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**The Critical Success Factors of Customer Relationship  
Management (CRM) Technological Initiatives**

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**A thesis in the John Molson School of Business**

**(Decision Sciences and MIS)**

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## **ABSTRACT**

### **The Critical Success Factors of Customer Relationship Management (CRM) Technological Initiatives**

Peter Li Kam Wa

Customers are any organizations' best assets. As an increasing number of organizations realize the importance of becoming more customer-centric in today's competitive economy, they are also discovering that they must deliver knowledge about their customers, products, and services internally (i.e across multiple organizational functions) and externally (i.e at all customer touch points). Therefore, enterprise executives are interested in knowing the Critical Success Factors that will drive their Customer Relationship Management (CRM) technological initiatives. CRM technological initiatives help foster a customer-centric business strategy, the diffusion of knowledge, a unified face to all customers, and a holistic view of customers.

There is no empirical research, to our knowledge, that delves into an understanding of the Critical Success Factors behind CRM technological initiatives. Nor has it been demonstrated that different profiles of Critical Success Factors exist for specific CRM technological initiatives such as Customer Support and Service (CSS), Sales Force Automation (SFA), and Enterprise Marketing Automation (EMA). This thesis compiles the Critical Success Factors of CRM technological initiatives using empirical data from 101 organizations across Canada. The Partial Least Squares (PLS) Structural Equation Modeling method was used to analyze the collected data. A comparison between 57 adopters of CRM technology and 44 non-adopters of CRM technology indicates that the levels of strategic perceived benefits, top management support, and knowledge management capabilities differ between these two independent groups.

The core finding of this study reveals that technological readiness, alone, does not lead to successful CRM technological initiatives. Possessing knowledge management capabilities emerges as the most significant critical success factor of CRM technological initiatives and is strongly related to technological readiness. Top management support is significant for all CRM technological initiatives with the exception of the SFA CRM Infrastructure.

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## 1. INTRODUCTION

The emerging economy is fundamentally changing the relationship between the buyer and the seller, which in turn, is causing transitions in the customer relationship management market (White, 2000; Guadagno, 2000). In a world where competition is only a mouse click away, customer relationships hold the key to organizational success or even survival (Seiders, Berry and Gresham, 2000; Sawy and Bowles, 1997; Colgate and Danaher, 2000). Attracting, satisfying, and retaining customers have become major challenges for brick and mortar organizations as well as e-Businesses. Therefore, an increasing number of organizations have realized that they have to pay more deliberate attention to their customers and have acknowledged customer intimacy as a strategic posture (Sawy and Bowles, 1997).

Customer Relationship Management (CRM) is a concept that enables an organization to provide specific services to each individual customer and, as a result, create customer intimacy. In the simplest scenario, it may simply mean creating a dynamic Web page to show the customized pricing and products dependent on a customer's location and status. At the other end of the continuum, CRM may be used to create personalized one-to-one experience that will give the individual customer a sense of being cared for; thus opening up new marketing opportunities based on the preferences and history of the customer (Peppers, Rogers and Dorf, 1999). As a measure of the significance of CRM, respondents of a survey conducted by Ernst and Young in 2000, indicated that they plan to increase their CRM spending by 31% in a year where overall technology spending increases are expected to flatten to 8% (Battista and Verhun, 2000).

## 1.1 History of Customer Relationship Management

CRM is not a new concept and has always existed in some form in most organizations. The underlying premise of CRM, caring and responding to customers' needs on a continual basis, has been around for several years. Organizations, of all sizes, have used a form of customer-oriented strategy to compete and survive in their respective customer segments. Before the establishment of large organizations and the deployment of various customer touch points such as multiple branches, call centers, and the Web, organizations were practicing customer relationship management based on the traditional one-to-one customer relationship. For example, the local butcher of the area would remember that Mrs. Doe would pay him a visit every Friday morning to buy a specific cut of meat; except for the month of June where Mrs. Doe is out of town.

Managing traditional one-to-one customer relationship, on an individual basis, is possible within a small organization. However, large organizations that have ventured geographically and that provide numerous customer touch points (such as remote locations, call centers, Web access, sales and marketing representatives), have acknowledged the need to develop information systems that can provide knowledge, fast response, fast answers, a unified face to the customer and a holistic view of the customer (Jutla *et al.*, 2001; Alavi *et al.*, 1999; Vance, 1997). Most of today's large organizations are organized along functional units spanning sales, customer support and service, marketing, finance, and accounting. As these large organizations undergo various organizational growth stages, coupled with the unprecedented advancements in technology, functional units have deployed best of breed systems that help address their

current needs. These best of breed systems quickly became disparate systems that lacked common integration and created dispersed customer's operational and historical data across the organization.

## **1.2 Significance of CRM in the new marketplace**

Until recently, most of the sales, service, support and marketing activities of an organization have proceeded in isolation in separate departments (Mitchell, 1998; Hoffman and Novak, 1996). Nowadays, however, there is a need to integrate these functions together in order to meet the demanding requirements of the emerging economy; an economy in which fast response, shared knowledge creation and customer-centricity are the dynamic enablers of success (Sawy and Bowles, 1997; Butler, 2000; Maoz, 2000; Mitchell, 1998; Puschmann and Rainer, 2001; Guleri, 2000; Cisco. 1998). In order to succeed or survive in the increasingly competitive market, organizations have learned the importance of treating their customers holistically and becoming more customer-centric. One way to achieve customer-centricity is to develop Customer Support and Service (CSS) strategies, Enterprise Marketing Automation (EMA) strategies that match each customer's expectations and Sales Force Automation (SFA) strategies based on customer relationships and knowledge through a CRM business initiative.

The emergence of electronic business, organizational dynamics and cultural change issues are dramatically shifting organizations' functional units to focus on the customer. Organizations have realized that customers are any organization's best assets.

