

Adopting customer relationship management technology

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Abstract

Now customer relationship marketing (CRM) solutions might be the hottest topic in business world. CRM impelled the growth of both B2B and B2C markets. But the issue is how to apply the cutting-edge CRM solutions. Do people really understand what CRM is and why they should install CRM? The mistaken concept of CRM may have disastrous effects on the company. This paper begins with the basic concepts of CRM, elaborates the characteristics, reviews its brief history and addresses the current status of CRM. Then it develops the extended concepts of CRM from micro- and macro- perspectives. In the "Implementation and tips" section, it concludes the proper steps to approach CRM and how to bear a right attitude towards CRM solutions. Related Government rules are also covered.

1. Introduction

Customer relationship marketing (CRM) became the number one focus when today's competitive markets were getting more saturated and competitive. Now the marketing model is changing from the product-centered stage to the customer-centered stage. Customers are demanding a different relationship with suppliers than the traditional sales model. The new database technologies enable people get the knowledge of who the customers are, what they bought and when they bought, and even predictions based on the historical behavior. Now more than ever, the ability to understand and manage a close relationship with the customer is central to delivering these business goals. This is the ultimate challenge for marketing in any business. CRM helps deliver customer centric relationships. Successful companies in the future will use customer information wisely to build relationships with their customers, on the level that the customer wants and will work towards developing a long-term relationship through retaining customers by delivering delighted customers.

The focus of CRM increased companies' abilities to understand the customers' current needs, what they have done in the past, and what they plan to do in the future to meet their own objectives. The goal is to improve the customer's experience of how they interact with us, which hopefully, in turn, creates more satisfaction, which yields more loyalty, which, ideally, yields more sales of products and services. The central database within CRM is available for

everybody in the enterprise. By accessing the central customer database, everybody in the enterprise can know each individual customer, in order to achieve that "experience", so they will not get lost.

However, the issue arises of how to apply this state-of-art technology. It might simply be a waste of money when companies install it before they are really ready for that.

This paper begins with the basic concepts of CRM, reviews the history and the evolution of CRM, and addresses the characteristics of CRM. Then it explores the various involvements of CRM application at different levels from the managerial level, to end-users and the macro-environment around it. Then it comes to the pros and cons of CRM application, etc. The major purpose of this paper is to seek the best way to fit CRM applications into the business environment and trying to avoid any waste.

2. CRM: an overview

2.1. Definition of CRM

CRM is an information industry term for methodologies, software, and usually Internet capabilities that help an enterprise manage customer relationships in an organized way. A company might build a database about its customers that depicts relationships in sufficient detail so that management, salespeople, people providing service, and perhaps the customer directly, could access information, match customer needs with product plans and offerings, remind customers of service requirements, know what other products a customer had purchased, and so forth.

CRM is also defined as an all-embracing approach, which seamlessly integrates sales, customer service, marketing, field support



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and other functions that touch customers. When using this approach, by integrating people, process and technologies and leveraging the Internet, the relationships with all your customers including e-customers, distribution channel members, internal customers and suppliers are maximized. Basically, CRM is a notion regarding how an organization can keep their most profitable customers and at the same time reduce the costs; increase the values of interaction to consequently maximize the profits.

CRM explores an approach to maximize customer value through differentiating the management of customer relationships. The company utilizes its understanding of the drivers of current and future customer profitability to appropriately allocate the resources across all areas that affect customer relationships, including communications, customer service, billing and collections, product/service development, pricing strategies, etc.

2.2. Characteristics of CRM

During the implementation of a CRM system, data hygiene software is used to distinguish individual customers and groups of customers, and then the integrated customer database is utilized to describe a complete view of the customer integration between the analytical and operational systems. Finally management campaigns to turn the analysis into actual promotions and offers (Advanced Sales Technology Inc., 2001). Basically CRM has four characteristics (see also Table I).

