

## Technological Customer Relationship Management (CRM): An Enterprises Business Partnership

### Abstract

*Customer Relationship Management* (CRM) represents a technological application based on the philosophy of Relationship Marketing and it recommends the interaction with high value consumers. Relating CRM to new social technologies, CRM 2.0 or social CRM deals with the relationship between companies and customers using online platforms. Through a comparative study based on qualitative indicators, this paper draws a relationship between CRM theory and practice. In two high technology organizations it was identified that, although the indicators are appropriate to the business activities, their usage and understanding are oriented by the nature of businesses and by the company characteristics.

**Key-words:** Customer Relationship Management; Databases; Data Mining Processes.

### 1 Introduction: Definition of Customer Relationship Management (CRM) in the Management Perspective

In free translation, it is possible to conceptualize *Customer Relationship Management* (CRM) as the ‘Management of the Relationships with Clients’. It is a management approach aimed at identifying, attracting and retaining customers. The increase of transactions with high value customers is recommended (WILSON, DANIEL, McDONALD, 2002), that is, a marketing orientation focused on retaining value. It is also understood as the automation and improvement of business processes, associated to Customer Relationship Management. Depending on the orientation of the research, it can be both a marketing subject and a subject of the technology area. According to Dwyer, Schurr and Oh (1987), for instance, CRM represents the extension of exchange relationships that contribute to the differentiation of products and services, which can provide competitive advantage. The goal of this kind of application is to focus on relationship programs to offer the customer a high level of satisfaction, higher than the one provided by competitors (WINER, 2001). In this sense, “CRM is a business strategy; not only a *software* apparatus” (RAGINS, GRECO, 2003, p.29). Day (2002) mentions that it is of high importance to maintain a loyal customer base. These customers represent a source of profits to the company.

Wilson, Daniel and McDonald (2002) present CRM as the set of processes and technologies to support planning, implementation and monitoring of consumers, distributors and interaction influences on marketing channels. By highlighting this strategic criterion at first, Ragins and Greco (2003) later warn about the need to create an intelligent technology application as a way to obtain the effectiveness of CRM practices. As a first step for a complete solution, Winer (2001) focuses on the construction of a customer database adjusted to the organization. CRM technological initiatives, according to Croteau and Li (2003), are based on support systems to decision and integrated sources of information. They must necessarily provide a comprehensive individual client view as well as the customer specific needs.

Following the latest trends in CRM theory and the concept of web 2.0, social CRM (or CRM 2.0) stands as a new marketing tool to evaluate customer behavior and relationships. Social CRM incorporates a new set of social tools and strategies to its traditional operational functions, meeting the connectivity demand of generation Y and Z customers (GREENBERG, 2010). Social networks are developing an important role in providing critical data do improve relations with customers and partners (MOHAN, CHOI, MIN, 2008).

Once the essence of CRM is defined, as its relations to new social tools, its technological aspect will be presented through central topics, which configure the qualitative indicators used in the empirical stage of the study. After that, the method used to conduct the research is presented. Finally, the discussion of the results found in the comparison between

organizations and the concluding remarks. The following discussion in this paper is the technological elaboration of a CRM application.

The objective of this research is to provide an appropriate classification for comparative analyses that adopt CRM. To consolidate this goal, the technological indicators will be generated and, later, empirically investigated. These indicators are the Information Technology; the Information Tools (Database and Data Warehouse), Data Mining process, and the stage of Sales Force Automation.

## **2 Main Technological Indicators related to CRM**

The technological CRM indicators built are divided into four conceptual sets for a further empirical analysis. The first set shows the wide view of the use of Information Technology (IT). In the second characterization, entitled Information Tools, data collection and client data storage were incorporated, including Database (DB), *Data Warehouse* (DW) and their respective definitions.

Specific to the processes of Data Mining and represented by the application of the *Data Mining* (DM) tool, the next indicator was created. Finally, it is presented the technological aspect of sales, related to the *Sales Force Automation* (SFA) system, which, in this study, refers specifically to the process of conversion of traditional sales into electronic or automated sales. As a first conceptual elaboration, the IT indicator is presented.