Therefore, an increasing number of organizations have realized the importance of having a customer-oriented strategy that includes a customer knowledge base; an organized collection of customer information. Organizations are also considering different customer acquisition and retention mechanisms ranging from convenience of self-service, ubiquitous availability through multiple access methods, creating a sense of community about the product or service, and configurable products or services innovation based on customer knowledge. Based on customer knowledge, cross-selling and up-selling of goods and services, at all customer touch-points, have also become major business drivers.

### **1.3 Role of Information Technology**

Information Technology is undoubtedly playing an overwhelming and non-replaceable role in all CRM technological initiatives in that it is an enabler to assembling customer information and creating customer knowledge (Cooper, Watson, Wixom and Goodhue, 2000). CRM technological initiatives are inherently based on decision support systems and integrated information sources that increase the value of the customer asset by providing a complete view of individual customers and each customer's respective needs.

The competitive pressures of the past decade, coupled with the data explosion era of the 1990's, have driven thousands of organizations to create fragmented and scattered data over multiple islands of transactional computer systems. Jenkins (1999) attributed this scattering of customer data in independent transaction-oriented databases to the

explosive growth of client/server applications. Building a centralized data warehouse has been identified as a remedy to this problem and also as one of the most critical components to providing a viable customer information base (Jenkins, 1999; McKendrick, 2000). Data warehousing or the practice of creating a data warehouse should not be seen as a product. Data warehousing is in fact a best-in-class approach that accommodates organizations' needs to consolidate and store data from disparate information systems into a centralized information base (Jenkins, 1999; Cisco, 1998). The data warehouse enables the integration of transactional level data to provide a consistent picture of the customer. If applied correctly with CRM, data warehousing provides a solid infrastructure of knowledge that leverages data into actionable information. In the banking industry, three banks (First Union Corp., KeyCorp, and Wachovia Corp) have successfully used data warehouses and data marts to support their CRM technological initiatives and reported strong results (Sherter, 1999).

Several lessons have been learned since data warehousing became mainstream more than a decade ago. For instance, organizations have learned that the best way to deploy an enterprise-wide data warehouse is to start with smaller application-based versions called data marts before expanding into more applications across the enterprise (Jenkins, 1999). A rationale analogy to that would be to refer to Montreal's subway system that was built iteratively "station by station" and certainly not all together. Organizations have also learned that they cannot limit the huge amount of information to a set of standard queries and reports for an elite group of users. On the contrary, data warehouses should be accessible to a broad range of users and should serve as the

supporting backbone of critical business processes such as sales, marketing, support and service – CRM supported processes.

#### **1.4 Research Objective**

This thesis delves into the Critical Success Factors that best support Customer Relationship Management (CRM) initiatives in organizations across Canada. The Critical Success Factor (CSF) methodology was developed by Rockart at the Massachusetts Institute of Technology to help senior executives determine their managerial information needs (Rockart, 1979). According to Chu (1995), “Critical Success Factors are the limited number of areas in which satisfactory results will ensure successful performance and poor results will spell trouble for the organization”. The CSF methodology is a versatile approach that has been used to support areas of research such as Total Quality Management (TQM), Management Information Systems planning, and requirements analysis (Sharri *et al.*, 1999; Boynton *et al.*, 1984).

The study of Critical Success Factors has been particularly active in the TQM literature where two main areas of focus have emerged (Sharri *et al.*, 1999). The first approach, “*Critical factors for TQM*”, studies, theorizes, and formalizes TQM (Sharri *et al.*, 1999). The second approach, “*Critical Factors for TQM implementation*”, identifies those important and necessary factors for making TQM implementation and adoption a success (Sharri *et al.*, 1999). Within the context of this study, the second area of focus of the Critical Success Factors methodology will be utilized.



The literature on CRM posits that three main organizational functions are supported; Customer Support and Service (CSS), Enterprise Marketing Automation (EMA) and Sales Force Automation (SFA). These three main organizational functions are defined as separate CRM infrastructures within the application's landscape of CRM. This study analyzes the link between the achievement of successful CRM technological initiatives (i.e CRM impact) and five a-priori Critical Success Factors of CRM: (1) operational perceived benefits, (2) strategic perceived benefits, (3) organizational readiness, (4) knowledge management capabilities, and (5) top management support.

The content of this thesis is structured as follows: Chapter 2 will present a literature review of Customer Relationship Management (CRM) including: the CRM lifecycle, the three supported CRM Infrastructures, electronic CRM (eCRM), operational and strategic perceived benefits of CRM, organizational readiness for CRM, knowledge management capabilities, top management support, and CRM impact. In chapter 3, the proposed research model along with a set of hypotheses that will be used to test the five Critical Success Factors of CRM, will be discussed. In chapter 4, the chosen research methodology will be reviewed: the sample population, the pre-testing procedures, the operationalization of the research model constructs, the measurement instrument, and the data collection strategies. In chapter 5, the data analysis procedures followed by a discussion of the results will be reviewed. The last chapter will conclude with a discussion on the implications, contributions, limitations, and future research considerations of this study.

## 2. LITERATURE REVIEW

Customer Relationship Management (CRM) initiatives have emerged as strategic and high priority projects in an increasing number of organizations. Brick and mortar as well as e-Businesses are implementing CRM technological initiatives due to the potential benefits and opportunities of CRM in marketing, sales, and service functions. According to a recent Gartner Group study on CRM (Gartner, 2001), organizations that effectively use a CRM business strategy are likely to emerge as market leaders but risks and rewards are equally high. Devising a CRM business strategy is unrealistic without a proper understanding of the benefits and opportunities of the CRM enabling technology and vice versa. Gartner Group (Gartner, 2001) reported that CRM projects can achieve some of the highest Return on Investment (R.O.I) but suffer from one of the highest rates of failures; as much as 32 percent and up to 55 percent after one year.