The first characteristic is salesforce automation. In CRM systems, current customer, deal, product and competitor information are all stored in the CRM central database for salesforce retrieval. The customers' sales process is configured into the application. The order placement and tracking are integrated, so that each customer's sales cycle can be monitored and tracked. This provides a singular view of

each customer which contains all contact information and sales history, available to everyone who has access to the system. This also allows data to be summarized by views such as region, territory, customer and product for target marketing campaigns. Besides, sales force has the access to product, pricing, promotion and discount information and how to make those marketing campaigns successful. Salesforce productivity is greatly enhanced with the tools of e-mail, Internet access, etc. Therefore salesforce automation greatly empowers sales professionals within the enterprise.

The second characteristic of CRM is customer service and support. CRM helps companies to incorporate an exemplary customer service into its core. CRM improves the organization's abandonment rate by configuring the functions of tracking, monitoring and measuring customer service responses. It also makes it possible for the company to assign each query to the appropriate expert, who can resolve the customer call once the query from the customer comes up. Customer problems can be solved efficiently through proactive customer support.

The third characteristic is field service. By using the CRM system, remote staff can quickly and effectively communicate with customer service personnel to meet customers' individual expectations. Customers' requests are logged, assigned, monitored and traced to ensure the qualities of customer services. Available and skilled engineers are quickly assigned to each problem. During the assignments, skill sets, availability, workload, geography, and parts and tools availability are all sufficiently taken into consideration. The knowledge base and detailed instructions for problem solving are all instantly available on the first service call. CRM also helps the company to reduce the service inventory cost to the lowest possibilities by automating

Table I

The characteristics of CRM

Characteristics	Impacts
Salesforce automation	Greatly empowered sales professionals
Customer service and support	Customer problems can be solved efficiently through proactive customer support
Field service	Remote staff can efficiently get help from customer service personnel to meet customers' individual expectations
Marketing automation	Companies can learn clients' likes and dislikes to better understand customers' needs. Consequently these companies can capture a market before their competitors.

fulfillment, replenishment, and cycle-counting functions.

The fourth characteristic is marketing automation. CRM provides the most up-to-date information on customers' buying habits so that the most effective marketing campaigns to cross-sell to current customers and attract new customers can be achieved. By using CRM, marketing intelligence, customer database and interactive communication technologies are combined to enable companies to better address customers' individual needs. Therefore, the company can capture a market before its competitors. It allows the company to learn the clients' likes and dislikes so that they can better understand their needs. Consequently companies are enabled to provide more value to the customers than their competitors.

2.3 Components of CRM

From the procedure perspective, a CRM solution includes many components. The multimedia access channels are a part, such as voice through an ACD or IVR, e-mail, Web site messages, fax, image, etc. The access channels bring a request into the CRM environment. Work rules are then invoked from a work rules engine. Clients are identified, and attributes are assessed to determine treatment by the workflow engine. The back office systems and database of client information are consulted, existing legacy applications are invoked, and fulfillment is then created for the client through a variety of fulfillment engines. The fulfillment process sends the content over the media choices, whichever is appropriate. This is a process view of the technology from a high level.

Another one of the technology "promises" of CRM is to have a complete, integrated, comprehensive view of management reporting. Front office, back office, across different media types or channels. If we look into the complete CRM picture we will see that in business terms, the basic functional areas to address are sales, customer service and marketing. Thinking in terms of sales, interaction plays a very special role and in that sense we have seen technological solutions emerging in the marketplace. They can either be self-service like IVR, Web browsing, or assisted, like having a representative answering phone calls or answering e-mails. As a matter of fact, contact centers have been playing a major role within the complete CRM picture, as different and more sophisticated media are adopted in order to interact with customers.

Also, CTI solutions like predictive dialing, voice/data tracking and skills-based routing have been making customer access more and more effective and efficient. The same applies to customer service; together with the ability to access complete customer information from a widely available customer database. But interaction is only one of the technological aspects of CRM. In order to have a truly proactive CRM attitude across the enterprise, two extra key components are required. These components are: workflow allowing the following up of customer issues on the service side, and marketing tools such as data warehouse, data mining, marketing analysis, clustering and segmentation allowing the building of targeted campaigns that can then be dealt with by salespeople. The final technological aspect is to have all these key components tightly integrated together, with a widely available customer database (see <http://www.nykamp.com>).

