence, innovativeness, employee support, and customer information management). The Harman's single-factor test, which includes all of the items in a factorial analysis of principal components, was used to rule out problems of common method bias ([Chang, Van Witteloostuijn, & Eden, 2010](#); [Podsakoff, MacKenzie, Lee, & Podsakoff, 2003](#)). The results of the factorial analysis do not indicate the presence of a substantial variance in the common method since not one single factor stands alone causing such a variance (the first factor represents 35% of the variance, while the total variance explained is 72%). Secondly, the CFA (maximum credibility) performed with the program LISREL 8.7 determined the convergent

<sup>1</sup> The quota suggested by *AC Nielsen España* for sampling corresponds to the following intervals: consumption (a sample of around 30%), industry (a sample of around 20%), technology services (a sample of around 20%) and non-technological services (a sample of around 35%).

**Table 2** Descriptive statistics. EFA and CFA results.

Latent variable (% of explained information in EFA)	Item	Mean	S.D.	Item-total correlation	Estimation			$R^2$	$\alpha$	CR	AVE
					$\lambda$	$\varepsilon$	Sig.				
Technological competence (13.1%)	V7	2.83	1.18	0.71	0.90	0.30	5.25	0.70	0.84	0.89	0.68
	V8	2.90	1.22	0.69	1.00	0.17	3.24	0.83			
	V9	2.95	1.15	0.63			Removed				
Innovativeness (8.1%)	V10	3.48	1.00	0.60	0.71	0.57	6.96	0.61	0.73	0.861	0.68
	V11	3.04	1.02	0.60			Removed				
	V12	2.90	1.15	0.63	1.00	0.39	6.11	0.44			
	V13	3.04	1.08	0.63	0.95	0.18	2.85	0.82			
Employee support (5.5%)	V14	2.90	1.16	0.72	1.00	0.29	5.35	0.71	0.84	0.909	0.72
	V15	2.95	1.15	0.72	0.98	0.10	2.00	0.90			
Customer information management (3.1%)	V16	2.86	1.16	0.60	1.00	0.09	6.84	0.91	0.75	0.808	0.69
	V17	2.91	1.05	0.60	0.67	0.57	6.07	0.43			
Goodness of fit indexes											
$\chi^2 = 57.10$ ( $p = 0.000$ ); RMSEA = 0.06; NFI = 0.90; CFI = 0.93; IFI = 0.93; RFI = 0.90; GFI = 0.92											

Note: AVE: average variance extracted; CR: composite reliability;  $\alpha$ : Cronbach's alpha.

**Table 3** Descriptive statistics and MIMIC model results, FIV and values of tolerance.

Latent variable (% of explained information in EFA)	Item	Mean	S.D.	Item-total correlation	FIV	Tolerance value	$\lambda$	Sig.
Perceived m-CRM benefits (35.2%)	V1	3.41	1.13	0.68	2.00	0.50	0.23	3.55
	V2	3.58	1.09	0.73	2.24	0.44	0.18	2.26
	V3	3.42	1.09	0.82	3.32	0.30	0.05	0.52
	V4	3.20	1.23	0.76	2.37	0.42	0.11	1.96
	V5	3.29	1.11	0.78	2.99	0.33	0.35	3.92
	V6	3.25	1.16	0.79	2.73	0.36	1.00	13.69
Goodness of fit indexes								
$\chi^2 = 15.06$ ( $p = 0.00$ ); RMSEA = 0.05; NFI = 0.94; CFI = 0.97; IFI = 0.97; RFI = 0.91; GFI = 0.97								

Note: FIV: factor inflation variance.

and discriminant validity of the measurement model (Tables 2 and 4). In addition, CFA is more sophisticated than the EFA test when it comes to validating the measurement model (Podsakoff et al., 2003). It is important to notice that the variable V17 presented an  $R^2$  close to 0.5 and that

variables V9 and V11 were eliminated because their measurement errors were correlated with other variables and/or had an  $R^2$  slightly lower than 0.5. The reliability of the final scales was corroborated with the values of the Cronbach's alpha coefficients, coefficient of composite reliability and

