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Analyzing the impact of knowledge management on CRM success: The mediating effects of organizational factors

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ABSTRACT

Customer relationship management (CRM) and knowledge management (KM) have become key strategic tool for all companies, especially in the current competitive environment. Moreover, customer knowledge is an important issue for CRM implementation. Reviewing the literature, we found many studies that analyze the crucial role played by KM initiatives as determinants of the success of CRM. Moreover, we found also diverse studies that show high rates of failure when implementing that strategy, so there is still no integrated conceptual framework to guide companies to their successful implementation. In this paper, with data of 153 Spanish hotels, we examine the relationships between KM and CRM success using a structural equation model. The main contribution is that having knowledge management capabilities is not sufficient for the success of CRM, but there are other factors to consider. In particular, organizational factors indeed impact CRM success and they appear to be intermediaries of the impact of other factors (KM capabilities/technological/customer orientation factors) in the success of CRM (in financial and marketing terms).

1. Introduction

Currently, knowledge society or knowledge-based economy is characterized by factors such as increased competitiveness, technological innovation and the global nature of markets (Castells, 1998). In this society, companies should pay attention preferred to knowledge when conducting its business as it becomes a key factor on which to build a competitive advantage (Beijerse, 1999; Salmador & Bueno, 2007). Moreover, in recent years, knowledge is being considered as a critical organizational resource and there is growing interest in this concept (Alavi & Leidner, 2001; Drucker, 1993). That is why KM is becoming a research priority by the academic community (Salmador & Bueno, 2007), and one of the areas that companies are allocating a greater share of spending for its implementation (Beijerse, 1999; Call, 2005).

In this environment, company relations with the market are critical, and have completely changed the marketing strategies of firms to other more relational approach (Grönroos, 1994), emerging customer relationship management (CRM) as an area of application and research. CRM literature emphasizes that companies find it more profitable to retain existing customers, by developing long-term relationships that meet their needs, than attracting new customers. These long-term relationships are based largely on customer knowledge and KM and CRM systems improving not only the organization's ability to interact, attract and build personalized relationships with customers, but also the ability to increase their knowledge about them (Xu & Walton, 2005).

Reviewing the literature, we found many studies that analyze the crucial role played by KM initiatives as determinants of the success of CRM (Croteau & Li, 2003; Gebert, Geib, Kolbe, & Brenner, 2003) together with other factors (technological, organizational and market related factors) as we will explain later. However, there is a lack of understanding about what are the influences of those factors on CRM success. Moreover, we also found many studies that show high rates of failure when implementing that strategy (Rigby, Reichheld, & Schefter, 2002; Rowley, 2002; Xu & Walton, 2005). So, there is still no integrated conceptual framework to guide companies to their successful implementation.

Consequently, our research questions are the following: Is KM the main factor that determines the successful implementation of CRM? Are there other factors that are also relevant? What is their role in CRM success?

To answer these questions, we analyze in this paper the relationship between KM and CRM from a literature review, propose a conceptual framework linking KM and other factors with CRM success, and we explore whether or not it is KM the most relevant factor affecting CRM success using primary data from an empirical study.

The main contributions of this paper are, firstly, the proposal of an integrated framework of factors affecting CRM success (not only

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KM but also technological, organizational and market related factors). Secondly, the paper provides some empirical evidence about the mediating role of the organizational factors in the influence of other considered factors on CRM success (considering both financial and marketing results).

2. Theoretical background

2.1. CRM overview

Despite the recent birth of CRM, which stands in the nineties, since then it has become a key tool for business management (Ngai, 2005). Similarly, research on CRM has increased significantly over the past few years (Romano & Fjermestad, 2003), but there are still research needs in different areas: search for a definition or a generally accepted conceptual framework, analysis of its key dimensions, study of CRM impact on business results, barriers to its successful implementation, development of valid and reliable scales to study the degree of implementation and success and rigorous empirical studies on the subject (Colgate & Danaher, 2000; Parvatiyar & Sheth, 2001; Sin, Tse, & Yim, 2005).