2.4. Evolution and current status of CRM

2.4.1. Evolution of CRM

The first surf of CRM solutions came in the late 1980s and early 1990s (see Table II). The providers of these products are Clarify (now owned by Nortel Networks Corp.), Onyx Software, Oracle, Vantive (acquired by PeopleSoft) and Siebel Systems. These packaged solutions emphasize automating and standardizing the internal processes which relate to acquiring, servicing and keeping customers. These processes ranged from capturing sales leads to creating scripts for customer service agents to enable consistent service and support across product lines and divisions. The foci for these CRM solutions are on automating and standardizing the internal processes to make the customers an asset. Although these processes addressed the companies' needs, they are very expensive and not easy to maintain.

Then in the mid-1990s the Web emerged. It changed both the CRM market and customer-related business requirements of all sizes of companies. The new CRM system means that the existing and potential customers are now able to interact and communicate with corporations. More importantly the client/server architecture behind existing CRM applications would disappear. The big vendors such as Siebel are slow to respond to the Internet. This leaves more opportunities to start-ups. A new market segment of eCRM emerged (3com Corp., 2001).

Table II
The history of CRM

Age	Year	Lesson learned	Milestones
Introduction	1980s to early 1990	Very expensive to maintain	Focusing on automating and standardizing the internal processes to make the customers an asset
Growing	Mid-1990 to end 1990	Some vendors are slow to respond to the Internet	Due to the emergence of the Web, client/server architecture behind CRM applications would disappear
Current	2000	N/A	E-CRM
Future	After 2000	N/A	N/A

2.4.2. Current status and applications

The market for CRM application is shooting skyward. The best word to describe CRM market is “profitable”. It is predicted that the total aggregate revenue of the CRM market is anticipated to grow from \$1.2 billion in 1997 to \$11.5 billion in 2002 with an annual growth of more than 50 percent. CRM license revenue will top \$7.5 billion by 2002 against \$762 million in 1997. CRM applications and market penetration is expected to significantly grow to new levels when the market is continuing striving to leverage the strategic advantages. Now CRM is becoming one of the hottest areas in enterprise applications (NameProtect, 2001a).

A lot of opportunities are created for consulting firms to add value when the demand for Web-enabled CRM applications is exploding. The demand for CRM-related services has already exceeded available resources. Information technology (IT) departments within the firms are often unable to provide and implement such complex applications. The gap between corporate needs and the limited available resources will keep impelling the great demand for CRM-oriented implementation and integration services to increase (NameProtect, 2001b).

In 1999, SAP introduced CRM software with the application for the Web. It includes SAP Internet pricing and configuration application, which companies can use to let clients, distributors and salespeople calculate prices and come up with features for products and services. This signified SAP’s plan to move to the front-office market (Oracle, 2001).

With the involvement of the Internet in CRM, its functions have been changed a lot. By using the Web, CRM becomes more interactive. Customers are actually transacting with the companies. The new customer-facing products and services can be implemented more quickly. Besides, the customers served are actually world-wide.

Here comes e-CRM. Companies’ adoptions of e-CRM are slow but success rates are high due to its complexity (IT-Analysis.com, 2001).

Some recent CRM packages integrate the speech-enabled specific application functions which embrace customer support, order management, and salesforce automation or modules within individual applications. These products are provided by companies such as Siebel Systems, Oracle, and SAP. With an actual interface, a critical component of the application, lengthy and costly custom development by systems integrators can be avoided during the product development and deployment. This enables systems integrators such as eLoyalty to simply perform application level integration between the speech-enabled solutions and the packaged application (see <http://www.crmguru.com>).

2.5. Pros and cons of CRM

CRM solutions not only improve customer loyalty, but also the internal processes which in turn increase efficiency.

From a marketing perspective, it identifies and targets best customers based on recency, frequency and monetary scoring. It helps manage marketing campaigns with clear goals and quantifiable objectives. It also creates and manages solid sales leads for field and telesales representatives. Marketing and cross-selling opportunities are also increased. The enabled tight and accurate targeting and one-to-one marketing increases returns on marketing investments. CRM solutions also add more valuable knowledge gained directly from customer interaction. This knowledge improves product development process.

