Using CRM data: Modeling and measuring the effect of sales force knowledge on customer decision making

While CRM investments and initiatives are increasing, questions related to effectiveness measures raise. As a marketing information system, CRM contribute in the improvement of market and customer knowledge. The aim of this research is to examine if CRM usage influences sales force knowledge and to what extent it can help customers in their decision making. A conceptual framework is drawn on CRM/IT literature and an exploratory qualitative investigation's findings. Then a conceptual model is designed and tested among a large sample of customers. The results indicate the positive impact of CRM usage by sales force on their knowledge. Also, product and customer knowledge have a positive effect on customer decision assistance and salesperson empathy. Research limitations and further contributions are then provided.

Introduction

In the recent years, CRM initiatives come to the front of companies' strategies to face a context of more competitive markets. Forester Research's report on CRM trends for 2011 indicates a permanent increase of investments in CRM to ensure better value creation and customer equity. One of the main followed objectives is to have a 360-degree view of the customer to make each customer interaction an opportunity of improving satisfaction and maximizing relationship profitability. Through its centralized data base system, CRM represents a huge channel for marketing and customer information flows. Thanks to its boundary spanning position, the sales force plays a crucial role in processing and conveying this information to realize market orientation and customer centricity. In addition to that, customer satisfaction toward sales force interaction has been identified as the most important dimension of overall customer satisfaction in industrial settings (Homburg and Rudolph 2001).

As CRM market is reaching a maturity phase, companies begin to overpass the adoption issues and start facing new challenges. One main question is: how to manage effectively CRM? Especially in terms of finding the balance between data collection and analytics and relationship monitoring. Knowledge generated from CRM should be oriented toward understanding market and customer value and modeling or estimating customer behavior. Customer data management remains a real challenge for many companies and business analysts today (Forester research, CRM trends 2011). From sales force point of view, CRM dedicated applications or SFA represent a knowledge base from which sales activities can be tracked and scheduled and customer relationships improved (Ahearne et al. 2008; Day 1992).

However, while most research studies examined the issues of CRM/SFA adoption by organizations and sales force or the benefits of CRM/SFA usage on salesperson individual performance (Engle and Barnes 2000; Ahearne et al. 2008; Widmier et al. 2002; Keillor, Bashaw and Pettijohn 1997; Speier and Venkatesh 2002; Zablah, Bellenger and Johnston 2004), insights on the contribution of CRM that simultaneously connect the benefits for the sales force and the impact on the customer side remain scarce. Many calls have been made within academia and companies like Forester or leader editors like salesforce.com to integrate the customer perspective while examining CRM or sales technology effectiveness. Such customer based metrics might reveal the effective ROI in CRM since it's oriented toward customer value creation (Honeycutt et *al.* 2005).

This article suggests that the true value of CRM generated knowledge lies in the capacity of salespeople of developing a complete picture of the market that profits to customers. The intent is to help managers and sales force to overpass the productivity focus to take a customer oriented approach that considers customer decision making. Drawing on literature on IT and CRM benefits and a qualitative exploratory investigation, a conceptual framework is then developed and hypothesized relationships tested from the customer's perspective.

Literature review and model development

CRM and sales force performance

Customer relationship management as a ''software solution'' emerged during the IT capabilities shift in the 1990s as a word referring to "information-enabled relationship marketing'' (Ryals and Payne 2001). From an academic point of view, CRM is the result of

the evolution of marketing paradigm from transactional to relationship approach (Gummesson 1997, Grönroos 1995). CRM is first a company philosophy and strategy that aims at aligning all processes to improve customer satisfaction and loyalty (Zablah, Bellenger and Johnston 2004). It seems that there is no agreement on what constitutes CRM on both levels: academic and managerial. Payne and Frow (2005) try to provide a synthetic definition by indicating that ''CRM unites the potential of relationship marketing strategies and IT to create profitable, long-term relationships with customers and other key stakeholders. CRM provides enhanced opportunities to use data and information to both understand customers and cocreate value with them''. Our approach of CRM will be in line with this definition by focusing on the applications dedicated and used by the sales force including sales force automation (SFA) and marketing or customers' data. Borrowing from IS and sales literature, we identify the most often cited benefits of IT/CRM/SFA and focus on those that pertain to salesperson–customer interactions and that are likely to be perceived by customers.