After reviewing the literature on the *concept of CRM* (i.e., Paas & Kuijlen, 2001; Parvatiyar & Sheth, 2001; Plakoyiannaki & Tzokas, 2002), we can say that there is not yet a consensus about a clear conceptual framework of the concept of CRM (Zablah, Bellenger, & Johnston, 2004). We summarize the concept of CRM, from the literature review, as follows: CRM is a business strategy that aims to establish and develop value-creating relationships with customers based on knowledge. Using IT as an enabler, CRM requires a redesign of the organization and its processes to orient them to the customer, so that by personalizing its products and services, the firm can optimally satisfy customer needs and thereby generate long-term, mutually beneficial, loyalty relationships.

At the theoretical level CRM clearly offers numerous advantages, but a large number of studies indicate a high failure rate in the implementation of this type of strategy (Xu & Walton, 2005). When examining the various causes of these negative results, several authors (Rigby et al., 2002; Starkey & Woodcock, 2002) suggest that one of the main causes of failure is not integrating CRM into the firm's overall strategy, in other words, considering CRM as an exclusively technological tool and not assuming the various organizational and cultural changes it entails. Additionally, Sin et al. (2005) argue that there is no integrative conceptual framework that translates the CRM concept into specific organizational activities and guides firms in how to implement the strategy successfully.

In view of the high failure rate in CRM implementation, and of the need to improve understanding of why some initiatives are successful while others are not (Roh, Ahn, & Han, 2005), there is a need for an explanatory model for CRM success based on knowledge, including the main variables that determine successful implementation of the strategy.

2.2. CRM and KM

In recent years, companies have integrated their CRM and KM efforts because they realize that KM plays a key role in CRM success (Dous, Kolbe, Salomann, & Brenner, 2005). Identifying the high value customer is a sophisticated knowledge task, as is determining the range of profiles among current customers. Technology can assist but KM puts the information processing power of technology to effective use. Collaborating with customers requires a strong grasp of tacit knowledge exchange, and anticipating or predicting new customer needs can be delivered competently using statistical methods with technology, but can only be done excellently when the dimension of tacit knowledge exchange and collaboration are also deployed (Lambe, 2008). Therefore, CRM processes are based on large amounts of knowledge (Bueren, Schierholz, Kolbe, & Brenner, 2005).

CRM is about managing customer knowledge to better understand and serve them (Beijerse, 1999). CRM is definitely related to the discipline of KM, thus, the existence of sufficient and continually updated customer knowledge is critical for an effective CRM system (Stefanou, Sarmaniotis, & Stafyla, 2003). Given the important role being played by KM systems in the current customer-centric business environment, there is a lack of a simple and overall framework to integrate the traditional CRM functionalities with the management and application of the customer-related knowledge (Beijerse, 1999).

Additionally, as Zablah et al. (2004), we see KM as the main sub process of CRM because, to manage CRM effectively, companies must develop capabilities related to customer KM processes. Since these capacities are difficult to imitate, they can become a source of competitive advantage (Shi & Yip, 2007). From a resource-based perspective (Penrose, 1959; Wernerfelt, 1984), customer knowledge will be a valuable and rare asset for businesses, which will allow them to respond quickly to customer needs and adapt to changing markets (Shi & Yip, 2007). Whereas the search for competitive advantage becomes the key factor of current strategic management, we should note that to collect information about customers in the context of a relationship, and offer those customers a superior value proposition based on this knowledge, will be a key advantage, hard to imitate.

At this point, it is interesting to note, that, unlike data or information, knowledge is embedded in people and not in IT (Davenport & Prusak, 1998). The way people capture, share and interpret knowledge accumulated in organizational repositories is very important in operational and strategic business activities aiming at retaining competitive advantage (Stefanou et al., 2003). In this sense, Swan, Newell, and Robertson (2000) found issues of people management, rather than IT development, pose central KM constraints. They assert there has been an over-emphasis on IT management in KM literature and that KM requires a skilful blend of people, business processes and IT.

To sum up, the relationship of the discipline of CRM with technological capabilities and KM is being recognized as an important research field at present that warrants further research (Dous et al., 2005; Romano & Fjermestad, 2003). Moreover, several authors believe that while previously the majority of CRM research focused on technological aspects, the critical role of KM is beginning to be recognized in research (Lambe, 2008; Shi & Yip, 2007). Consequently, we can say that the relationship between CRM and KM is an important issue in Management research (Campbell, 2003; Shi & Yip, 2007; Stefanou et al., 2003). Such is the synergy potential of both concepts that have emerged theoretical models from the integration of both concepts: the models of customer KM (CKM models) (Gebert et al., 2003; Morgan, 2007; Tiwana, 2001).