From sales perspectives, CRM solutions improve telesales, field sales and sales management through real time information sharing among multiple employees. Sales efficiency is increased through wireless and Internet-based order entry. Territory management is improved with real time

account information updates. The entire salesforce is improved by capturing, distributing and leveraging the success and expertise of your highest performers. By focusing on growing the best accounts, the revenue per call is also increased.

From the field service perspective, customer satisfaction and retention are ensured by solving customer problems quickly. The management of people and materials within the service organization are smoothly integrated. Customer satisfaction is ensured by allocating, scheduling and dispatching the right people, with the right parts, at the right time.

From the perspective of customer support, shared relationships with individualized customer care based on specific customer history and preferences are strengthened. Through automated scripting based on known solutions, call center efficiency and help desk support's quality are improved. Support and service costs are decreased when customer satisfaction is increased by extending Web-based support functionality directly to the customers. All customer contact from sales, support, field service and marketing are centralized.

Now CRM is facing lots of challenges (see Table III).

To implement a CRM system which does not meet the organization's goals or simply can't be accepted by the users is a disaster to a company (Apex IT Inc., 2001).

3. CRM: a micro analysis

3.1. Managerial

In this booming CRM market, some companies are rushing for CRM products before they really understand how these products can virtually make any difference

for their companies. When the leaders in some companies were asked why they decided to install CRM products, they responded that because this is the most advanced technology. We have got to have it if our competitors have that. It sometimes happens that companies bought the stuff, it did not work and the vendor walked away counting his money. One key point that managers should understand is that although CRM depends on, and is driven by cutting-edge technology, it only works when supported by the corporate culture that embraces customer-focused aims. Without the comprehensive understanding of customer-focused objectives, the company will find it very difficult to really leverage this cutting-edge technology (see <http://www.network-advisor.com>).

3.2. Personnel

Loosely defined, CRM is a 360-degree, customer-centric view covering the entire business cycle. CRM involves improved and increased communication between a company and its customers, as well as within the company itself. Not only must competing departments such as sales and marketing, accounting, customer service/support, and manufacturing or fulfillment within the enterprise learn to share information and communicate more effectively, but every point of contact with the customer must be enhanced. This entails a fundamental shift in the information flow within an enterprise, from quantitative data to qualitative data. It is about integrating strategy, process, technology, and people in a comprehensive change management process. A CRM system will change the way information flows within a company. CRM is not just technology. Companies which view it as a tactic might fail in its implementation. It is reported that

Table III

Challenges CRM is facing

End user-driven methodology	IT departments might not have knowledge base or power to influence corporate decision making
Lack of appropriate executive sponsorship	CRM projects are very likely to be driven by a functional head such as the vice president/director of sales or marketing and consequently rarely produce an enterprise view of customers
Lack of cultural preparation	Investing in CRM technology without a customer-oriented cultural mindset will fail to yield an acceptable ROI
Inappropriate application design approach	Designing CRM applications to model a single functional view rather than an enterprise customer view will often result in failure
Over-automation	Making functionality the primary design driver leads to over-automated business functions
Lack of appropriate network infrastructure	The network infrastructure must be capable of providing total network available to support the enterprise CRM application. Inadequate infrastructure is a leading cause of failure for CRM implementations

70 percent of CRM implementations fail. (Forrest Research, 1998). CRM should be viewed as a corporate strategy that needs careful design and the sponsorship from the employees at all levels within the company.

3.2.1. Change breeds resistance

Employees' resistance is one of the major risks associated with CRM implementation. In most companies, CRM efforts often never get off the ground because they encounter such stiff resistance from IT. In some of those failed efforts, CRM is proclaimed a new cultural initiative. Similar to TQM in the 1980s, it sounds great in theory. But what happens in practice is that management encounters so much resistance to implementing CRM as a large change management initiative that it just fizzles out. A well-planned training program is one of the solutions to this. As you know, you cannot just put the system in and hope that people will figure it out by themselves. In order to eliminate or minimize the resistance to it, companies should also let the end-users become involved early in CRM implementation and spark a grass-roots movement.