**Table 4** Correlation matrix.

	Perceived m-CRM benefits	Innovativeness	Technological competence	Employee support	Customer information management
Perceived m-CRM benefits	*				
Innovativeness	0.20	0.83			
Technological competence	0.50	-0.57	0.83		
Employee support	0.43	0.16	-0.34	0.85	
Customer information management	0.09	0.78	-0.52	0.28	0.83

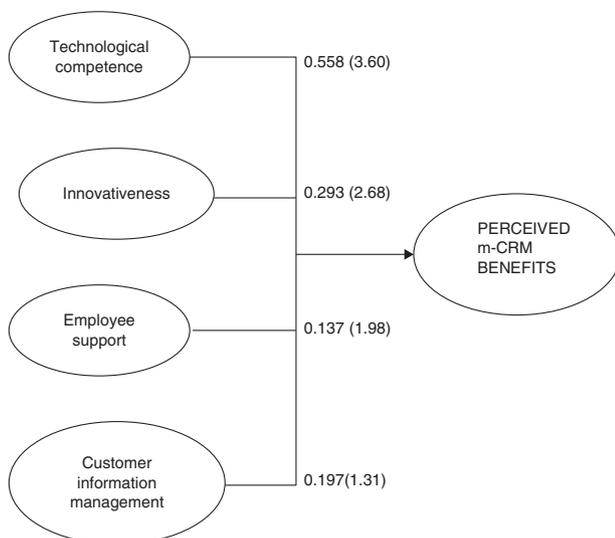
Note: The main diagonal shows the square root of the AVE.

\* Construct validity in terms of convergent and discriminant validity is not meaningful for formative constructs (Bagozzi, 1994; Diamantopoulos & Winklhofer, 2001).

average variance extracted (higher than 0.50, 0.60, and 0.70 respectively) (Bagozzi & Yi, 1988). As to the discriminant validity of the reflective latent variables (i.e. technological competence, innovativeness, employee support, and customer information management), the results show that the average variance extracted in all cases is superior to the correlations to the square with other constructs (see Table 4) (Anderson & Gerbing, 1988; Bagozzi, 1994; Diamantopoulos & Winklhofer, 2001; Fornell & Larcker, 1981). As shown in Table 2, the goodness of fit indicators are, in general, positive and exceed the minimum established parameters (Hair, 2001).

In the case of the formative construct (m-CRM benefits), a model of multiple-indicators-multiple-causes (MIMIC) was used to determine the model of this construct was suitable (Diamantopoulos, Riefler, & Roth, 2008). The covariance of indicators was allowed and a parameter of a reflective display (V6) was fixed to the unit in order to assign a scale to the formative construct (Jarvis et al., 2003). The indicators of goodness of fit of the model allow us to consider the formative construct measurement appropriate and the results show that all indicators have a significant relationship with the construct, except indicator V3 (see Table 3). However, in the case of formative constructs it is not appropriate to elimination this indicator, since the meaning of the construct could be altered (Churchill, 1979; Jarvis et al., 2003) and not all the indicators have to be relevant and significant in their measurement (Diamantopoulos et al., 2008). The existence of problems of multicollinearity (Carbonell & Rodríguez Escudero, 2010) should be discarded. Following Hair (2001), we calculated the values of the variance inflation factor (FIV) of the formative variable indicators, which are less than 5, and the values of tolerance, which are greater than 0.10 (Table 3).

Finally, the global structural model was estimated by using the methodology of structural equation modeling (Fig. 1). The indicators of goodness of fit in the model are acceptable:  $\chi^2 = 116.47$  ( $p = 0.00$ ); RMSEA = 0.07; NFI = 0.90;



**Figure 1** Model and hypothesis tested.  $\chi^2 = 116.47$  ( $p = 0.00$ ); RMSEA = 0.07; NFI = 0.90; CFI = 0.90; IFI = 0.90; RFI = 0.90; GFI = 0.91.