### **2.1 Information Technology**

Information Technology (IT) is the umbrella term that encompasses technologies used to create, store, change and use the information in its different configurations (PEPPERS & ROGERS GROUP, 2004). In marketing perspective, says Shoemaker (2001, p.178), IT is “the nervous system which evolves the forms of marketing organization.” In CRM, IT responds to the computer requirements of the system, represented by *software* and *hardware*. Pedron (2001) postulates that the CRM strategy is closely related to the advances of IT and, through this tool, it is possible to seek customer loyalty. Nogueira, Mazzon and Terra (2004, p.2) highlight that IT and its automation “enable the provision of individualized versions of products and services aiming to serve the customer at a reasonable price.”

Bretzke (2000) warns that, at the moment of defining and adopting the software component, it is necessary to guide this choice based on the nature and relational model the organization intends to establish with the customers. Brown (2001, p.161) adds that a “CRM solution requires the adoption of new technologies to reach transparency and visibility in business value chain and between business and its customers”. Social CRM is also important as a new breed of customer require corporate transparency, authenticity and interaction (GREENBERG, 2010). Boon, Corbitt and Parker (2002) conclude that the IT infrastructure is usually described as a set of services, including communication management, management standardization, safety, IT training, management of services and applications, data management and administration and IT research and development.

For Hansotia (2002, p.129), IT is “the facilitating element in the implementation of CRM strategy”. Srivastava et al. (2002) corroborate and complement stating that the simultaneous maturation of IT data management, such as *Data Warehousing* and technological analyses like *Data Mining*, can generate the ideal environment to make CRM a systematic effort. Kellen (2002, p.2) proposes that “the CRM *software* is really a set of applications for the management of customer data”, where “IT enabled channels such as the *Internet*, allow the *one-to-one* dialogue with current and potential customers, through individual negotiation” (WILSON, DANIEL, McDONALD, 2002, p.194).

Finally, Campbell (2003, p.375) states that organizations which use IT adopted it “to focus on the use of CRM in search of databases necessary to evaluate customer status and profitability”. These databases refer to customer data, which can be used in traditional Databases or in consolidated data warehouses, such as *Data Warehouse* applications. The characteristic of these tools is solidified in the ability to generate information through data included in the system, or through information available practically in real time. Focusing on these IT tools, the global indicator “Information Tools” will be presented in the next part of the theoretical foundation.

## **2.2 Information Tools**

The Information Tools will be conceptualized, for analytical purposes considering three fundamental groups, namely, respectively: Database (DB), as a transactional instrument; customer data, which permit business intelligence in relation to customers, and also; *Data Warehouse* (DW), as the storage of already consolidated data, a kind of memory of company transactions.

A Database (DB) is understood as a set of organized and structured data, subject to use. In this case: the company transaction with clients. Peppers & Rogers Group (2004) defines DB as any set of information. It can be either a simple shop list or a complex set of customer information. The use of internet and social networks ease the access to this kind of information, since customers describe their experiences and tastes through blogs, public profiles and even companies forums. Nogueira, Mazzon and Terra (2004, p.13) state that “a good data management is essential to CRM practices”. It is a kind of process that never ends and that is constantly evolving. Customers transact over time and, these transactions are systematically recorded and updated in the DB. Pedron (2001) mentions that the DB is used in customer behavior analysis, in which are performed processes of checking and classification of market segments and of the individual in his own group.

Missi, Alshawi and Irani (2003) state that the quality of data and database integration tools is projected to interactive operation and management of great amounts of distribution. Such information is unstructured in different taxonomies, thus, allowing combinations, different arrangements, as well as reports based on information from different sources. This can provide the CRM operator with a unified view of information. According to Dowling (2002), the CRM run by database presents significant advances in the identification of profitable customers and an alert to non-profitable ones. For Pedron (2001), the DB structure presents four main groups. They refer to current customers, potential customers, lost or forgotten customers and, dealers or brokers (who provide useful indirect information about the consumer preferences). In these DB subgroups updated information about customers must be included to be used in CRM initiatives.