Previous studies underlined CRM benefits in terms of increasing marketing effectiveness by leveraging opportunity intelligence (Grant and Schlesinger 1995). As a main driver of CRM solutions, SFA module is dedicated to the organization and optimization of sales force activities. Various researchers advocate the positive impact of SFA applications on salesperson productivity (Hitt and Brynjolfsson 1996; Hunter and Perreault 2007; Moriarty and Swartz 1989; Wedell and Hempeck 1987). Pullig et al. (2002) demonstrate SFA applications contribution in terms of better account prospecting, development, and customer profiling. Timely and accurate information access offered by CRM solutions influences salesperson capacity to formulate alternatives, make effective decisions, stimulate more effective customer relationships, and increase productivity (Hill and Swenson 1994). The benefits of CRM dedicated applications are also related to efficiency. In fact, the automation effect is supposed to reduce the time spent on support and administrative activities like contract generation or activity reporting to optimize planning and sales call (Rivers and Dart 1999, Ahearne et al. 2005; Wedell and Hempeck 1987).

Moreover, the contribution of CRM in terms of information processing enables salespeople to explore market and customer data and then qualify leads and focus on critical elements that shorten sales cycle and enable sales execution. Jayachandran et al. (2005) underline the benefit of a better identification of leads or prospective customers that can be targeted for cross-selling and up-selling proposals (Hill 1998) as well as those who may no longer be viable sources of revenue. Finally, CRM tools usage enhances salespeople's ability to communicate clearly with customers and contacts (Hunter and Perreault 2007; Rice and Blair 1984; Sproull and Kiesler 1986), which improves their ability to propose a solution to the customer problem and close the sales deal. Some studies demonstrated that information technology helps the salesperson communicate benefits to the customer more effectively through interactive, participatory presentations that permit offers comparisons and position the product within a context directly relevant to the customer (Ahearne et al. 2008, Khandpur and Wevers 1998). In their study, Ahearne et al. (2008) found a positive effect of SFA on sales presentation quality and adaptive selling behaviors.

Qualitative exploratory study

A review of the literature allows for the identification of IT and CRM applications potential benefits. In order to both confirm the existence of these benefits and possibly reveal new ones, we lead an exploratory qualitative investigation. In depth semi-structured interviews on perceived benefits for the customer are conducted with a matched sample of CRM editors,

sales managers, salespeople and their customers, constructed through a cascade process. The investigation adopts a methodological triangulation that combines thematic content analysis, lexical analysis and cognitive mapping.

Thematic content analysis consists of the dissection of interviews corpus into meaningful semantic units called themes based on an aggreement based coding process (Cohen's Kappa=80%). We follow a two-step coding procedure according to Miles and Huberman (1994). First, the step consists of comprehending, synthesizing, and sorting inductive themes both manually and using the *NVIVO 2* software. In the second step, we refine our thinking about codes by theorizing and generating meta-thematic categories that match the themes (nodes for *NVIVO*) and concepts previously identified in the literature based on inference process (Miles and Huberman 1994). The following table indicate an extract of the main results of this analysis step.

Table 1. Thematic coding of customers' interviews – Extract of results' table

Themes First-level coding	Meta-Thematic Categories (perceived benefits by customers)	Coding Frequency	% of Total
Information exchange Customer information Offer knowledge	Product and market knowledge	35	19.1
Responsiveness Effectiveness Service	Responsiveness	30	16.4
Customer knowledge	Customer knowledge	9	4.9
Adaptive selling	Adaptive selling	7	3.8
Decision-making uncertainty	Decision-making uncertainty	5	2.7
Proactivity	Proactivity	4	2.2

Then, lexical analysis is operationalized to (1) characterize the corpus according to indicators and statistical measurement and (2) help rapid understanding of the corpus through lexical approximation. The focus was more on the words cited most frequently by the interviewees when they mention CRM contributions from the customer's perspective. Finally, Cognitive mapping enables to capture in depth interviewees' thoughts and ideas about CRM/SFA benefits for the customer and shed light on value creation mechanisms. We adopt cognitive causal mapping following an unstructured method (Cossette 1989) and using Decision Explorer software to design individual and aggregate maps to represent mental structure of interviewees. Similar to a research model, we refer to every variable as a concept or node, and each arrow refers to a causal cited relationship (Axelrod 1976). Finally, we draw individual maps for each interviewee and provide customers' average map in the figure below.