The following section will review topics included in the proposed research model; Customer Relationship Management (CRM), Customer Support and Service (CSS), Sales Force Automation (SFA) and Enterprise Marketing Automation (EMA). Due to the predominant role of the Web, a short review of electronic Customer Relationship Management (eCRM) is provided.

This thesis is drawn from Iacovou, Benbasat and Dexter's EDI adoption and impact research model (1995). Iacovou *et al.*'s (1995) technology adoption and impact model is extended to study the Critical Success Factors of CRM technological initiatives. Two constructs from Iacovou *et al.*'s (1995) EDI adoption and impact model will be

reviewed with respect to CRM; perceived benefits and organizational readiness. In addition, Iacovou *et al.*'s (1995) research framework is reinforced with Rai and Bajwa's (1997) top management support factor; a critical factor that is widely accepted in the MIS literature. This thesis also extends Iacovou *et al.*'s (1995) research model in introducing the knowledge management capabilities component in evaluating CRM impact; another critical factor that has been identified in the CRM literature (Jutla *et al.*, 2001; Battista and Verhun, 2000; Puschmann and Rainer, 2001; Fluss, 2000).

## **2.1 Customer Relationship Management (CRM)**

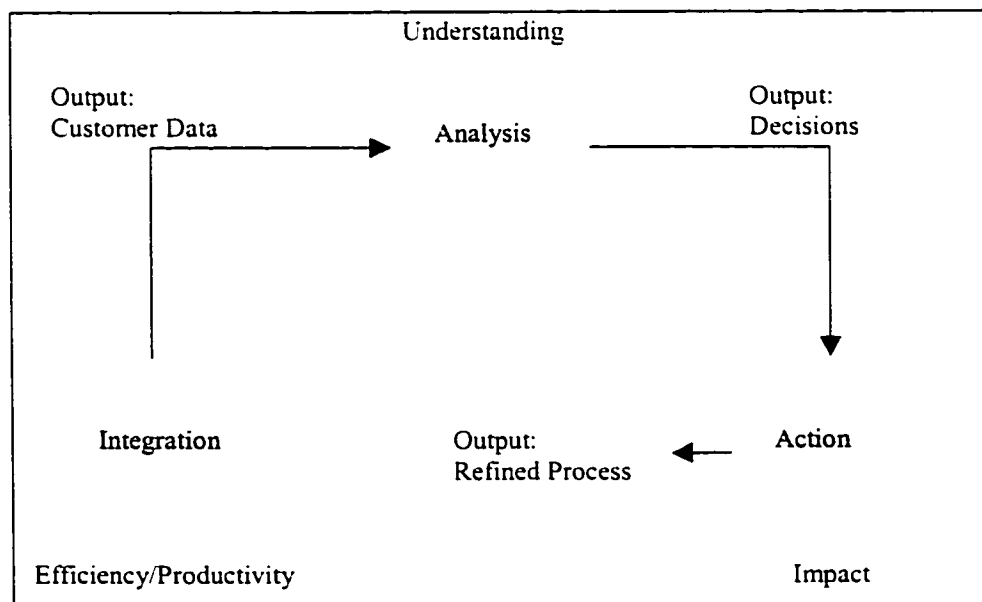
Customer Relationship Management, or CRM, is a customer-focused business strategy that aims to increase customer satisfaction and customer loyalty by offering a more responsive and customized service to each customer. CRM is implemented in organizations to optimize profitability and revenue. It is most commonly used in functional areas such as customer support and service, sales and marketing and is said to combine sales, marketing, service, support, e-Commerce functionality and e-Commerce content (Fluss, 2000; Butler, 2000; Brown, 2000; Johnson, 1999, Anonymous, 2000). Still considered as a new science whose central challenge is to use technology to achieve the goal of mass customization, CRM's concept is the opposite of the Mass Marketing model that builds on the product-centric marketing structure (Battista and Verhun, 2000; Fusaro, 1999).

CRM systems capture a broad range of information about customers such as product purchase history, product satisfaction and customer contact with sales, marketing,

support, and service departments. Organizations use CRM to collect, store, and analyze customer behaviour information in view of attracting and retaining their customers (Mitchell, 1998; Butler, 2000; Fluss, 2000; Battista and Verhun, 2000; Brown, 2000; Sheridam, 1999; Sodano, 2000). CRM holds the key to organizational success since it organizes itself around customer segments, fosters customer satisfying behaviours, and implements customer-centric processes (Maoz, 2000; Fusaro, 1999; Puschmann and Rainer, 2001).

CRM, like any other IT innovation, is not solely technology-driven. CRM is believed to be one of the broadest innovation that organizations have encountered so far since CRM technological initiatives normally imply the implementation of customer-centric business strategy, a redesign of functional activities, and a re-engineering of work processes (Galimi, 2000; Nelson *et al.*, 2000; Close *et al.*, 2001). Hahnke (2001), as depicted below in Figure 1, describes the CRM lifecycle as consisting of three stages: Integration, Analysis and Action.

Figure 1: CRM lifecycle (Hahnke, 2001).



The first stage of the CRM lifecycle, Integration, is accomplished through the integration of front-office systems in sales, marketing, and customer support and service organizational functions with centralized customer-related data. The benefits of the CRM Integration stage include improved front-office efficiency and productivity. The output of the Integration stage is a centralized customer information platform that provides relevant customer data across all customers' touch points (Hahnke, 2001).

The second stage of the CRM lifecycle, Analysis, is believed to be the most critical stage to a successful CRM initiative (Hahnke, 2001). Using CRM analytics, organizations are able to develop customer knowledge and effectively manage customer relationships through a better understanding of customer relationships. Analyzing customer behaviors, identifying customer buying patterns and discovering causal relationships ultimately create customer knowledge. Together, these capabilities help organizations understand their customer assets and reach business decisions that model and predict future customer satisfaction and customer behavior.