Regarding Customer Data, in CRM it is important that they be reliable as well as updated and available in time for use. The user of CRM solution needs reliable customer data to perform marketing and sales actions appropriately. For Nogueira, Mazzon and Terra (2004) it is important to eliminate problems that can affect the CRM Database, such as redundant and duplicate data. It is important to give attention to these aspects, since the CRM data administration must consist in a solid base in the use of new techniques for data analysis. Attracting and recording the answers provided by consumers are the most critical parts in the process of identifying and collecting relevant and reliable data, either in relation to established customers or in relation to prospects.

For the data obtained to be valuable for the company, Pedron (2001) states that the value of the process of marketing communications lies in the fact of being naturally circular, that is, the customer data are collected, analyzed and stored. For every new interaction, data must be immediately updated in the DB. Thus, it is possible to know the result of marketing actions and to adjust the other plans based on customer responses in time to make other employees of the

company also understand the customer based on customer historical records of interactions and transactions with the company.

According to Bolton and Steffens (2004), the ability of organizations that employ CRM to understand customer privacy and preferences throughout the transactions guides campaigns and processes to centralization, marketing plans, customer data management and minimizes the risks of not knowing the profile of existing or prospective customers.

According to McKim (2002), data help find what is necessary for effective communication with the customer. In this sense, CRM means a marketing action of *high-touch* type and not only a *high-tech* action. The purpose of using customer data is to better serve and not only to have a technological application. The use of the data inserted in a customer DB is directly related to strategic decision making. For Bretzke (2000), the CRM strategy allows the company to become targeted to the clients, a process which is conducted by using the existing customer data by the IT structure, enabling the achievement of a sustainable competitive advantage. As highlighted by Hansotia (2002, p.121), the "CRM is essentially an intensive effort with customer data."

Missi, Alshawi and Irani (2003, p. 1607) say that "the essence of the CRM system implies understanding, controlling and optimizing business and data management," and Campbell (2003) says that for customer data to be used properly, they must be converted into information and this information must be integrated into business processes. After that, customer knowledge must be developed. The internal company processes generate and integrate customer specific information, which provide ideal conditions for companies to develop specific relationship strategies. Shoemaker (2001) says that the interactions between customers and transactions in process provide an abundance of data and information that must be transformed into customer knowledge. The *softwares* of customer knowledge provide tools available for the marketing actors to manage the process of transforming data into knowledge and, thus, develop the appropriate customer categorization.

According to Boon, Corbitt and Parker (2002), the data used in customer segmentation can include a number of events, for example, buying preferences and habits, income, education, *status* and family size, among a number of possibilities in data arrangement. Wilson, Daniel, and McDonald (2002) report that the segmentation can be seen as a simplification of the complex mess of dealing with a large number of individual customers, each with specific needs and aspirations and different potential value. In other words, Srivastava et al. (2002, p.18) state that "customer segmentation is the division of the total population of customers into smaller groups, called customer segments." Companies need to be selective when correlating and integrating data in the programs and marketing efforts by gathering appropriate customer information, thereby developing individual marketing programs (PARVATIYAR, SHETH, 2001).

Concluding the conceptual development of informational tools, *Data Warehouse* (DW), accounts for the supply of reliable information that supports the process of decision making. The fundamental difference between the DW and the DB is that in the DB data are current, that is, they are constantly changing. In the DW, consolidated data are stored, usually representing the annual exercise or other completed periods.

Nogueira, Mazzon and Terra (2004, p. 3) conceptualize *Data Warehouse* as "the generic name for the infrastructure of *online* data storage," which is used to store customer information such as transactions, phone calls, purchases, invoices, among others. There is synchrony between DW and transactional databases, although data are not changed directly in DW. An important aspect is the need for data to be transformed into information, since they are essential to CRM practices. *Data Warehouse* is important due to its functionality to store information in only one central location, which is later used in building the customer image. It is a tool that seeks to map and understand the customer, by

centralizing information and by being linked to the organization channels and departments, in particular customer contact points, the case of sales relationships.

*Data Warehouse* has a reason to exist due to the perceived need to integrate business data in only one place, so that they are available to all users involved in the decision-making levels of the organization (ANGELO, GIANGRANDE, 1999). As Pedron points out (2001) this systematization provides the organization with ways of knowing who the customers are, what their preferences are, the likelihood of not doing business with the company anymore, as well as ways of training the company to meet the needs and profiles of other preferences by these customers. Customer knowledge, says Swift (2001), configures the storage of historical information in detail and client-centered, allowing the company to be agile and responsive to the market, enabling solid marketing decision making, such as the determination of important points that require resource allocation.