Figure 1. Customers' average causal map
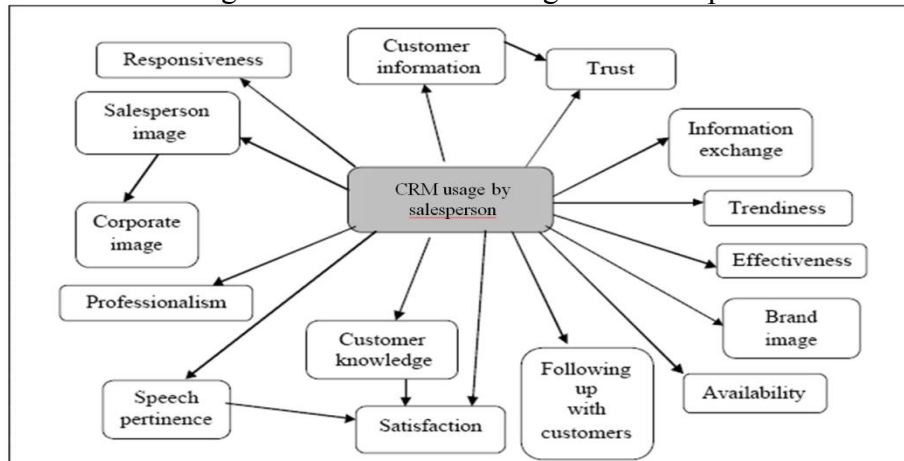
The map indicates customers' perception structure of CRM usage by salesperson. The usage of these applications seems to convey different information on salesperson, the supplier and the brand.

In general, the qualitative investigation provides results on the impact of CRM usage on salesperson perceived professionalism, relationship consequences (satisfaction, loyalty,…). For concision reasons and given our research object, we will only focus here on the issue of knowledge transfer from salespeople to customers. Literature review combined to qualitative insights from our exploratory investigation reveal (1) value creation processes of CRM contribution to the salesperson-customer interaction from customer's perspective, (2) underlined structural perceptions of benefits indirect realization levels. Based on theory and qualitative results, we build a conceptual model of the effect of CRM usage by salespeople on customer decision making.

Conceptual framework

Salesperson competence

The concept of competence refers to the customer's perception that a salesperson is knowledgeable in important areas such as specific customer needs, product knowledge, industry trends, and competitive products. These critical areas of knowledge have been identified by Behrman and Perreault (1982). Technical or product knowledge is related to the technical aspects and usage situations (Behrman et Perreault 1982). Second, market knowledge related to the industry, competitors and trends (Narver et Slater 1990). Finally customer knowledge manifested by customer needs anticipation and understanding (Day 1994 ; Huber 1991 ; Sinkula 1994). Customer knowledge is highly important in sense that it contributes to a better satisfaction (Buehrer, Senecal et Pullins 2005). Given markets' structure and the intensive competition, the degree to which the sales force is knowledgeable attests of its business environment mastering and represents a source of value creation and loyalty. In this stream, different studies demonstrated the importance of knowledge for sales effectiveness (Behrman et Perreault 1982 ; Leigh et McGraw 1989 ; Sujan et *al.* 1986 ; Weitz 1978 ; Weitz et *al.* 1986). Knowledge constitution is the result of a process of information search, collection and memorization about the products and the market (Weitz et *al.* 1986). In fact, because of its boundary spanning position, the sales force role depends heavily on information processing and dissemination abilities (Ingram, La Forge and Schwepker 1997). Sujan et *al.*

(1988) emphasize the necessity for sales managers to favor and encourage access to market data by salespeople to ensure their effectiveness.