The third and final stage of the CRM lifecycle, Action, is the stage in which strategic decisions are carried out. Based on the findings of the Analysis stage, business processes and organizational structures are adjusted. This final stage allows organizations to take actions in all customer-facing activities and refine the necessary business processes. This stage closes the CRM loop and permits organizations to cash in on the valuable insights gained through the Analysis stage (Hahnke, 2001).

## **2.2 CRM Infrastructures**

The CRM applications' landscape can be broadly defined into three categories: Customer Support and Service (Fluss, 2000; Battista and Verhun, 2000; Baker, 2000; Craig, 2000; Anonymous, 2000), Sales Force Automation, and Enterprise Marketing Automation (Battista and Verhun, 2000; Craig, 2000; Anonymous, 2000). Each of the three categories of CRM applications can be considered as a separate CRM Infrastructure that can be implemented standalone or all together at different stages.

### **Customer Support and Service (CSS)**

Customer Support and Service is becoming one of the most critical core business processes for most organizations. Seen as a growing envelope that can manage and grow long-term customer relationships, Customer Support and Service covers the manner in which a product is delivered, bundled, explained, billed, installed, repaired, renewed and redesigned (Sawy and Bowles, 1997).

Whether an organization is in manufacturing or in services, what is increasingly making a competitive difference is the Customer Support and Service that is built into and around the product (Sawy and Bowles, 1997; Brown, 2000; Lord, 2000). The Strategic Planning Institute found that companies rated highest for customer service quality achieved more than twice the market share, Return on Investment (ROI) and Return on Sales (ROS) of companies characterized by inferior service (Mitchell, 1998).

The Internet has also grown into a medium that allows organizations to increase their visibility, accessibility and sales to the growing customer base. The fundamental appeal of this intensely interactive Web medium is immediate gratification for Web visitors. Web-savvy customers who deal with faceless organizations demand quality products or services, 24 by 7 accessibility, removal of geographic boundaries, easy ordering, on-time delivery, and responsive service and support (Butler, 2000; Lord, 2000; Fusaro, 1999). As a result, organizations have realized that they need to become more customer-centric in the new economy. Many organizations have begun centralizing their business strategy orientation around their customers (Mitchell, 1998). For instance, organizations are increasingly capturing, sharing, and applying customer knowledge in knowledge bases for customer support and service purposes. The goal is to reduce support call times, resolve customer problems with fewer expert support personnel, and reduce the need for support personnel through customer self-service (Davenport, 1998).

### **Sales Force Automation (SFA)**

Sales Force Automation, or SFA, means applying the best practices of selling into a software package that can help organizations' sales teams attract and retain profitable customers. SFA applications are designed to shorten selling cycles, increase customer face-to-face time, and guide the sales process. These solutions provide functionalities for sales management in sales forecasting, for sales personnel in sales planning, and for sales personnel in sales execution. They also empower the entire selling process and create added value both for the organization and for the customer; that is internally and externally (Seligman, 2000; Day, 2000).

Using SFA applications, salespeople have the capability to build customized value packages instantly and juggle pricing, terms and volume for the organization's product offerings while in front of the customer. Broadly deployed SFA applications between partners and various branches of an organization will provide, as well as promote, an informed and unified face to the customer. Undoubtedly, this kind of knowledge is beneficial for building customer relationships (Stevens, 1999; Day, 2000; Goldberg, 1999).

### **Enterprise Marketing Automation (EMA)**

Enterprise Marketing Automation, or EMA, applications seek to have the same automating and empowering impact on marketing that SFA has on sales (Stevens, 1999). The Internet revolution has given rise to new methods of creating customized enterprise marketing plans and there is a need to automate marketing plans on Web sites, online Call Centers or simply in the hands of sales teams, marketing people, and even customer support and service personnel. EMA applications and CRM share one common goal which is to evolve from the mass marketing model, which was spurred on by the product-centric marketing structure, to providing customized marketing plan for each customer as if they were the only customer (Fusaro, 1999; Peppers, Rogers and Dorf, 1999).

To manage each customer relationship individually, the enterprise marketing functions need to allow the tracking, the capture, and the analysis of customer activities, both interactions and transactions, over a long period of time (Fusaro, 1999). Converting information into knowledge can be used to create personalized marketing plans that target



each defined customer segment. Knowledge can also be utilized to develop new products, new services and design communication programs that attract, reward and hence retain customers (Brown, 2000; Fusaro, 1999; Sodano, 2000; Colgate and Danaher, 2000; Day, 2000; Puschmann and Rainer, 2001).

### **2.3 Electronic CRM or eCRM**

The emerging and predominant electronic marketplace has caused an increasing number of organizations to embrace the online channels. This has undoubtedly caused transitions in the customer relationship market (Butler, 2000; Guadagno, 2000; Fusaro, 1999). The Web offers organizations endless opportunities; opportunities that could be easily missed or lost to aggressive competitors. Faced with market pressures, e-Businesses are being forced to move closer to their customers since the customer is the center of every organization involved in the electronic marketplace (Sawy and Bowles, 1997; Nemzow, 1999).

The electronic marketplace is characterized by high customer expectation for speed, ease of use and quality of interactions. In the past, organizations served a limited number of customers through storefronts or over the phone with much success. However, the contact channel of the new electronic marketplace, the Web, must support a dramatically altered volume and complexity of customers.

eCRM or electronic CRM has become a strategic imperative for today's e-Businesses especially in a business environment characterized by unprecedented speed, rapid knowledge creation, increased complexity and the spreading of electronic networks

(Sawy and Bowles, 1997; Nemzow, 1999). eCRM is an intersection of CRM and e-Business. As opposed to CRM that utilizes mostly client/server architectures, eCRM is built from the ground up on an Internet-native architecture that will provide businesses with a single application to manage all marketing, campaign management, sales, service and support functions on the Internet (Guleri, 2000). eCRM incorporates functionality to manage the Internet interactions necessitated by e-Business and hence recognizes the demand for interactive, Web-based customer contact (Fluss, 2000; Brown, 2000).