For Brown (2001), *Data Warehouse* is fundamental and unrestrictive factor to the customization and creation of *one-to-one* marketing environment, through which it is possible for the company to substantially increase customer satisfaction. Srivastava et al. (2002) say that the implementation of *Data Warehouse* is an essential step to the analytical CRM, where data sources are designed for operational use. Day and Bulte (2002) explain that CRM depends on the organizational quality and performance in the extraction and shared management of information, which, converted into knowledge, can be used in consumer service. The conversion of data sources into information is a result of the analytical processes performed by the company, such as 'Data Mining'.

### **2.3 Data Mining**

*Data Mining* (DM) is responsible for analyzing information in a Database by using tools that seek trends or anomalies without prior knowledge of the meaning of data. It is an essential process in CRM strategies, especially in electronic commerce. In short, *Data mining* is the process of extracting and crossing relevant information, where customer behavior patterns can be mapped (PEPPERS & ROGERS GROUP, 2004).

Nogueira, Mazzon and Terra (2004, p.3) say that DM is "a process for extracting and presenting new knowledge, not previously detected, selected from databases for decision-making in action." Angelo and Giangrande (1999) say it can be defined as a data extraction, when run in database, aiming at obtaining useful and unknown information. Bretzke (2000) describes DB as a tool used in search of more profitable customers or customer segments more significant to the company. The main advantages of using it are the ability to guide the development of products to customers, reduce the distance from the final consumer, offer products and services with competitive prices and, add extra value for customers through segmentation and analysis of different types of customers.

Mining data, Srivastava et al. (2002), represents an analytical need. Its primary focus is the innovative knowledge, previously nonexistent or unavailable, used in order to predict the future and automate the analysis of the data sets. For Paas and Kuijlen (2001, p.57), DM is "particularly crucial to transform transactional data stored in *insights* about the customer needs."

Data mining technique is also considered when using approaching social CRM, since social networks are spread over the internet. From social websites customers behavior can be observed, improving companies' capacity do differ and deliver specific services (MOHAN, CHOI, MIN, 2008). Bolton and Steffens (2004) also state that it is necessary to know what kind of customer data are ideal to be collected by the company to make available complete interactions at the touch points between company and client, where is necessary to provide the appropriate kind of treatment and personalized

service. Fletcher says (2003, p. 249) that, in CRM systems, "companies collect and use customer information" in order to increase profit margins. There is a direct relationship between data analysis and the sales process. Having this prerogative in evidence, the theoretical stage is completed with 'Sales Automation. "

## **2.4 Sales Force Automation**

In the definition proposed by Peppers & Rogers Group (2001), Sales Automation or *Sales Force Automation* (SFA) refers to the *software* to automate the sale force, including the processes of contact management, forecasting, sales management and group sales. Hansotia (2002) says that the main operational focus of CRM is the technological platform that supports customer interactions and sales automation. Shoemaker reports (2001) that most CRM *software* providers are rooted in SFA. In this context, it is possible to understand that CRM is designed to increase sales and business management functionality. The primary functions of CRM directed the sales force are the contact management, location of accounts, account administration, incoming orders, proposal generation, support presentation, technical support and the sales process.

One of the major papers on SFA, Speier and Venkatesh (2002, p. 98), says that "automation technologies of sales force are increasingly being used in support of CRM strategies," and that their tools are often implemented to facilitate CRM processes, rooted in the philosophy of Relationship Marketing. By improving the speed and quality of information flow among salespeople, customers and the company, SFA tools support business processes. SFA tools vary in complexity and degree according to the integration, emphasizing in each case the organizational and existing IT infrastructure.