In this way people who are going to do the work will become evangelists for CRM. When you combine that movement with the top-down support from senior management, you can pull it off. Besides, end-users' opinions are very important for defining the project requirement and design work flow (Robertswitt, 2000). It is also critical to involve the enthusiasts in each step of the development and testing, and to ask for their opinion and suggestions. Managing expectations is the key to acceptance.

3.3 Technical

To improve the quality of customer service, efficient customer interactions are not enough any more. The key to achieving a competitive edge is to identify the individual characteristics of the most profitable customers. However the analytical function of CRM has long been neglected. In order to maximize the return on customer interaction, the staff of the company must deploy data warehousing and obtain domain-specific analytical applications, to establish a panoramic customer view in order to successfully improve marketing efforts. SAS is a feasible solution to approach this goal. By using SAS, the data of all customer contact points, including World Wide Web, can be collected for analysis. SAS solution helps companies

gain a complete view to identify, target and respond to the needs of the most profitable customers. The data are turned to knowledge for better understanding of customer behavior and needs, for better serving the customers (Renner, 2001).

JAVA technology is another tool to add more value to CRM. It can allow users within the company working in different locations, or the customers from different geographical areas, to access the company's CRM application through the Internet. The customer service staff that are working in the client's location can use the key functions of CRM without any hassle. Such products include RTI's CustomerFirst, which is a Java-enabled CRM application developed for software companies that are offering support, new versions and services to their customers. The workflow through an organization is recorded since the customer service request. WebFirst is another alternative which can let the customers communicate via the Internet using a Web browser. The customers can enter new events, review their current events and search for the answers to their questions (Drucker, 2000).

3.4. Economical

At the new millennium, the competitive pressures – due to global economic factors and the rise of Web channels and e-commerce – will drive enterprises to automate the intra-enterprise customer-facing process with such back-office functions as supply chain functions. Within several years, CRM, CRM, ERP application suites and XML-based messaging standards will facilitate multiprocess, cross-functional front- to back-office supply chain integration efforts across multiple channels. Vendor consolidation and solution expansion, collaborative supply chain network evolution and CRM infusion within the enterprises in the twenty-first century will enable upstream demand-driven pull to replace downstream supply-driven push as the *modus operandi* of demand fulfillment. To achieve competitive advantage, the enterprises must map existing CRM activities in marketing, sales, and service to companion back-office functions. If we look at it in a long-term perspective, it is easy to find out that, in terms of efficiency, two to five years on a better system is better than the cost of having no system for an additional three months. So CRM is a long-term investment, not a short-term one. If you have no system now, you may be working, but you are inefficient. But you need to spend time planning. Get the right people in, and ensure that they create the

right solution that engages your critical success factors. Therefore, the company's leaders should be aware that as this is a long-term investment, the economic return will also be a long-term one. (Sweat, 2001).

4. Macro analysis

4.1. Government/standards

CRM, especially e-CRM involves a lot of legal issues – security, etc. On July 17, 2000, White House Chief of Staff John Podesta offered important new measures to assure the security and trust of US citizens in cyberspace (The White House, 2000). Topics of updating law enforcement authorities for the Internet age, harmonizing the rules that apply to different technologies such as telephones and e-mail, and balancing important values are emphasized.

On June 30, 2000, President Clinton signed the "Electronic Signatures in Global and National Commerce Act". The Act clarifies the legal validity of electronic contracts, signatures, notices, and other records, and allows contracting parties to choose the technology for authenticating their transactions without government intervention. The Act will also ensure that on-line consumers will have legal protections equivalent to those in the offline world. The Act does not diminish the protections offered by any federal or state law relating to the rights of consumers, other than to eliminate requirements that contracts and other records be written and signed on paper. Consumers retain the choice to do business and receive records on paper or online. Before notices and disclosures may be sent electronically, consumers must give their consent and the firm must verify that the consumer will be able to access electronically the information that will be provided (Bevan *et al.*, 2001).