CFI = 0.90; IFI = 0.90; RFI = 0.90; GFI = 0.91. By looking at the results, hypothesis H1 has been confirmed since the technological competence of a company leads to the perception of greater benefits of m-CRM ( $\lambda = 0.558$ ,  $p < 0.05$ ). The effect of the innovativeness in the benefits of m-CRM is positive and significant, which supports hypothesis H2 ( $\lambda = 0.293$ ,  $p < 0.05$ ). Regarding the effect of employee support, it influences in a positive and meaningful way, the benefits of m-CRM, so we can also accept hypothesis H3 ( $\lambda = 0.197$ ,  $p < 0.05$ ). Regarding customer information management, it does not influence on the benefits of m-CRM. Thus, hypothesis H4 is rejected ( $\lambda = 0.137$ ,  $p > 0.05$ ).

## Conclusions

This study analyzed factors of a different nature which influence the perception of companies on the benefits of implementing a m-CRM strategy. Few studies establish the relationship between CRM concepts and m-marketing and its perception by companies (Abdul-Muhmin, 2012) and scarce jobs analyze the perceived benefits of m-CRM from the perspective of relationship marketing (Liljander, Polsa, & Forsberg, 2008) and the TOE model factors that may cause their perception in the context of m-marketing.

According to the results, we can say that companies perceive that the better the technological competence is, the more willingness to innovate, the more employee support, and the better management of customer information, the larger the benefits derived from a m-CRM strategy will be. The perception of the companies in our sample on the contextual factors that improve outcomes of m-CRM are similar to those found in previous studies. First, our study confirms that the technological competence of the company (infrastructure and available technological knowledge) is key for perceiving benefits derived from the implementation of an m-CRM strategy, as it has been suggested in previous studies in the context of electronic commerce (Trainor et al., 2011). Second, the propensity of the company to adopting innovations, such as mobile technology, is a decisive factor for the perception of benefits of m-CRM, as it has also been suggested in the context of m-marketing works by Awasthi and Sangle (2013), Schierholz et al. (2007), Valsecchi et al. (2007). Third, the interest and involvement of all employees in a company, although to a lesser extent, allow the company to obtain and perceive benefits of implementing an m-CRM strategy, as confirmed by our results and pointed out by other authors such as Krauss (2002) and Horne (2003). Fourth, and contrary to our expectations, customer information management is not influencing the perception of benefits in the use of mobile technology for CRM. From an academic perspective, we could argue that this fact may be the consequence of companies considering customer information management an element of hygiene, which, according to Herzberg, Mausner, and Snyderman (2011), may not contribute to a perception of greater benefits from m-CRM, but currently may represent a condition of the environment of the company, which is necessary but not sufficient for the perception of benefits from m-CRM. However, from a methodological perspective, it is worth noting the high correlation between the variable information management and innovativeness, which can make the effect of the

variable information management on m-CRM be enclosed on the variable innovativeness. It may be more likely that companies that tend to innovate are also the ones that more adequately manage large amounts of client information, as a company's operational activity. Following this line of argument, [Abdul-Muhmin \(2012\)](#) suggests that companies use the m-CRM primarily to improve their operational efficiency in the management of the large amounts of customer data.

Definitely, this study confirms that the organizational and technological factors influence the most the perception of benefits of m-CRM.

In regards to the *managerial implications* of this research, we understand that providers of content and services, operators and technology companies must work on triggering companies desire to access the benefits of developing a m-CRM strategy, which would help in the advancement of m-commerce in Spain. Among these, financial benefits must be emphasized, such as the volume of sales and profitability; as well as commercial benefits, such as improving service, customization, brand capital, loyalty, cost efficiency and the own future value of companies, which confirms the results suggested for the mobile channel by [Ramón-Jerónimo and Flórez-López \(2013\)](#), [Karakostas et al. \(2005\)](#) and [Kellen \(2002\)](#). However, there are decisive factors in that perception that are under the control of the company. The technological competence of the company and its investment in technologies related to m-marketing, the employee support to this type of activity and the propensity to innovations, as that derived from marketing and m-commerce, will help in the perception of the benefits of the development and maintenance of a m-CRM strategy. Public support in the implementation of emerging technologies in companies, training programs in technologies, and the emphasis on the advantages of being pioneers in a growing penetration in the market sector would contribute to a greater perception of m-CRM, marketing, and m-commerce strategies.