For Speier and Venkatesh (2002), some organizational characteristics can have significant influence on IT implementation, consequently, affecting acceptance of SFA. As studies in general show, salespeople react reasonably positively to SFA tools immediately after training. However, this initial response becomes negative after longer periods using the tool. Qualification and training processes, intense in the early adoption and later neglected, can explain this downfall in employee adherence in the automated sales. In the opinion of Speier and Venkatesh (2002, p.110), "companies need to proactively evaluate how SFA tools change the role of salespeople and to identify the more appropriate capabilities of these salespeople." The authors also state that salespeople may think that their role is threatened, because administrators will have access to the same customer information, favoring control. The organizations must be aware of these perceptions to make decisions of a technological nature to avoid differences between middle management and salespeople.

SFA tools can generate excessive conflicts with the sales staff. These conflicts result in significant organizational costs, possible financial loss and possible loss of the most valuable employees. If the managers understand and control the potentiality of this conflict, and deal with it properly, companies may have better chances of success with the use SFA alternatives.

For Peppers & Rogers Group (2004), the term sales force automation has been widely used, but there is not a final consolidation of what this terminology comprises. In this study, SFA is understood as the technological processes that are directly associated with the sales processes, where previously there were people in today's mechanized functions. The requirements of the application of these tools need to evolve from the existent sales processes in the company. When appropriate, SFA reduces the duration of the cycles of customer-related processes, the waste, and improves customer relations, following the CRM principles. The salesperson does not lose importance in the transactional process, and must understand the system as the management of sales operational routines. In this context, the salesperson focuses directly on customer interaction, especially when bureaucratic sales processes are complex.

By using the SFA system, the salesperson can serve the customer in a personalized way, with more quality, and access to the history of the relationship between company and customer. Thus, as Anderson (2002) mentions, in many marketing contexts, the role of the salesperson is to assess customer needs, direct the client to the appropriate product or service, and then negotiate with him. Shoemaker (2001, p.178) says that in many companies "sales force is the basis of interactions with customers." The technological integration with every touch-point between company and customer strengthens the ability of sales force to develop appropriate relationships with customers and provide faster responses to their demands. For Speier and Venkatesh (2002) the sales staff is the primary source of information exchange in the relationship between customer and salesperson, and, thus, plays a crucial role in the formation and sustainability of customer relationships. As Shoemaker (2001) highlights, the sales staff creates connections with customers and understands the importance of preserving these relationships.

### **3 Methodology Used in the Empirical Stage of the Study**

Research of a qualitative approach was conducted in a comparative way, very close to the concept of a Case Study. The focus consists of the analysis of CRM in two high-tech companies, which will be called "Company 1" and "Company 2" to keep their names confidential. The first company is devoted to digital technology focusing on *software* and *hardware* products. It is a multinational company and one of the leaders in the IT market, with operations in Brazil. A software development unit located in southern Brazil was investigated. The other company is a national leader in its segment, working in media and entertainment. The business unit investigated was its headquarters, located in Sao Paulo.

The conduction and elaboration of the instrument for data collection and the analysis of results of field collection were based on Yin's principles (2001). Zaltman (1997) says that the research methodology requires attention to the environment and types of common phenomena as literature recommends. Considering the author's principles, the first stage of the study was the development of a theoretical framework used as a reference for the stage of data analysis. Bruggen, Lilien and Kacker (2002) recommend that both informants and the procedure for collection and analysis of their contributions should be specified. Meeting these principles, the CRM executive managers were identified as the appropriate informants to the provision of information of interest.

Although the results are consolidated per company, three people were interviewed in the construction of the results of Company 1 and two interviewees in Company 2, selected by recommendation and merit criteria. For Boyd and Westfall (1964, p.51), "most information used in marketing is obtained through interviews," which was also observed. The technique of semi-structured interviews was conducted, with questions prepared in accordance with elements taken from the theory. All five interviews lasted about one hour and were transcribed based on Bardin's study (1977) on content analysis. Zaltman (1997, p. 424) believes that "verbal language plays an important role in the representation, storage and communication of thought" and, therefore, the lack of secondary data relevant to the study did not limit the possibility of analysis and preparation of results which represent the specific cases of the organizations here compared.