4.2. Environment

4.2.1. Internet

Internet technologies are making sweeping changes in the software industry. Virtually every class of software application is incorporating Internet functionality as a core feature, and this is especially true for CRM applications. Leading companies use these applications to build a stronger relationship with their customers by improving customer service, increasing the efficiency of the sales cycle, and developing more effective marketing programs. Consequently, CRM also offers a new opportunity for Internet

service firms. Leveraging the similarities in the need for consulting, implementation, and operation services in the Internet service and CRM markets, Internet service firms are developing strategic initiatives to offer their clients CRM solutions. Many emerging Internet service firms have already developed CRM solutions, including Aris, Emerald Solutions, Proxicom, Stonebridge Technologies, and US Interactive. IDC believes there are many reasons these firms are now offering CRM services (SAS, 2001).

4.2.2. B2B

The B2B e-commerce market is expected to grow from US\$403 billion this year to US\$7.29 trillion in 2004. Solid CRM will be a key element.

It is predicted that two factors will influence the future state of B2B CRM. The first is customer/partner information disclosure. The key to any CRM strategy is the ability to acquire and effectively use customer and partner relationship information. However, to acquire that information, customers and partners must be willing to disclose it. The other factor will be the global economy, which will affect corporations' ability to invest, and will therefore control customer buying power. There are three key points for establishing strong customer relationships. First, a company should practice scenario-based thinking in B2B CRM planning; B2B organizations should have long-term planning sessions every four to six months, to consider what effect critical success factors will have on their CRM plans. Next, it is better for the companies to invest in collaborative training tools now to increase the success of channel partner selling. Finally, companies should look for vendors of CRM solutions that support widespread collaborative frameworks. The initial CRM investment should address the entire process, from buying to delivery. Siebel Systems now plunked down \$444 million in stock to acquire a B2B auction vendor to flesh out its CRM suite (Jones, 2001).

4.2.3. B2C

The move to CRM is happening in a number of industries, particularly in the B2C sector. In 1999, online retail activity represented less than 1 percent of overall consumer spending in North America. By 2004, it is estimated that online retailing will grow to about 5 to 7 percent of total retail sales in North America (Repository Technologies Inc., 2001).

The major criteria for defining the relevance of such an approach to an industrial sector are the value of the customer relationship and the ability of the organisation to gather and process customer-related information. In the bank's view, CRM systems have a significant role to play in the retail financial services sector, changing the focus of marketing. A key issue in understanding that role is the relationship between CRM and the new channels. In addition, the role of IT in CRM is fundamental.

4-2.4. Vendors

Most CRM vendors have strength in certain areas, but those specializations are not enough for B2B users. Traditional CRM leader, Siebel, is branching out beyond sales, marketing, and channel support and even call-center service. Pivotal Corp., recognized for its automated customer, partner and enterprise features, and Onyx Software Corp., a platform vendor that provides automated sales, marketing and customer-service needs, are adding new communications and business-process capabilities. Remedy has added a full suite of automated sales, marketing, and customer-service applications to its product line, and SalesLogix Inc., combines CRM with contact management, sales and marketing automation – but additional Web features are needed. Vendors seem to be seeking quick ways to add missing functionality, and deals have been rampant during the last few months.

In February, Kana Communications Inc., revealed its \$4.2 billion merger with Silknet Software Inc., to get Extensible Markup Language-based sales and marketing automation. Epiphany Inc., bought Octane Software Inc. for more than \$3 billion to round out its Internet-based communications management, and Vignette Corp., a leading content-management provider, is attempting to broaden its basic suite with e-commerce and personalization features acquired from DataSage Inc. Vantive was acquired by PeopleSoft Inc., for \$433 million, at the same time Clarify Inc., was bought for \$2.1 billion by Nortel Networks Corp. Vendors that were focused strictly on the consumer end of CRM, such as eGain Communications Corp., are adding voice-over-IP capabilities to provide integrated communications management. Oracle, SAP, and other enterprise applications vendors are also gearing up with their own versions of CRM functions.