The capacities offered by CRM applications in terms of information gathering, storage, access and diffusion facilitate these processes for the sales force (Glazer 1991 ; Fletcher 1990 ; Huber 1991; Marshall, Moncrief and Lassk 1999). The usage of sales force dedicated applications in CRM allows salespeople to improve their market and customer intelligence through a better quality and quantity of information. Ahearne et *al.* (2008) find positive correlations between SFA/IT usage and market and technical knowledge. In fact, CRM systems are based on a centralized data base representing an organizational shared memory recording market and customer information (purchase records, order's amounts, customer preferences, products ranges, competitors' offer, etc) on a regular and progressive basis (Day 1994 ; Sinkula 1994). This data base is supposed to be updated by marketing and sales department. Moreover, CRM architecture enhances information sharing about marketing data and customers among the sales force teams thanks to remote access and rapid requests execution. Then, we hypothesize a positive effect of CRM usage on the three levels of salesperson knowledge : product, market and customer.

Customer decision making

Decision making process refers to a set of different steps related to problem formulation, objective setting and finally identification and generation of alternative solutions (Cyert and March 1963; Mintzberg, Raisinghani and Theoret 1976). In business context, customers' decision making process is based on information requirements, decision-making time, people involved in buying decisions, and buying criteria (Sharma and Pillai 1996). In addition to that, Szymanski (1988) suggests that companies have preferences for some specific sales strategies and approaches. Tailoring the sales strategy to better fulfill customers' specific needs is then a valuable source of competitive advantage. As a major communication medium and brand representative, the sales force plays a crucial role in accompanying and optimizing customers decision making process. This task is accomplished through providing critical information and showing the capacity of meeting expectations and integrating customer's constraints (Atkinson and Koprowski 2006). Then, it seems obvious that the sales force's role depends on its expertise and cognitive capacities. Stringfellow et *al.* (2004) underline the necessity of aligning three critical levers to build a successful CRM: insight into customer decision-making, information about customers, and information-processing capability. For example, data base marketing permits to permanently sharpen customers' segmentation through a better profiling. Moreover, accessing customer data base helps salespeople in having enough information about customer profile to adjust behavior and offer before and during the sales call. Technology capacities allow the adaptation of sales presentations structure and content according to customers. Furthermore, CRM usage influences the way of conveying information to customers in timely, accurate and adapted manner. We identify two critical components in the customer decision process: decision making assistance and empathy.

Concerning decision making assistance, the main challenge for customers remains risk monitoring and reduction to ensure decision quality. Customer uncertainty may be related to different factors: the amount of information available, decision consequences forecast and trust in decisions (Achrol and Stern 1988). The improvement of salesperson knowledge (informing the customer), personal attributes (proposed alternatives) and behaviors (customized information and assistance in problem solving) through CRM is likely to help customer in the decision making process.

On the other hand, the contribution of the sales force in customer's decision making process depends also heavily on its ability to adopt customer's perspective. This refers to the concept of salesperson empathy which is the capacity of identifying and understanding customer perspective (Marks 1988). Main (1985), demonstrated that empathy was positively correlated to sales efficacy. When manifested by the salesperson, empathy is perceived by the customer as a similarity or convergence factor and contributes then to decision making (Pilling and Eroglu 1994). Expressing empathy by the salesperson relies on competence, personal attributes and behaviors to convince the customer of his or her capacity to understand the customer specific situation and to provide the best suited solutions. Consequently, the improved salesperson knowledge thanks to CRM will positively impact customer decision making.