## Limitations and future lines of investigation

It is important to note the *limitations* on our study. For example, a limitation in the empirical study of this work is the small size of the sample; an endemic problem in studies with companies. As [Li and Mao \(2012\)](#) point out, the use of CRM has multiple impacts on the company and there is little evidence that allows determining all the possible benefits of this marketing activity. Thus, the measurement of the perceived benefits of m-CRM in future studies must take into account other aspects besides the financial and marketing ones, such as the improvement in the control of resources of the company or objective measurements of business results (e.g. increase in ROI and increase in market share) ([Kim et al., 2015](#)).

We should also emphasize the limitation of only taking into account four contextual variables that may affect the perception in the practice of m-CRM benefits because there may be other influencing factors such as the appropriateness of the activity of the company and the products or services sold through technology and mobile channel. A major limitation of this study is the existence of a high

correlation between customer information management and other variables studied, which perhaps is the cause that the influence of customer information management in the perceived benefits of m-CRM is not significant, as it has been mentioned before. In this sense, it is necessary to continue studying the interrelationship between variables that have been considered the background of the perceived benefits of m-CRM. In addition, future studies should take into account other factors that can be determinant, such as the size of the company, compatibility with the main activity of the company, the experience of the company, the sector or investment on mobile technology by the company. Thus, for example, future studies should deepen in the role of moderator that the characteristics of the company can have, such as the sector of activity of the company being studied. While companies cannot remain apart from the change in the form of making transactions as a result of the development and evolution of new technologies, such as Internet and mobile phone, it is likely that companies with activity in technological and non-technological sectors perceive the phenomenon of m-commerce differently.

Another possible line of future research would be to investigate the identification of the different factors that can influence the technological, organizational, and environmental contexts of companies in the mobile context. As [Gangwar et al. \(2015\)](#) point out, the application of the TOE model and its meaning can vary in different contexts and the absence of a set of variables that can be used widely to explain the adoption of technology in any context and technology is remarkable.

In addition, few Spanish companies have adopted in an integrated manner a m-marketing strategy being this an incipient channel in our country. It is therefore recommended for further studies to deepen in how companies carry out customer information management and what are the causes that do not allow these companies to perceive it as a determinant factor to obtaining greater benefits in terms of CRM. Also, it will be interesting if future studies take into account the influence of the concern for customer privacy, which could slow the adoption of technology in the specific field of CRM ([Okazaki, Li, & Hirose, 2009](#); [Okazaki, Navarro, & Molina-Castillo, 2012](#); [Phelps, Nowak, & Ferrell, 2000](#)).

Another area of opportunity for future research is to analyze how the use of mass data in a m-CRM strategy for companies may narrow the B2C relationship and how it affects the perception of benefits in m-marketing and the management of unstructured data from the environment of the company and the consumer (e.g. data coming from social networks).

## Conflict of interest

The authors declare no conflict of interest.

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## Appendix. Item description

Variable	Item	Item description
Perceived m-CRM benefits	V1	To facilitate the increase of market awareness.
	V2	To facilitate personalization.
	V3	To facilitate service customer attention.
	V4	To improve customer loyalty.
	V5	To increase sales and firm transactions.
Technological competence	V6	To improve the firm's global profits and results.
	V7	The company's infrastructure is available to support the activity.
	V8	The company is committed to ensure that employees are familiar with the new activity.
	V9	The company has a high level of knowledge about the mobile business.
	V10	In general, at the company we are wary about accepting new ideas. <sup>a</sup>
Innovativeness	V11	At the company, we are reticent to adopt new manners of knowledge before they are proved in other companies. <sup>a</sup>
	V12	At the company, we realize we are one of the last companies to adopt a new technology. <sup>a</sup>
	V13	At the company, we are skeptical about new ideas. <sup>a</sup>
Employee support	V14	The extent to which employees have knowledge about the mobile technology.
	V15	The extent to which employees have interest in adopting m-commerce.
Customer information management	V16	Customer information is essential in the decision making process.
	V17	The database is a crucial business tool.

<sup>a</sup> Reverse-coded items.

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