4.3. Technology-related

4.3.1. Data warehouse

Data warehouse is a major component of closed-loop CRM systems. The market for CRM-centric data warehousing software and services is expected to grow explosively. CRM solutions are now dealing with the data warehousing supported processes of customer data integration, customer data analysis, and customer interaction personalization. Among these four steps to establishing a closed-loop CRM systems, three of them involve data warehousing. The CRM-centric data warehousing model will present a lot of challenges, despite its benefits to the companies. For example, now there is still no single vendor who could support all these four steps. Besides, the business processes have to be modified before the implementation of CRM-centric data warehousing model. But companies still have a lot of chances to overcome these challenges and gain the benefits from it (The White House, 2000).

4.3.2. Wireless

Now more and more firms that deployed a CRM system are adopting wireless devices as a tool to enhance their CRM system. CRM functions are supposed to be improved by accessing enterprise data and services through wireless devices. It is believed that some industries such as utilities, financial services, healthcare services, manufacturing, and retail are more likely to improve their CRM by adopting wireless devices than other industries. Wireless CRM applications will make business more proactive. The access of real-time data by remote service staff and the instant information on parts, inventory, and order status available to the salesforce will significantly improve the quality of CRM and reduce the transaction times. However, the challenges involved here include the lack of standardized wireless infrastructure or protocol, and a clear value-added business use and necessary education. The former could possibly make the application crash and the later could slow the impact of wireless CRM (SAS, 2001).

4.3.3. SCM

Now companies are trying to connect CRM activities and customer insight information with upstream operations in supply chain. In this way, supply chain's "generate demand" activities can be seamlessly linked to "fulfill demand" activities. Supply chain can be increasingly responsive. Transaction data can be easily shared among partners and inventories can be kept low. To a deeper level, it means that salesforce, frontline

employees, are connected with the right data in the supply chain. A salesperson, for example, is exposed to updated inventory and production data, so that he/she will be able to offer accurate information to customers when asked. In the mean time, information shared between supply chain partners can provide upstream partners with comprehensive customer information for them to better plan product development and manufacturing. By integrating CRM with SCM, companies will be able to deliver customer-configured products, as Dell does. Ultimately it is about the movement of quality information through the whole supply chain. By maximizing the information capabilities, companies are offering the products of best value to the customers (The White House, 2000).

4.3.4. ERP

Consider the scenario: a customer places an order from the Web after being presented with up-to-the-minute pricing and configuration options. That order flows through the manufacturer's inventory and production planning systems, pings a customer database to check credit history, hits a financial system to generate an invoice, and records the details of the transaction, so information can later be leveraged by telesales or support professionals to better service customer requests or cross-sell products. That is the promise of integrating enterprise resource planning (ERP) and CRM, but achieving that kind of nirvana requires significant handiwork. Manufacturers will need to go beyond stitching new sales, marketing, and call center modules onto their core back-end applications and instead weave the new functionality into the very fabric of their systems. This is the big challenge many companies that are doing the integration between CRM and ERP are facing right now. Many of ERP back-end systems are designed for product-related processes and not customer-related processes. The CRM solution chosen must have ability to provide complete integration with these ERP systems. CRM applications should also be well integrated with office productivity tools like Outlook or Word.

In 1999, Oracle announced that it had truly integrated back-end ERP system with front-office CRM applications. It marked a major step in the evolution of ERP and CRM products. Prior to this integration breakthrough, the integration between these

two products was deemed as expensive and time-consuming (IT-Analysis.com, 2001).