Regarding the validation process of the interview script, Malhotra (2001) says it is an appropriate alternative to increase the credibility of the results. To ensure greater accuracy and suitability, the script was sent to three professors, Doctors in Marketing, with CRM research experience. After some minor adjustments in the questions submitted, the script was classified as appropriate by all the evaluators. The interviews were administered by the researcher directly to respondents. With the respondents' consent, they were fully recorded from the reading of the instructions until the final considerations provided by the interviewees at the end of the formal questioning. It is important to say that the interviewer's

final consideration was requested by the respondents to express and provide further information besides those already supplied along the questions. This final request was relevant, since all respondents cooperated in detail with their explanations of the indicators used.

The results were generated by comparing companies and were guided by theoretical support. The parallel between companies and theory sets a technique of Nomological Analysis, which, for Bunn (1994, p. 164), represents "the final step in the development of measures." This technique is designed to generate issues based on theoretical and empirical studies and to use theoretical guidelines for the elaboration of results. Once the research procedures were presented, especially processes of Nomological Analysis (BUNN, 1994), and Content Analysis (BARDIN, 1977), the results were found and they are discussed in the next part of this text.

Among the questions used to conduct the interviews, some stand out: when it comes to CRM from a technological point of view, what variables involved in the process are important? What technologies are adopted in the transactions with customers?; How does the company experience and conceptualize Information Technology (IT) to provide CRM solutions? Are there parameters to measure interaction? How can a database, in the company's view, be used to obtain different compositions of customer information?; Is the developed database aligned with the perspective and other strategic aspects of the organization that uses it?; How is *Data Warehouse* treated in the company's CRM projects? Can this set of structured information be used in reliable decision-making? Does the storage structure developed meet the requirements of this concept, which competes for storage and delivery in time to used information for decision making?; Do the extraction and cross-checking information occur through the process of *Data Mining*? How important is it in the development of the application provided by the company and how is this project perceived in the CRM actions? And how does the company believe this same view is from the client-user's point of view? Through the solutions provided is it possible to cross different data and draw estimates?; Does the company provide support for sales force automation? How is this process developed in the solutions offered/obtained? How does the sales force of the customer-user react in face of the application? In this process, is there an increase of quality and integration between company and customer?

#### **4 Discussion of the Indicators through Identified Empirical Elements**

Regarding the Information Technology indicator, the theory incorporates everything that is used to create, store, exchange and use information in its several formats, which can be *software* or *hardware* (PEPPERS & ROGERS GROUP, 2004). In CRM, IT is related to aspects of support to Relationship Marketing (SHOEMAKER, 2001), having as its main focus the personalized interaction with customers (McKIM, 2002; BRETZKE, 2000). It is responsible for the technological scope of CRM (PEDRON, 2001).

In Company 1, the appropriate service to the customer's needs was referred to as the first step in IT applications for customers. Technical elements were also mentioned, such as, the programming language, the technological resources expected by the customer, the capacity and the cost of implementation and maintenance of the CRM system. The technology in the organization is measured by the degree of adequacy of the solution given to meeting the customer's expectations. Specifically with regard to IT experiences and CRM solutions, the elements of the CRM system are aimed at the *software* and not at the equipment. Any informational response by the customer, independently of the level of importance, is the management's responsibility and requires action. In the words of one of the interviewees, this approach is clear: "*if the customer is not satisfied, even if I do not agree, I have to perform the action.*" It was found that the *software* is suitable for the company's business, and not the other way round, besides being more aimed at technology sale processes.



There are technical aspects that maximize the system operation. CRM software was developed under demand, with reference in the business rules and the company's needs.

In the perspective of Company 2 it was mentioned that a CRM solution requires structure robust enough to provide appropriate services to customers. The CRM system, as in Company 1, was fully developed, and regarding the possibility of using tools available in the market, interviewees reported that the alternative was analyzed but proved to be insufficient. The developed system has resulted in competitive advantage to Company 2 over its direct competitors. There is no quantified measurement of the result of the IT used, only perceptions of improvement. The organization's CRM system was designed in order to supply customers with a differential that competitors cannot hinder or copy.

**Information Tools** are divided into three related concepts, respectively, Database, Customer Data and Data Warehouse. The Database is essential for market segmentation (PEDRON, 2001), so that the organization can perform marketing actions by different combinations of customer data (MISSI, ALSHAWI, IRANI, 2003). However, good data management is crucial for a CRM initiative to be reached (NOGUEIRA, MAZZON, TERRA, 2004). For Campbell (2003), customer data must be transformed into information, and this must be used in CRM (BRETZKE, 2000). Therefore, the quality of data is essential and redundancies and duplications are forbidden (WALNUT, MAZZON, EARTH, 2004). *Data Warehouse* is the infrastructure used to store data and customer detailed information. It is nothing more than a single repository, debugged, consolidated and consistent, responsible for providing reliable information (GREENBERG, 2002).