The advent of the Web has caused researchers to exclusively investigate attributes of eCRM despite the lack of an established framework for CRM adoption and impact; CRM being the foundation of eCRM (Jutla *et al.*, 2001; Kundisch *et al.*, 2001). This study proposes a generic framework that can be applied to both CRM and eCRM. The following sections will review the different constructs that make up the proposed research model.

#### **2.4 Perceived Benefits**

The perceived benefits construct has been proposed in the past as a determinant of new technology adoption and impact of new technology such as Electronic Data Interchange (EDI) and e-Commerce (Iacovou *et al.*, 1995; Kettinger *et al.*, 1997). Perceived benefits is the extent to which managers comprehend and recognize the relative advantage that CRM technology can provide to the organization before the implementation of a CRM initiative. Past literature from a technology adoption and

impact perspective has identified two major categories of perceived benefits: direct perceived benefits and indirect perceived benefits (Iacovou *et al.*, 1995).

Direct perceived benefits are defined as the operational savings due to the improved internal efficiency of the organization (Iacovou *et al.*, 1995). This category of benefits is directly linked with the benefits and outputs from the Integration stage of the CRM lifecycle that was previously reviewed (Refer to Figure 1, p. 10). Direct benefits such as improved front-office efficiency and productivity in sales, marketing and customer support and service functional units are perceived to shorten the organizational sales cycle, marketing cycle and customer support and service cycle due to better employees' productivity. Furthermore, improved operational efficiency and productivity will help decrease costs related to all customer-related activities. Finally, the availability of centralized customer information will also allow an organization to handle more complex customer relationships because of greater information accessibility, increased accuracy in information content, and accelerated processing and exchange of information.

Indirect perceived benefits are defined as the tactical, opportunistic and competitive advantages due to the impact of CRM on the business processes and relationships (Iacovou *et al.*, 1995). This category of benefits is directly linked with the benefits and outputs from the Analysis and Action stages of the CRM lifecycle that was previously reviewed (Refer to Figure 1, p. 10). Indirect benefits include an improved and accurate understanding of the customer, the availability of strategic business decisions that model and predict future customer satisfaction and customer behavior, and the resulting opportunity to increase organizational profits. Possessing customer knowledge

will assist an organization to access new customer segments, achieve greater customer loyalty among its clientele, and provide customized products or services that mirror customers' needs. These capabilities would also help an organization gain a competitive edge over its competitors.

For the purpose of this thesis, direct perceived benefits are considered as the operational perceived benefits of CRM. Similarly, indirect perceived benefits are considered as the strategic perceived benefits of CRM.

## **2.5 Organizational Readiness**

In previous studies, the organizational readiness construct has been proposed as a determinant of new technology adoption and impact of new technology such as Electronic Data Interchange (EDI) and e-Commerce (Iacovou *et al.*, 1995; Kettinger *et al.*, 1997). Organizational readiness refers to the level of financial resources and technological resources available to the organization (Iacovou *et al.*, 1995). This construct is included in the research framework because CRM can be a costly and complex initiative that requires a significant level of financial support, IT sophistication, and technological skills. In this study, organizational readiness exists in two dimensions: financial readiness and technological readiness.

The first dimension of the organizational readiness construct, financial readiness, refers to the availability of financial resources in the organization to support CRM (Iacovou *et al.*, 1995). CRM implementation normally include costs related to acquisition of the technology, integration of sales, support and service, and marketing

functions, maintenance of central databases or data warehouses to store information from all contact points, and the use of decision analytics to convert information into knowledge. Therefore, it is very important that financial resources are made available to support successful CRM technological initiatives.

The second dimension of the organizational readiness construct, technological readiness, refers to the level of sophistication of IT usage and IT management in an organization (Iacovou *et al.*, 1995). Since CRM necessitates a high level of integration between all contact points, a visible supply chain (encompassing sales, support and service, and marketing functions) and a solid IT Infrastructure, it is posited that IT-sophisticated organizations would have the necessary technological resources to support CRM technological initiatives (Iacovou *et al.*, 1995).

## **2.6 Top Management Support**

Top management support refers to the extent to which CRM efforts are promoted by the top/corporate management in an organization (Rai *et al.*, 1997). This dimension is especially important in situations where a redesign of work processes and functional activities are likely to occur. Top management support is a widely accepted Critical Success Factor in the MIS literature. As Jarvenpaa and Ives (1991) stated, "few nostrums have been prescribed so religiously and ignored as regularly as executive support in the development and implementation of management information systems". Past innovation studies have also reported a positive association between top management support and observed innovation behavior in organizations (Kimberly and Evanisko, 1981; Meyer and

Goes, 1988; Rai *et al.*, 1997). Top management support is, therefore, proposed to be a critical factor that influences the level of CRM innovations and diminish resistance to change in this study (Rai *et al.*, 1997).

## **2.7 Knowledge Management Capabilities**

Possessing knowledge management capabilities has recently been identified as a critical enabler to supporting successful CRM technological initiatives (Jutla, Craig and Bodorik, 2001; Battista and Verhun, 2000; Puschmann and Rainer, 2001; Fluss, 2000). Knowledge management activities have flourished as an increasing number of organizations attempt to capture and reuse their best practices and their intellectual assets (Davenport, 1998). Since the existing body of research on knowledge management capabilities is very restricted (Alavi *et al.*, 1999), it is necessary to investigate the evolution of knowledge to knowledge management before defining the knowledge management capabilities construct.