2.3. Factors affecting CRM success

Based on an extensive literature review on the topic, a success model for CRM implementation was developed, considering KM as main success factor and other four factors mentioned in the literature: organizational factors, technology, customer orientation and CRM experience. These factors can have direct or indirect effects on CRM success. A direct effect is considered a direct impact of the factor in the CRM success. An indirect effect is considered an impact in the CRM success not directly but through other factors. From the literature review is unknown whether the considered factors have a direct or indirect effect on CRM success. Consequently, and similarly to other previous studies (Chen & Ching, 2004; Eid, 2007; Roh

et al., 2005), in the statistical estimation of the success model both types of effects will be considered.

2.3.1. KM capabilities and CRM success

KM capability is the ability of an organization to capture, manage and deliver real time authenticated customer, products and services information to improve customer response and provide faster decision-making based on reliable information (Alavi & Leidner, 2001). Consequently, CRM and KM initiatives are directed towards the same goal: the delivery of continuous improvement towards customers (Dous et al., 2005). Furthermore, the creation and transmission of knowledge is seen as strategically significant as one of the fundamental processes that determine the ability of organizational learning and innovation (Salmador & Bueno, 2007). Because of this, KM will exercise a decisive role when implementing CRM, as it involves a change in the organizational vision and therefore a great deal of learning and innovation within the organization. Additionally, previously published empirical studies on the subject highlighted KM capabilities as the variable that has a more significant impact on CRM success (Croteau & Li, 2003; Love, Edwards, Standing, & Irani, 2009; Sin et al., 2005). Consequently, we propose the following hypothesis:

H1. KM capabilities are positively linked to CRM success.

2.3.2. Organizational variables and CRM success

These variables are aspects to do with human resource management, the organizational structure, and resource allocation. Considering that implementing CRM requires changes both in the way a firm is organized and in its business processes (Sin et al., 2005), any model needs to include a variable measuring the importance and effect of these organizational factors on CRM success. In fact, in order to implement CRM successfully firms need to redesign their organization and orient their value chain to the demand (Kotorov, 2002). Thus, the strategy, the organizational structure and the business processes all need to be transformed to implement CRM, since success in the initiative will depend on creating the right synergy between technological systems, processes and people (Xu & Walton, 2005).

On the other hand, the human factor is critically important, since even with the best defined processes and the most advanced technology the relation between people still has a determinant role in the implementation of any business strategy (Mendoza, Marius, Pérez, & Grimán, 2007). This is why factors such as employee training and motivation and the establishment of appropriate reward systems will be determinant in employees' involvement in implementing this type of strategy. Moreover, the organizational culture will play a key role also in KM: the vision of the organization, rules, structure and reward system are direct determinants of the transmission of knowledge within the company (Racherla & Hu, 2006), and therefore have a direct effect on the successful implementation of an initiative of this type.

H2. Organizational variables are positively linked to CRM success.

2.3.3. Technology and CRM success

CRM technological systems should be seen as a key component in implementing this type of strategy (Hansotia, 2002; Mendoza et al., 2007). As Sin et al. (2005) note, CRM software systems enable firms to offer a customized service with higher quality but at lower cost, so many customer-centric activities would be impossible without the right technology. Consequently, to implement the CRM successfully the firm must have the right technology with which to optimize the business processes involved in customer relationships (Chalmeta, 2006). This author also argues that CRM technological systems offer numerous benefits to firms, since they provide a single view of the customers, manage the relationships with customers in an integrated way regardless of the communication channel used, and help the firm improve the efficiency and effectiveness of the processes involved in customer relationships. Despite all the above, however, it is not a good idea to give the technology an excessive role. Instead, the firm should consider it as an enabler of its CRM. We consequently consider the technology as a necessary but not sufficient condition for the success of CRM.

H3. CRM technology is positively linked to CRM success.