In Company 1 it is understood that a DB application is the closest understanding of the people who deal with *software* and its programming. The company understands DB tool as an application used in the business data storage. According to the interviewees, the DB is aligned with the company strategies. The complete histories contained in the DB can be used. It is possible to check the customers who make more purchasing proposals, the transaction volume per customer, the most profitable ones etc. The CRM system is used in sales relationships. The interviewees understand that the DB solution could be used more fully than it is used at present. Concerning grouping data and their update in real time, the response was positive. The datum entered in the system is stored, and the only changes relate to current transactions. There is no change in the data of previous transactions. Data regrouping provides a complete and immediate use of client histories. For one of the interviewees, the DW characterizes "*the business engine*", because it contains consolidated information about business transactions and interaction with customers. This IT module provides graphical information, used to support decision making and CRM action formulation.

In its DB, Company 2 incorporates operational aspects, elaborations of material deliveries and other necessities, besides data of customers making purchases, investment data, demands and relationship possibilities. The main data composition (the most commonly used) is the customer history. With these data it is possible to build CRM actions according to the requirements of relational philosophy. In regard to data, minor inconsistencies are reported. There is the categorization of customer data by different criteria, such as billing and attendance. Data obtained are converted into information, (used in CRM), differentiating and segmenting customers. The application of DW exists, although it is not understood as presented by the theory. In company 2, it was found the non-use of concepts and technical terms usually used by IT students and professionals. The application allows reliable and timely decision making.

**Data Mining** is a practice directed to serving the desired customers in marketing campaigns. It is an analytical action (SRIVASTAVA et al., 2002). Peppers & Rogers Group (2004) defines it as the practice that allows analysis of data grouped in databases. The information collected is used to better meet the customer needs (PAAS, KUIJLEN, 2001), and to

allow the identification of the profile of potential customers. In summary, it is a tool that provides the identification of customers or customer segments the company is interested in (BRETZKE, 2000).

Members of Company 1 say that the existing databases in their company are qualified to data mining practices. The essential, which is the concentration of consolidated data, is part of the company's regular information system. The employees interviewed understand data mining as an important alternative that enables the qualification of the services performed in front of customers. However, they understand that a complete data mining requires more than the current system can provide. Existing customers are properly analyzed; however, the application of data mining in prospecting potential customers is a practice not currently used.

In the case of Company 2, the same perceptions regarding the use of data mining were expressed. But, unlike the other organization, data mining in Company 2 is used not only in the analysis of existing customers, but also in the search for new customers. As mentioned by one of the interviewees, mining practices are used to identify target customers, the *targets*. But in the words of the manager interviewed, the restricted understanding of operations is clear: "*it is a common practice, but I cannot detail it.*"

An important definition of **Automation Sales** is presented by Speier and Venkatesh (2002), who relate it to a sales action based on IT, aligned with the principles of Relationship Marketing, put into practice through the implementation of CRM strategies. It is a technological platform for customer interaction and sales (HANSOTIA, 2002). Speier and Venkatesh (2002) say that SFA can cause conflicts with the sales force. Although the IT of SFA is not fully used in the companies investigated, the conflicts mentioned in the theory were not detected during the study.

The SFA sales system of Company 1, according to one of the managers interviewed, confirms that "*the sale is automated,*" which leaves no doubt about the existence of the use of SFA. Employees see this application as a benefit, and despite the changes in posture, they receive sales commission, which may explain their non-resistance. The system, as expected, provides fast and efficient service, generating positive results to the organization. Salespeople have been allocated in the most important sales and relational actions, leaving the bureaucratic part to the automated system. In this company, the SFA tool is a web-based application, and the salespeople work in interactive and support issues. This application of SFA increased the quality of customer services, being understood as "*a tool that has improved work*", used in the operational CRM practices.