### **2.7.1 From Knowledge to Knowledge Management (KM)**

The broad and abstract definition of knowledge has been a subject of many epistemological debates in western philosophy beginning from the classical Greek era (Alavi *et al.*, 1999). The information systems literature contains a distinction between knowledge, information and data to help understand the differences in these three terms. Vance (1997) defines information as a meaningful interpretation of data and knowledge as information that has been authenticated and thought to be true. Alavi *et al.* (1999) refer to knowledge as a justified personal belief that increases an individual's capacity to

take effective action where an action refers to the possible combination of physical skills, physical competencies and cognitive or intellectual activity.

Furthermore, Alavi *et al.* (1999) define knowledge management as the systemic and organizationally specified process for acquiring, organizing and communicating both tacit and explicit knowledge to improve effectiveness and productivity. Knowledge management is said to encompass all forms of business relationship management (relationships with customers, partners and regulatory bodies), intellectual assets management (employee knowledge and expertise) and content management (including document management, web content management, media asset management and syndication of content) (Jutla *et al.*, 2001).

### **2.7.2 From KM to Knowledge Management Capabilities**

Since this study is oriented towards CRM, the following working definition of the knowledge management capabilities construct has been adapted from the combined work of Jutla *et al.* (2001), Alavi *et al.* (1999), and Vance (1997) with a CRM twist. Knowledge management capabilities is the ability of an organization to capture, manage and deliver real time authenticated customer, products, and services information in order to improve customer response and provide faster decision-making based on reliable information (Jutla *et al.*, 2001; Alavi *et al.*, 1999; Vance, 1997). Essentially, knowledge management capabilities is the ability of an organization to capture, manage and deliver reliable customer, products and services information across the enterprise or the ability of an organization to treat its customers on a holistic level.

Alavi *et al.* (1999) conducted a survey with fifty vanguard organizations to determine the knowledge management capabilities that were deemed necessary by these organizations' executives. The results of Alavi *et al.*'s (1999) survey, as shown in Table 1 (p. 23), showed the emergence of three knowledge management capabilities perspectives:

- (1) *Information-based* capabilities perspective such as need for access to customer information, client information, competitor information, product/market information, activity-based costing, human resource information and up-to-date financial status.
- (2) *Technology-based* capabilities perspective such as wider bandwidth, e-mail suites, web-based products, search engines, intelligent agents, navigational tools, global IT infrastructure, interoperability of existing data systems and fast retrieval.
- (3) *Culture-based* capabilities perspective such as practical guidelines to knowledge management systems, facilitation of organizational change and promotion of knowledge sharing.



Table 1: Emerging Knowledge Management Capabilities (Alavi *et al.*, 1999).

<b><u>Information-based</u></b>	<b><u>Technology-based</u></b>	<b><u>Culture-based</u></b>
Client information	Integrated databases	Teamwork
Competitive information	Systems interoperability	Practical guidelines
Customer information	Larger bandwidth	Knowledge sharing
Market information	Global IT infrastructure	
Activity-based costing	Intelligent agents	
Financial information	Email suites, Web products	
Human Resources information	Navigational tools	
Product and services information	Fast retrieval	

Skyrme and Amidon (1998) have reported the importance for organizations to develop knowledge management and to possess adequate knowledge management capabilities in order to succeed in the dynamic global economy. However, traditional asset-based measurement systems, of which financial accounting is the most developed, are merely based on measures of physical and tangible items and do not measure intangibles such as knowledge and intellectual assets (Skyrme and Amidon, 1998; Atkinson, Waterhouse and Wells, 1997; Bohn, 1994). Barsky and Marchant (2000) illustrated the inappropriateness of financial measures using Microsoft Corporation's example. During the second quarter of 2000, Microsoft had a market value of over \$600 billion compared with a book value of approximately \$45 billion. This enormous difference in value is attributable to Microsoft's value creation process from its intellectual assets and knowledge (Barsky and Marchant, 2000).

### 2.7.3 A process-based approach to measure intangibles

Bohn (1994) proposed a process-based approach to measure the intangible levels of technological knowledge; knowledge about how to produce goods and services. Bohn's framework, as shown in Table 2 (p. 24), consisted of eight stages of technological knowledge ranging from complete ignorance (stage 1) to complete understanding (stage 8). Each stage of technological knowledge describes the knowledge of an input variable effect on the process output and can be applied to a diversity of tasks and industries. Understanding the knowledge stage of different process variables is important because it determines how to manage knowledge and the production process (Bohn, 1994).

Table 2: Eight stages of technological knowledge (Bohn, 1994).