2.3.4. Customer orientation and CRM success

Following Narver and Slater's (1990) conceptual proposal, we assume that customer orientation implies having a sufficient understanding of the customers to be able to offer them greater added value. Likewise, customer orientation implies unequivocally placing the customer at the center of all the firm's activities in order to gradually build long-term relationships (Bentum & Stone, 2005). This is why this variable is a fundamental component of the organizational climate needed for CRM success: an organization that is strongly oriented to the customer will be able to design its processes better, since that organizational culture is conducive to improved employee understanding of the customers (Bang, 2005).

Consequently, a customer orientation is an indispensable prerequisite for the successful implementation of CRM (Bentum & Stone, 2005). On this basis, the fourth hypothesis follows:

H4. Customer orientation is positively linked to CRM success.

2.3.5. CRM experience and CRM success

CRM implementation involves a substantial change in both business processes and in the organization itself, is therefore essential to carry out a proper organizational change management (Shum, Bove, & Auh, 2008). In this sense (Selander, 2006) highlights that in applying a new technology in an organization, both the management processes and the structure, culture and organizational routines experience a profound change, which affects the entire organization. Therefore, organizational learning and experience in the development and implementation of the strategy can also determine the effectiveness of it.

Likewise, Campbell (2003) deepened into the internal processes of organizational learning that involves implementing CRM. In this learning process there are four transformations that are particularly relevant: the process of acquiring information about customers; the integration of marketing and IT functions; the involvement of senior management and the employees' evaluation and compensation system. Since these transformations are developed gradually, it is logical that as more time elapses since the beginning of the implementation of the strategy, the required organizational learning will be taking place.

Moreover, Hart, Hogg, and Banerjee (2004) analyzed empirically the effect of the level of experience in CRM in the effectiveness of it, from the perspective of organizational learning. They noted that the use of and experience in CRM improved the company's ability to obtain effective results with this initiative, increasing productivity and benefits of CRM with increasing time since its implementation.

Consequently, we propose the following hypothesis:

H5. CRM experience is positively linked to CRM success.

2.3.6. CRM success: results of CRM implementation

We had some difficulty in measuring the results of CRM implementation, since as various authors note (Ryals & Knox, 2001; Sin et al., 2005) despite the increasing importance of the CRM concept there is still no validated measurement scale for evaluating

its results. Measurement of firm performance is traditionally based on an analysis of a limited number of financial measures. But if the aim is to evaluate the impact of a CRM initiative, which seeks to improve customer relationships, any measure of results must also include the perspective of the customers (Chang, Liao, & Hsiao, 2005). Authors recommend not using a single indicator to measure the results of CRM implementation, so most models use a two-dimensional measurement scale that includes both financial performance and market performance.

Thus we decided to take a bidimensional approach to measure the results of CRM implementation, as proposed by authors such as (Chen & Ching, 2004; Li, 2001; Sin et al., 2005). In this work, the financial perspective will measure the impact of CRM for the organization in terms of improved profitability or reduced costs, while the marketing perspective will capture the value that the strategy generates for the firm's customers, and include measures such as customer retention and satisfaction rates.

3. Research methodology

3.1. Methodology

We designed a questionnaire that was directed at the Spanish hotel sector. After the data collection, and using exploratory and confirmatory factor analyses, we validated and refined the measurement scale of the proposed model. Finally, we used the structural equation methodology to test the proposed CRM implementation success model empirically.

The target population for the empirical study consists of 3–5 star hotels located in Spain. The reason for choosing this sector was that CRM is extremely important in the tourism sector, and in particular in the hotel sector due to the necessary close relation with customer. Moreover, various authors see this sector as ideally placed to exploit the strategic advantages that CRM offers (Lin & Su, 2003; Luck & Lancaster, 2003; Piccoli, O'Connor, Capaccioli, & Alvarez, 2003). We followed the key-informant methodology in this work, choosing the hotel managers as informants, as in previous studies (Bang, 2005; Li, 2001; Wu, 2002). The population under analysis consists of 4,405 hotels of 3–5 stars, which were sent the link to an online questionnaire by email. The fieldwork was carried out from 23 January to 28 March 2008. We twice sent reminders of the questionnaire to the different hotels in order to increase the response rate. We finally obtained 311 correctly completed questionnaires. Regarding the profile of the respondents, the survey was completed exclusively by managers. Specifically, we observed how the position of hotel manager was the one with a higher frequency of respondents (60.5%), followed by the marketing director (23.8%).