Figure 2. Conceptual model of the impact of CRM usage on customer decision making
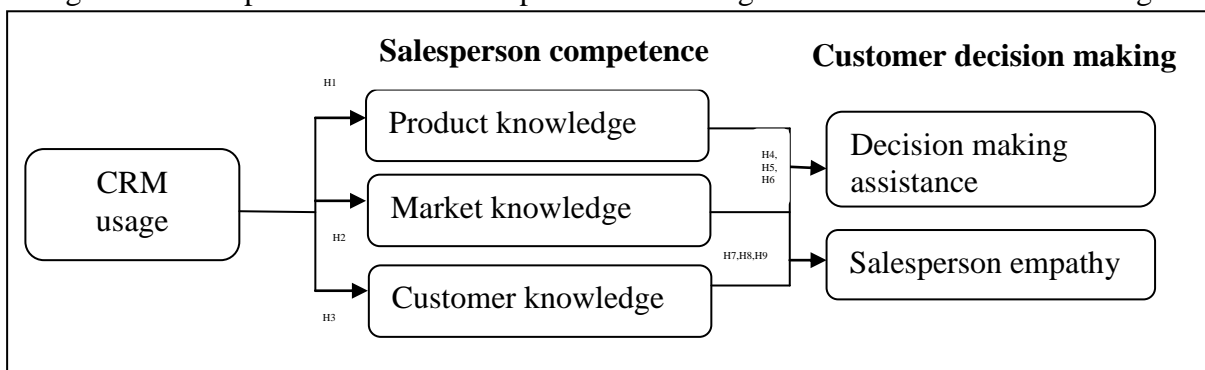
Method

Survey

To collect data, an online survey questionnaire has been administrated among a sample of 280 customers from different industries like retailing, pharmaceutical, banking and insurance, etc and who are dealing with salespeople using CRM/SFA applications. 249 respondents have been kept after outliers' removal from the database. 68 % of respondents know their referent salesperson for at least two years. To better apprehend variance, customers were asked to answer the questions by comparing and contrasting with a case of a salesperson who is not using CRM.

Measures

We adapted measures from previous relevant studies when available or created them specifically for this research. All measures are multi-item and relied on five-point Likert scales (1: Strongly disagree, 5: Strongly agree). CRM usage has been measured on the basis of the scale adopted by Ahearne and Schillewaert (2000) with five items. This scale measures the usage and usage frequency of CRM applications, the integration of these applications to the different tasks and the analysis of information and market data. As far as, the salesperson competence is concerned, three scales have been adopted. Market knowledge scale contains three items (information about competitors, trends and events) and is inspired by the scale of Behrman and Perreault (1982) which has been reused by Ahearne and Schillewaert (2000). It's the same case for the technical/product knowledge (product characteristics and functionalities, offer trends and innovations, company's production and technical

developments). The scale concerning customer knowledge has been structured with four items based on our qualitative results and the study of Schell (2003) (customer's firm, customer's firm industry, customer's constraints, customer's needs). The scale of customer decision assistance is adapted from the SOCO scale of Michaels and Day (1985) replicated within customers. It contains four items that refer to problem solving, decision quality and offer adaptation. Finally, we relied on three items scale for empathy relied on an adaptation of SOCO scale and Schell (2003) study (help in reaching buying's objectives, sensitivity to costs reduction and taking into consideration the satisfaction of the buyer's customers). Reliability of individual items is assessed by examining the loadings of the items with their respective latent construct; loadings of less than .5 may represent poorly worded or inappropriate items and thus should be eliminated from the model (Hulland 1999). As the table reports, all constructs have acceptable levels of reliability, with the composite reliability coefficients ranging from .72 to .81 for each construct, exceeding the .7 recommended threshold (Nunnally 1978). Results related to the SEM confirmatory scales analysis are also provided.

Table 2. Measurement exploratory and confirmatory results

Construct	Reliability Cronbach's alpha	KMO index	Explained variance	Model fit RMSEA	Reliability Jöreskog's Rhô	Convergent validity Rhô
CRM usage	.81	.818	58 %	.071	.82	.48
Market knowledge	.80	.684	71 %	.029	.80	.59
Product knowledge	.73	.673	65 %	.067	.73	.48
Customer knowledge	.75	.743	57 %	.049	.48	.19
Customer decision assistance	.80	.789	62 %	.056	.80	.51
Empathy	.72	.666	64 %	.040	.73	.48