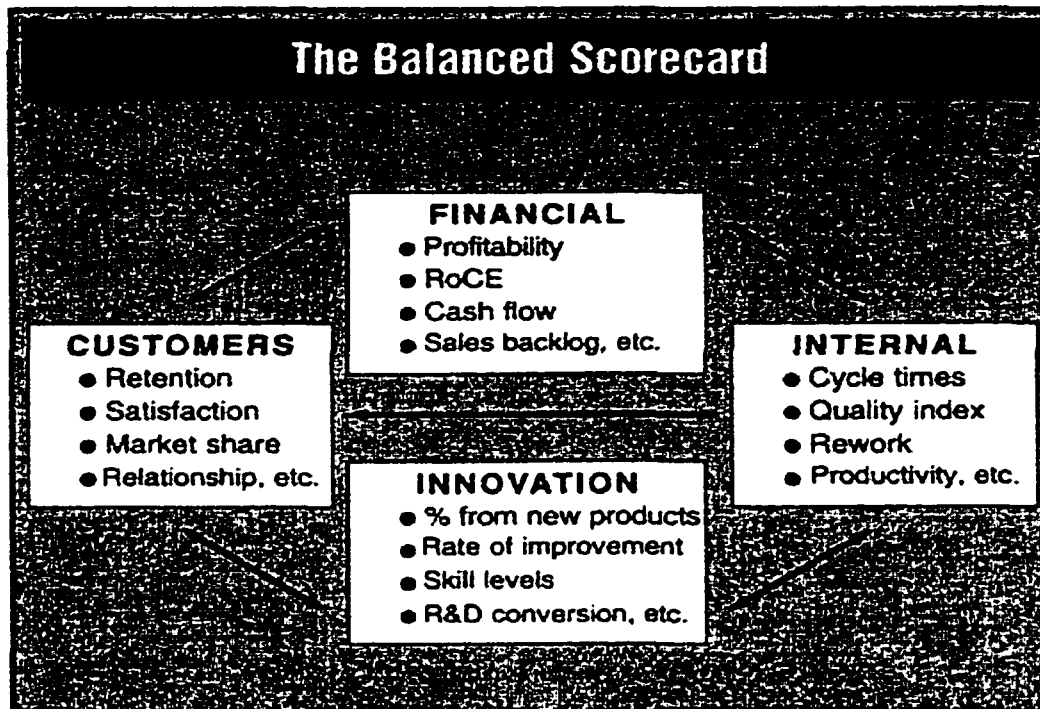
<u>Stage</u>	<u>Name of the stage</u>	<u>Comment on the stage</u>
1	Complete Ignorance	
2	Awareness	Pure Art
3	Measure	Pre-technological
4	Control of the mean	Scientific method feasible
5	Process capability	Local recipe
6	Process characterization	Trade-offs to reduce costs
7	Know why	Science
8	Complete understanding	Nirvana

Kaplan and Norton (1992) also proposed a process-based approach known as the Balanced Scorecard as an alternative approach to measure intangibles such as knowledge during the 1992 Harvard Business Review seminar. The Balanced Scorecard is a

management methodology that goes beyond traditional financial based measures and looks at setting objectives and measuring performance from several distinct perspectives. This broadened scope provides a balanced view of the present and future performance of the enterprise. The Balanced Scorecard brings together many disparate elements of an organization's competitive agenda: increasing customer-centricity, shortening customer response, improving quality, emphasising teamwork, reducing new product launch times, and managing intellectual assets for long-term (Kaplan and Norton, 1992).

Since 1992, the Balanced Scorecard has grown in popularity and is known as one of the best-developed methods to measure intangibles (Skyrme and Amidon, 1998). The Balanced Scorecard approach measures knowledge by linking knowledge to its applications and business benefits. Balanced Scorecard measurements cover four important perspectives: *financial* measures of actions already taken, *customers* perspective or "How do customers see us?", *internal* business perspective or "What must we excel at internally to meet customers' expectations" and *innovation* perspective or "Can we continue to improve and create value?" (Refer to Figure 2, page 26).

Figure 2. Balanced Scorecard measures (Kaplan and Norton, 1992).



The essence of the Balanced Scorecard approach is that the drivers of financial performance rest on the design and management of an organization's internal business processes to achieve customer satisfaction. This process approach to performance measurement describes how results from internal processes create customer satisfaction, customer relationships and organizational results (Atkinson, Waterhouse and Wells, 1997).

The definition of the knowledge management capabilities construct describes the intrinsic ability of an organization in terms of knowledge management to satisfy its customers. Therefore, only the *internal* quadrant of the Balanced Scorecard methodology will be used in this study, to specifically measure the intangible value of an organization's knowledge management capabilities. The Balanced Scorecard *internal*

quadrant refers to the actions that have to be conducted internally to meet customers' expectations. The four measurements of the Balanced Scorecard *internal* quadrant are:

- (1) Cycle times or the length of each customer-related activity.
- (2) Quality index or the quality of products and services delivered to each customer.
- (3) Rework or the ability of an organization to adapt to the changing needs of its customers.
- (4) Productivity or the achievement of enhanced productivity because of the availability of intellectual assets and customer knowledge.

## **2.8 IT Impact and CRM Impact**

The difficulties in demonstrating the effects of growing IT investments on organizational performance have given way to an increasing debate in the study of IT impact on organizational performance (Mahmood *et al.*, 2000). IT impact refers to the organizational benefits from the embedding of technology in products and services offerings as a result of IT investments (Mahmood *et al.*, 2000; Karimi *et al.*, 2001).

Karimi *et al.* (2001) recently approached this debate with respect to CRM technology investments and reported that “despite huge CRM technology investments, several organizations have been unable to increase their customer satisfaction index ratings”. Brynjolfsson *et al.*'s (1998) analysis of several studies on IT investment-organizational performance relationships revealed that the greatest benefits of IT, at the organizational level, appear to be realized when IT investment is coupled with other

complementary investments such as organizational reengineering, restructuring, and redesign.

Brynjolfsson *et al.*'s (1998) perspective offers a new level of inquiry that is very adequate for IT investments such as CRM technological initiatives. This is because CRM technological initiatives are business strategies that inherently rely on IT, and normally imply the implementation of customer-centric business strategy, a redesign of functional activities, and a re-engineering of work processes (Galimi, 2000; Nelson *et al.*, 2000; Close *et al.*, 2001).

CRM impact refers to the actual benefits that organizations receive through the use of CRM technology. This construct is originally derived from Iacovou *et al.*'s (1995) research model for EDI adoption and it is re-worded to apply to CRM technological initiatives for the purpose of this thesis.

A broad interpretation of Iacovou *et al.* (1995) measurement instrument in regards to technology impact, that is non-related to trading partnerships from EDI, resulted in a list of seven items. These items measured the impact of the technology on the firms' competitiveness, operations, added value (i.e advantages and disadvantages), customer service, efficiency, control, and flexibility (Iacovou *et al.*, 1995).

These seven items were found to be very appropriate for any new technology innovation, including CRM, despite the huge advancements in Information Technology in the recent years.