Although the response rate was not very high (7%), is similar to that obtained in other studies in the Spanish hotel sector (Claver, Molina, & Pereira, 2006). Of the total sample of 311 hotels, only 49.2% (153 hotels) were implementing a CRM strategy. On this subsample of 153 hotels the proposed model of CRM success was tested.

In order to verify that the sample obtained is indeed representative of the population, we analyzed the *nonresponse bias*. We used the extrapolation method for this, which assumes that the subjects (in this case, hotels) that respond at the end of the data collection process are representative of the nonrespondents (Amstrong & Overton, 1977). Thus, we compared the data obtained between the firms responding at the beginning and those responding at the end. We carried out a Mann–Whitney *U*-test to test the difference of means in all the questionnaire variables. No significant differences existed in the hotel characteristics, or their level of CRM implementation, or in the different model variables, between the two groups of respondents. Thus the conclusion is that nonresponse bias does not affect the data in this study.

3.2. Measurement scale

To build the measurement scale for the model variables we consulted various studies and drew up a list of 147 items to measure these variables. We eliminated repeated items from the list, and selected the most representative items in function of the significance shown in their respective studies. After this refinement process, the final scale for measuring the various variables and CRM results consists of 42 items (see Table 1). This scale is validated empirically in the following subsections.

A 7-point Likert scale (1 = totally disagree, 7 = totally agree) was used to measure the variables of the model. Except for the CRM experience variable, which was measured considering for how long has been the company implementing the strategy (less than 6 months, 6–12 months, 1–3 years or more than 3 years). The questionnaire was further refined after a pretest conducted with a business consultant and 5 researchers in the topic.

3.3. Analysis of validity, reliability, and dimensionality of measurement scale

After confirming that the data available were suitable for use in factor analysis, and in order to evaluate the measurement scale, we analyzed four basic aspects of the scale (Hair, Anderson, Tatham, & Black, 2004): its conceptual definition, validity, reliability, and dimensionality. The conceptual definition refers to the theoretical bases considered in the scale development. The measurement scale here was built on the basis of an extensive analysis of the literature, considering research that defines the nature and structure of the concepts under analysis. The validity of a measurement scale refers to the extent to which the measurement process is error-free. The validity of the scale here was confirmed by considering the different modalities of the validity (content, construct, convergent, discriminant, and external).

To ensure content *validity*, a pretest of the questionnaire was made by six experts (five researchers in management and a business consultant). Regarding construct validity, as mentioned before, the measurement scale used constructs that had been identified and used in previous studies and theories. To ensure the convergent and discriminant validity, the correlation matrix between variables of the questionnaire was examined, verifying that indeed the correlations between variables of the same construct were shown to be higher than correlations between different constructs. Finally, with regard to external validity, the sampling technique used (random sampling) allows that the results are generalizable to the population.

We used a *reliability* coefficient—the Cronbach alpha—to analyze the reliability of the scale. This coefficient evaluates the consistency of the entire scale, and is the most commonly used measure (Hair et al., 2004). The Cronbach alpha is close to 0.9 for all the variables, which confirms the scale reliability.

Finally, in order to analyze the *dimensionality*, we carried out a principal components exploratory factor analysis. This analysis resulted in a factor model consisting of 8 factors made up of the 42 observed variables. Thus both KM and CRM results are bidimensional, in other words, they consist of two factors. The bidimensionality of CRM results was foreseen at the theoretical level, the concept including both financial and marketing performance, as mentioned above. Regarding KM, in the literature we found different studies considering KM as a multidimensional concept (Lin & Lee, 2005; Sin et al., 2005). Our empirical results reveal the concept to be bidimensional, so KM was split into two groups of factors: knowledge acquisition and application, and knowledge diffusion capabilities. This division will be considered when estimating the model.

Table 1
Measurement scale items for model variables.