Analysis and discussion

The results indicate a positive effect of CRM applications usage on salesperson competence. CRM is significantly related to market knowledge (H1; $\beta=0.408$, $R^2=0.163$, $p<0.05$). Furthermore, CRM influence positively product knowledge (H2; $\beta=0.322$, $R^2=0.1$, $p<0.05$) and customer knowledge (H3; $\beta=0.388$, $R^2=0.147$, $p<0.05$). Concerning the effect of salesperson's knowledge on customer's decision assistance ($R^2=0.218$). The hypothesis related to market knowledge was not supported (H4; $\beta=-0.162$, $p<0.05$). Product knowledge has a positive and significant effect on customer decision assistance (H5; $\beta=0.460$, $p<0.05$). It's the same case for customer knowledge (H6; $\beta=0.137$, $p<0.05$). Then, only product and customer knowledge showed positive and significant influence on customer decision assistance. The test of hypothesized effects of salesperson knowledge levels on empathy ($R^2=0.219$) indicate: (1) the positive but non significant effect of market knowledge on empathy (H7; $\beta=0.015$, $p=0.814$), (2) the positive and significant effect of product (H8; $\beta=0.388$, $p<0.05$), and customer knowledge (H9; $\beta=0.156$, $p<0.05$), on empathy.

Figure 3. Correlation between CRM usage and perceived salesperson knowledge
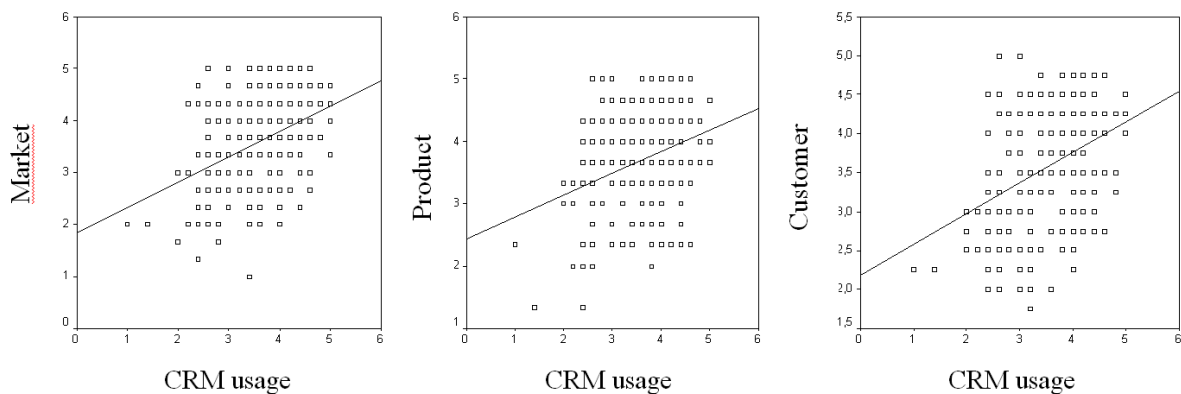
According to our findings, the usage of CRM applications influences positively salespeople's perceived knowledge on three levels: market, product and customer (see Fig.3). Given the customer's perspective adopted in this research, sales force's knowledge improvement is shown through interactions with the customer, especially during the sales call but also during critical moments or ''moments of truth'' when the salesperson is requested for specific needs, advice or information. The way sales presentations are structured and tailored, the process of argumentation and the salesperson demonstrated professionalism enable customers to notice this improvement. In fact, CRM database capacities facilitate access to timely and accurate information when needed. The salesperson will be also more knowledgeable about innovations and customer records (procurement history, motives and preferences) to adapt the selling proposition. These results indicate also the importance of customer knowledge in addition to the product and market one to establish relationships with added value. Thanks to segmentation and a better profiling of leads, sales force demonstrates a better expertise in mastering customer specific situation and constraints.