The SFA of Company 2 is connected to the relational aspect of the system, beyond the other organization which focuses only on sales. Despite electronic interface, the company's transactional processes, such as trading contacts, are also more intense compared to the result of the other organization studied. The SFA is understood as a channel of open relationship, used in CRM actions. After the adoption of the SFA system, communication with the company's customers has improved and expanded, and the general business information began to flow better and in an organized way. The possibility to access data at different points of contact with customers was one of the most emphasized improvements during the interviews, resulting in the desired expansion of operational quality and customer service. Automating the sales process favored the company's CRM. In the case of Company 2, the interaction with the customers is substantially better than what had been noticed in Company 1, which delegated most relationships to the support.

Considering the presentation of the results distributed by indicators, respectively bringing the conceptual synthesis and the cases of companies 1 and 2, the summary of findings and the implications of the differences detected are understood as essential. As a final stage of this research, the 'Final Remarks' are developed based on the results presented so far.

## 5 Final Remarks about the Theoretical and Empirical Results

In the companies investigated, in an overall analysis, the indicators built were pertinent in their CRM applications. The understanding of the IT of the companies corroborates the theory, although there are differences in the contexts analyzed. IT was already expected to be identified in both cases, because it is an essential requirement to any kind of computerization, which also occurs in CRM. In Company 1, the IT is aimed at meeting the customer needs. Besides the utilitarian aspect, technical premises were observed in building CRM. Although the indicators were not available, the measurement of CRM effectiveness is based on the adequacy of the system to customer service. Corrective action or actions to identify customer dissatisfaction are a common practice. The main focus of the CRM system is sales. As in the first case, Company 2 also works with developed CRM, and not with *software* packages offered in the market. The CRM is identified as suitable for the structural element of the company and, as in the first case, there is the sale with technological support. Unlike Company 1, Company 2 explicitly identified competitive advantage and assigns CRM the differential provided to customers. Interestingly, in case 2 there is no quantified measure, only perceptions of improvement are recognized.

Regardless of the types of solutions used, from internal databases to virtual information available in social networks, data is the essence in information generation and subsequent intelligence in the specialized customer service. In case 1, data tools are assigned to the technical staff, which is surprising since the theoretical expectations consist of using them in all customer contact points. In Company 2, the orientation is closer to what CRM theories preach. In both companies, customer histories are used in relationship practices, particularly with regard to sales processes and marketing actions. In Company 2, the nomenclature of data operations is not consistent with the technical characterization, which implies casual misunderstandings. Both companies attribute importance to Data Warehouse in decision making, because they understand that this tool enables data reliability.

The act of mining data is widely recognized in analytical CRM. Besides being used in the understanding and supply of customer needs and in segmentation practices, data mining can be used in more advanced analyses, such as the identification of the profile of potential customers or targets. In the situation 1, the existing data are enough for mining; however, the systems for this practice do not support predictive prospecting. Data analyses of existing clients are carried out, but potential client prospecting is not a common practice. On the other hand, in Company 2, predictions are carried out, although the interviewees failed to explain how these processes occur. For analytical CRM, working with predictive data is as relevant as analyzing existing data. Companies which use both possibilities have an analytic and technological differential with respect to companies which partially use or do not use data analysis. Data not analyzed are very unlikely to promote relevant information.

Concluding the analysis, the sales force automation requires alignment with the philosophies of relationship marketing for CRM to be effective. Company 1 uses automated sales, and one way to avoid conflict was to work with sales commissions, provided to employees based on the salespeople's help and support in relational functions, rather than in trivial business operations. In this case, automation is an operational solution to bureaucratic issues. In the second scenario, Company 2 better meets the relational principles in the systems. It was also found a more intense interaction with customers, where sales automation represents more than just operational support, but a strong channel for CRM actions.

As shown by Company 2, the interactivity with customers through available technologies makes a better CRM system. The more powerful and appropriate to business and the more technologies are explored in the understanding and prediction of current and potential customers, the better the results of the initiatives of relationships based on CRM. The alignment between CRM and social CRM can be seen as a future trend in which the close relation between customers and

companies will be conducted through social networks and virtual environments. Technology aligned with business is the ideal combination in analytical CRM.

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