5. Implications/tips

To avoid failures in implementing CRM, companies should spend time in strategic planning:

- 1 Establish corporate needs. Identify its problems. Identify the solution to that problem. Decide how to implement the solution.
- 2 Talk to customers and staff. Ensure staff are willing to accept it. Serve customers better to keep them loyal. Offer profitable products that meet their expectations, repeatedly. Change from product-focus to customer-focus. Build long-term, mutually beneficial relationships with all stakeholders.
- 3 Encourage inter-departmental communication and corporate-wide support. Appoint a chief customer officer and a CRM project team. Invest in key components such as a data warehouse and analytical tools.
- 4 Choose a scalable product with:
 - (a) technology that facilitates monitoring of marketing campaigns;
 - (b) CRM architecture that can handle existing and future sales channels.
- 5 Integrate front-end systems with back-office data mining processes for one view of the customer. Use only the relevant data for your business issue. Supplement data where required.
- 6 Establish a central data warehouse for new and old data. Data mine and analyse it. Create different data models for your solution. Standardise your data format to reduce extraction complications. Use only highest-quality data.
- 7 Automate the decision-making process. Monitor variances in customer behavior with intelligent Agents to predict key customer events.
- 8 Use cluster analysis to discover new customer insights. Promote customer retention through predictive modeling.
- 9 Build, test and apply analytic models.
- 10 Trigger behavioral change for more profitable marketing campaigns with an event service.
- 11 define clear, measurable business objectives for each phase, limiting investment while monitoring ROI.
- 12 break general goals into narrow specifics so progress can be monitored.

- 13 Benchmark customer satisfaction pre-implementation. Learn from campaign mistakes and successes to aid future improvements.
- 14 Analyse customer database.
- 15 Promote customer loyalty for increased profitability. Identify customer needs and further opportunities.
- 16 Deliver customized customer service.
- 17 Provide reliable, convenient, fast and readily-available customer interfaces.
- 18 Offer the same customer service level via all channels (Croen, 2001).

It is clear that, to be effective, a CRM system must integrate seamlessly with the company's data warehouse. Indeed, to fully live up to expectations, the CRM system must integrate with all corporate applications and systems external to the company. This includes ERP and e-commerce applications.

Unless disparate systems are interconnected, the information they contain cannot be leveraged to best advantage. Decision makers using them to compile reports may find that data conflicts, does not make sense or, even worse, is just not available. In order to provide the highest quality and most timely information, a business must combine information stored in both front-office and back-office systems.

It is a relatively simple matter to integrate the information in the front-office systems because their architectures are very similar. The real challenge is to combine and integrate the information stored in the back-office systems with that of the front-office systems. This is because back-office systems are usually very different, from the hardware used to the way data are represented and stored.

CRM is an external-facing system that consolidates the back-office information into a format acceptable to the outside world. It is a unique combination of back and front office. It follows that a CRM system implemented without integration to the back-office is not the external window to the corporation that it needs to be. Indeed, CRM's value is greatly diminished if it is not integrated with back-office systems.

The challenge of integrating front- and back-office is considerable. The back-office systems are often old or proprietary technology. The CRM solution is typically new technology, usually Unix-based client-server systems. Seamlessly integrating these disparate systems into a scalable, clean and manageable whole is the obvious route forward. But before we consider how to merge contemporary and traditional

architectures, it is vital to consider the impact of e-commerce on the established business model.

6. Conclusions

The battle for customers has never been more intense. Deregulation, diversification and globalization have stimulated a dramatic rise in competition – and these unforgiving marketplace realities have forced companies to switch from a product-centric approach to a customer-centric approach. CRM depends on “systems” to support continuous interactions, fast feedback, adaptation and proactivity. Technology alone cannot do this. Therefore, the companies need to understand how they are going to fill these gaps. Besides, no application can organize the data in the most beneficial way for your company, that's what you need to be able to do. Companies need to assess the business situation and understand the real requirements for automation. Often companies have to change their internal business processes.

In addition to supporting the customer ordering and fulfillment processes, the information captured and managed within CRM applications can play a vital role in planning and provide a key to enhanced customer service through the integration of CRM with ERP or SCM. The integration of CRM and other back-end applications has more to do with culture and processes than software and data flow. The integration is really a challenging task but worth effort.

Now the failure of CRM implementations is a problem of incompleteness. Seamlessly cooperating sales, marketing and customer service activities is the first stage in the CRM implementation. This is necessary but not sufficient. It also requires exploitation of human and organizational resources. It is a journey. Any company committed to CRM must continuously invest in its relationship with its customers because this is the only competitive advantage remaining to an organization.

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