Knowledge management capabilities (Beijerse, 1999; Li, 2001; Chen & Ching, 2004; Lin and Lee, 2005; Sin et al., 2005)

1. Knowledge acquisition and application
- Firm provides channels to enable ongoing two-way communication with key customers
- Firm has established processes to acquire knowledge about customers
- Firm has established processes to acquire knowledge for development of new products and services
- Firm has established processes to acquire knowledge about its competitors
- Firm fully understands needs of its key customers thanks to its knowledge orientation
- Firm can take decisions rapidly thanks to availability of knowledge about customers
- Firm can provide real information about customers allowing quick and precise interaction with them
- Firm has established processes to apply knowledge to resolve new problems

2. Knowledge diffusion
- Firm encourages employees to share knowledge
- Firm's organizational culture stimulates acquisition of knowledge and transmission between employees
- Firm has designed processes to facilitate knowledge transmission between the different functional areas

Organizational variables (Greve & Albers, 2006; Li, 2001; Sin et al., 2005; Song, Xie, & Dyer, 2000)

1. Employees
- Firm has qualified (expert) employees and resources needed to succeed in CRM strategy
- Training programs are designed to help employees develop skills needed to manage customer relationships appropriately
- Employee performance is measured and rewarded on basis of detection of customer needs and customer satisfaction with service received
- Firm motivates employees to comply with CRM objectives

2. Leadership
- Firm has established clear business objectives with respect to customer acquisition and retention, and has communicated these objectives to all members
- Top management considers CRM a top priority
- Top management is strongly involved in implementation of CRM strategy

3. Organizational structure
- Organizational structure is designed following customer-centric approach
- Open and two-way communication exists between different departments
- The different departments work together to achieve CRM objectives

CRM technology (Chang et al., 2005; Chen & Ching, 2004; Li, 2001; Sin et al., 2005)
1. Firm has right technical staff to provide technical support for use of CRM technology in building customer relationships
2. Firm has right hardware to serve its customers
3. Firm has right software to serve its customers
4. Firm's information systems are integrated across the different functional areas
5. Individualized information about each customer is available at all contact points
6. Firm is able to consolidate all information acquired about customers in comprehensive, centralized, up-to-date database

Customer orientation (Narver and Slater, 1990; Sin et al., 2005)
1. Firm's business objectives are oriented to customer satisfaction
2. Firm closely monitors and assesses its level of commitment in serving customer needs
3. Firm's competitive advantage is based on understanding customer needs
4. Firm's business strategies are driven by objective of increasing value for customers
5. Firm frequently measures customer satisfaction
6. Firm pays great attention to after-sales service
7. Firm offers personalized products and services for key customers

CRM results (Bang, 2005; Chen & Ching, 2004; Li, 2001; Sin et al., 2005; Wu, 2002)

1. Financial results
- Profitability
- Growth in sales
- Reduction in costs
- Growth in market share

Table 1 (*Continued*)

2. Marketing results
- Trust
- Perceived customer satisfaction
- Customer loyalty

CRM experience (Hart et al., 2004)
For how long has been the company implementing the strategy

3.4. Structural model testing

We carried out a confirmatory factor analysis to refine the measurement scale definitively. This analysis resulted in a scale consisting of 32 indicators, which shows higher levels of validity and reliability than the scale proposed initially, so we used it to estimate the model. In order to test the proposed hypotheses, we followed a structural equation methodology, which allowed us to evaluate the suitability of the theoretical model under analysis with respect to the empirical data, and examine the significance of specific hypotheses. The data were not normal (the normalized Mardia coefficient of multivariate kurtosis equals 39.10 > 1.96), so we used the statistics package EQS 6.1 to estimate the SEM model. This software can be used to estimate robust goodness-of-fit indicators as well as the robust chi-square statistic (Satorra–Bentler scaled statistic), which corrects the chi-square when the variables are nonnormal (Satorra & Bentler, 1994, 2001).

First, in an exploratory way, we proceeded to estimate a preliminary model which contained only the direct effects of the variables in the success of CRM. As it was explained earlier in the paper, it was not clear if the factors affect directly or indirectly CRM success. Additionally, in the model were included correlations between latent variables. To evaluate the fit of the structural model, we analyzed the significance of the model parameters, using robust statistics. In this case, only two parameters were significant at the 0.05 level, and the one relating organizational variables to CRM success had the most relevant effect. Considering that the structural model does not have a satisfactory fit, we decided to re-specify the model on the basis of the obtained results and of the underlying theory.