Also, the perceived impact of CRM usage on salesperson different knowledge levels is the consequence of the progressive balanced information sourcing adopted by the salesperson. In fact, since the sales force has access to the centralized CRM data base and to different dedicated sales applications, then each salesperson choose to use the information he or she considers as necessary to prepare the call, solve the customer's problem or close the deal. Furthermore, through different interactions and call visits, salespeople memorize some information that they don't need to recheck. These statements can also justify the differences noticed in terms of explained variance of knowledge levels. In the main stream, the way the company implements CRM, communicates on the projects objectives and expected benefits and chooses to align performance evaluation criteria will drive salespeople behaviors and usage levels of the applications. Finally, the differences in terms of CRM information usage may be related to the quality, updating and exhaustiveness of database as perceived by sales force. This relies mainly on the marketing and sales teams efforts to share and enrich the database.

As far as the impact of the improved sales force knowledge, the findings confirm only the role of product and customer knowledge on customer decision assistance. This result could be explained by different reasons. First, during buying decision process, customers can be more interested in the ability of the salesperson to master his/her offer and his or her capacity of adapting it to the specific needs and constraints of the customer. Market knowledge is generally a domain that the customer knows and that can also be mentioned in other different

sales presentations. Second, the non significative impact of market knowledge can be explained by the approach adopted by salespeople that is sometimes more focusing on the offer and the willingness of manifesting an expertise in terms of customer situation and record. Finally, this result can be related to the maturity level of database content or usage that sometimes doesn't integrate yet market aspects. In addition to that, results demonstrate that the positive effect on empathy is only driven by product and customer knowledge. This result could seem logical in sense that empathy drivers and the scale's items refer to a general ability of the salesperson to put him or herself in the customer situation. Then, we can imagine that this ability perception will be strongly related to the knowledge levels that are the closest to the customer.

Research contributions and limitations

The current paper helps understanding how CRM usage by sales force may be beneficial to the customer who represents a major target of such an investment. Also, the approach of this research is totally in line with the stream focusing on CRM as relationship leveraging process and with many academic and managerial calls for customer centricity. In addition to that, this research adopts the customer's perspective. Based on a literature review and a qualitative investigation we build a conceptual model that involves sales force knowledge and customer decision making. The investigation uses a methodological triangulation combining thematic content analysis, lexical analysis and cognitive mapping. The study contributes in revealing the value creation mechanisms related to the usage of IT/CRM by sales force. The comprehensive generated model is tested within customers' sample.

From theoretical standpoint, our findings results provide insights into underresearched and intangible facets of the return on investment on CRM/SFA. In particular, we show how the information properties and cognitive capacities result in relational outcomes. The results confirmed the positive impact of CRM usage on salesperson perceived knowledge. This indicates an effective approach of measuring ROI especially while some companies are nowadays drown in data and don't manage to reap profit from it. Also, the approach consisting of linking salespeople knowledge to customer decision making integrate the whole process and enables to overpass the simplistic and limited productivity objective associated to CRM/SFA. As far as methodological contribution is concerned, the research combines three methods, especially cognitive mapping. This can be considered as innovative since the method has been rarely used in marketing and sales research. Furthermore, it allows coming up with mental structure of interviewees' thoughts, beliefs, and causal interactions to apprehend a complex phenomenon that involves individuals and technology.

On the managerial side, our findings demonstrate the extent to which the usage of CRM by salespeople improve their expertise and help customers to make effective decisions. This approach will lead managers to address the issue of CRM data storage and quality. Also, the developed model provides an insight to managers on the way CRM benefits are realized in direct and indirect manner. In fact, investment in CRM software packages cannot be justified if it doesn't lead to new customer value propositions that increase share, turnover and profitability. Then, investments in CRM/SFA might be better justified and channeled in a profitable way that reduces potential risk of misfitting customer needs and lead to satisfaction. In fact, firms should move toward an approach of CRM that involves the customers -the central focus of all marketing and the key to gain competitive advantage- by considering the relational consequences. Finally, if companies communicate clearly on this focus, they might improve the acceptance and usage of CRM applications by salespeople.

Future research should extend the model by testing the impact of the improvement of customer decision making on key variables like satisfaction, loyalty, commitment, or predisposition to recommend the supplier. To reduce the bias of variance common source, model test should consider a dyadic approach that combines both perspectives: salespeople and customers ones. Furthermore, to improve model test quality, moderating variables related to the customer attitude toward IT or salesperson familiarity should be integrated.

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