Secondly, with the aim of improving the model, we decided to introduce the organizational variables as an intermediate variable that mediates the effect of KM, technology and customer orientation on CRM results. We observed that the modification led to some improvement in the measures of overall fit of the model. Table 2 summarizes the measures used and the overall fit of the improved model.

Although the chi-square was nonsignificant ($p < 0.05$), considering the limitations of this measure we turned to other indicators to analyze the model's goodness of fit. As the table shows, the other indicators were all at acceptable levels. With regard to the fit of the measurement model, we examined the significance of the loads in the model and the measures of reliability and variance extracted of the constructs. These exceed the recommended values comfortably, so the fit of the measurement model was satisfactory.

Table 2
Goodness-of-fit indicators of the improved model.

Indicator	Value	Recommended value
Satorra-Bentler chi-square	$p = 0.00006$	$p \geq 0.05$
RMSEA	0.044	≤ 0.05
RMSEA confidence interval	(0.032, 0.054)	narrow
NNFI	0.910	≥ 0.9
IFI	0.921	≥ 0.9
CFI	0.919	≥ 0.9
Normed chi-square	1.289	>1; <2
AIC	−296.241	Small values

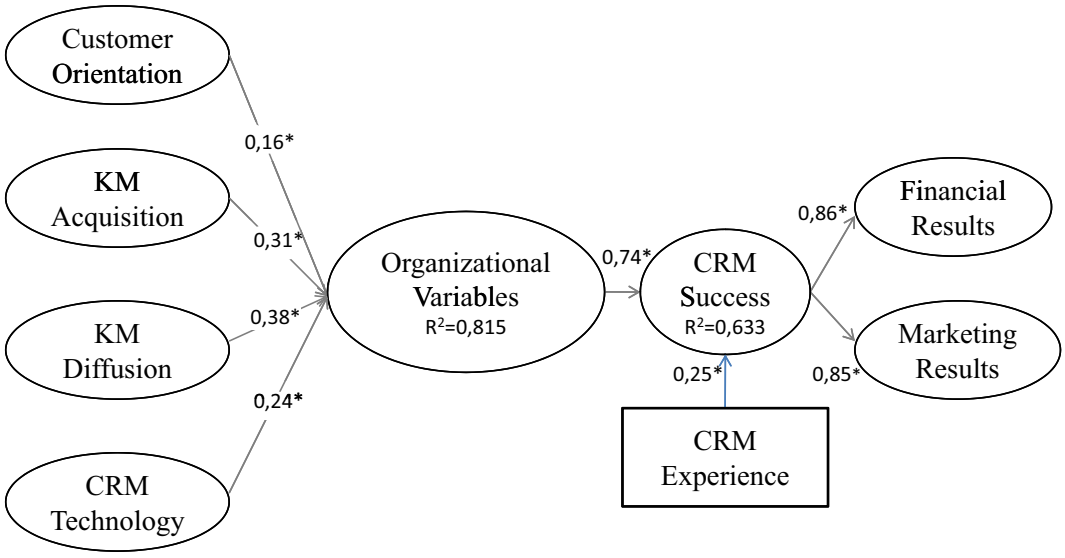

Fig. 1. Structural model for CRM success.

Finally, evaluating the fit of the structural model, we observed that, in this case, all the coefficients estimated in these equations were significant. Fig. 1 shows the estimations of the standardized regression coefficients. All the *t*-values (critical ratios) exceed the reference value of 1.96 for a significance level of 0.05, which means that the estimated coefficients were statistically significant (robust statistics were used in these calculations). Moreover, the coefficient of determination of CRM success rises to 0.633, which means that 63.3% of the variability of them was explained by the improved model.

4. Analysis of results

In general terms, we have found positive influences in CRM success of all proposed factors (KM, organizational, technological, customer orientation and CRM experience). However, contrary to the idea of KM capabilities being the most important factors affecting CRM success, the organizational variables arise as the most determinant, as they even have a mediating effect in the relation of the other factors and CRM success. Likewise a large number of studies (Mendoza et al., 2007; Nguyen, Sherif, & Newby, 2007; Ryals & Knox, 2001) we found the organizational variables (strategy, top management support, organizational structure, human resources) to be the key success factors for CRM. The estimated model shows that the organizational variables are antecedents of CRM success and are, in turn, affected by the variables KM, CRM technology and customer orientation. Consequently, hypothesis H2 was accepted.

On the other hand, the variables KM, CRM technology and customer only have an indirect effect on CRM success, meaning that they impact CRM success influencing the organizational variables. Therefore, hypotheses 1, 3, and 4 were only partially confirmed, since these variables only impacted CRM success in an indirect way. Similar to Zablah et al. (2004) we found that the KM process is highly dependent upon the human resources of a firm and other organizational variables.

In addition, CRM experience also had a direct effect on CRM success, so the hypothesis H5 was confirmed. In this sense, Hart et al. (2004) empirically analyzed the effect of the level of CRM experience on the effectiveness of the strategy from an organizational learning perspective. Similarly to us, they found that using CRM and having experience in the strategy improve the firm's ability to obtain effective results from this strategy, and that productivity and the benefits of CRM increase the longer firms have been using the strategy.

5. Conclusions

Results of the empirical test of the model confirm the fundamental role of the organizational factors (aspects to do with the leadership of the top management, human resource management, functional integration, and organizational structure) in the implementation of CRM. Although the literature has emphasized the role of KM as the key determinant of CRM success, according to our analysis, the organizational variables are the real antecedent of it, since they mediate the effect of the rest of the variables (including KM capabilities, technological and customer orientation factors) on CRM success.

These findings show that even if the firm carries out KM initiatives, acquires the most advanced technology and tries to generate a customer-centric orientation, if these initiatives are not integrated into the organization, the firm does not redesign its organizational structure or processes, organization members do not all participate in the project, and change is not lead appropriately, the implementation of CRM will not be successful.

Additionally, although we consider CRM as an IT-enabled business strategy, the current analysis shows that simply introducing KM initiatives or CRM technologies does not generate advantages for the firm or translate into a positive impact on the results. In order for the initiatives to be successful and represent a source of competitive advantage, the firm first needs to engineer a change at the organizational level.

Examining the results obtained here from the resource-based perspective, the current findings are consistent with that theory, which gives a special role to internal and organizational aspects as determinants of the firm's success. Thus according to this theoretical approach, the efficiency and success of firms will be a function of their abilities, skills and competences in developing a management of the resources that facilitates the creation of sustainable competitive advantages (Barney, 1991; Grant, 1991). In our case, the results show that only when the KM capabilities, the CRM technology and the customer-centric orientation are integrated into and internalized by the whole organization, will the firm create an organizational capability in CRM that is difficult to imitate and reproduce and hence a source of sustainable competitive advantage.

Finally, analysis of the model shows that experience in CRM (number of years firm has been using the system) is also an explanatory variable of CRM success, since it has a direct effect on it. In other words, the results show that as firms use CRM, they experience an organizational learning that helps them to use the strategy more efficiently, and so the results of the strategy improve. Consequently, these results provide empirical evidence that CRM is a long-term strategy, so that as firms become experienced in the strategy, organizational learning takes place, as well as the organizational change necessary for the firm to benefit from an improvement in the effectiveness and the results of CRM.

6. Limitations and future lines of research

There are a number of limitations of the reported research, as well as areas for future research, that are worth mentioning. Regarding the limitations, first, the use of cross-sectional data prevents us from examining the evolution in time of the phenomenon under analysis. Second, although the sample is similar to that used in various previous studies of the sector, the sample size is rather small. In order to solve, partially, this problem we used a random sampling technique in order to get statistically significant data from the population. Third, the use of managerial perceptions (from the managing directors or marketing directors of companies) to evaluate the different model variables and the results of CRM could be considered also as a limitation. Asking to more people in the same company and using other methods (financial data) to measure CRM success would help to solve this issue. Four, the empirical study has focused specifically on the Spanish hotel sector, so the results obtained here may not be entirely generalizable to other sectors of activity or other countries.

The first possible future line of research is to carry out studies using larger samples and longitudinal data that allow us to explain better the observed relationships and their temporal evolution. Studies at the international level would also be useful in order to test the validity of the model using data from other countries. Another possibility is to design empirical studies that consider the perceptions of the various agents involved in developing CRM: managers, employees, and customers. Future research could also add new explanatory variables to the model. Finally, the success model developed here could be applied to other segments of the services sector, as well as other sectors of activity, in order to test its generalizability.

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