Jutla *et al.* (2001) recently proposed a customer-focused evaluation framework, based on three customer metrics, to measure CRM impact as the ongoing performance, costs and effectiveness of the CRM technological initiatives. The three customer metrics are (1) customer retention rate, (2) customer satisfaction, and (3) customer profitability. Customer retention rate refers to the existing customer retention rate for new, old and repeat or loyal customers. Customer satisfaction refers to the degree of customer satisfaction due to the introduction of innovative products and services, better lead times, on time delivery, anticipation of emerging needs, customization, convenience and team spirit. Customer profitability refers to the organization's position towards its competitors in terms of ratio of customer costs per market segment, market and wallet share in targeted segments (Jutla *et al.*, 2001).

Gartner Group (Gartner, 2001) suggested that the impact of CRM technological initiatives should be measured in two dimensions: from an organizational focus (i.e internally) and from a customer focus (i.e externally). Following Gartner Group's indicators, Jutla *et al.*'s (2001) customer-focused evaluation framework will be measured internally (i.e in terms of the organizations' customer retention rate and profitability) and externally (i.e in terms of the organizations' perceived customer satisfaction).

CRM impact is therefore re-defined as the actual benefits that organizations receive through the use of CRM technology from an organizational focus (i.e in terms of customer retention rate and profitability) and from a customer focus (i.e in terms of perceived customer satisfaction) (Jutla *et al.*, 2001; Gartner, 2001).

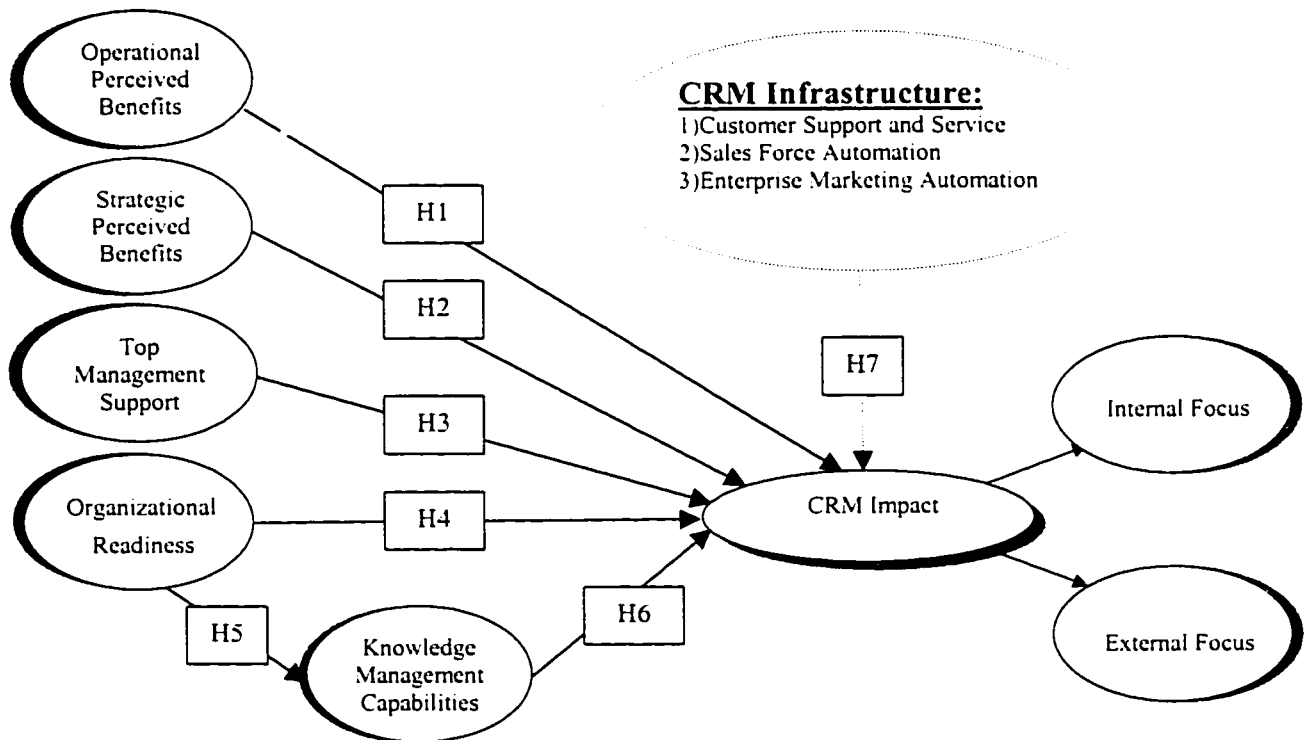
### 3. RESEARCH MODEL AND HYPOTHESES

This chapter provides a description of the proposed research model and the seven hypotheses put forward.

#### 3.1 Research Model

The proposed research model, illustrated in Figure 3, is a schematic representation that attempts to answer the following research question: *What are the Critical Success Factors that best support a Customer Relationship Management technological initiative?* A secondary objective of this study is to investigate if a specific set of Critical Success Factors exists for the three supported CRM Infrastructures.

Figure 3. Research Model (Note: dotted lines indicate dummy variables)





The proposed research model is the framework that will be utilized to measure the relationship between the five pre-defined Critical Success Factors (operational perceived benefits, strategic perceived benefits, organizational readiness, knowledge management capabilities, and top management support) and CRM impact for each CRM Infrastructure. As such, CRM impact is the dependent variable and operational perceived benefits, strategic perceived benefits, organizational readiness, knowledge management capabilities and top management support constitute the independent variables. The three CRM Infrastructures are dummy variables that will be used to investigate the Critical Success Factors relevant to a particular CRM Infrastructure. The theoretical background of the proposed research model combines fundamental constructs taken from Iacovou *et al.*'s (1995) EDI adoption and impact model, top management support (Rai *et al.*, 1997), and knowledge management capabilities (Kaplan *et al.*, 1992; Alavi *et al.*, 1999).

There are four main differences between the proposed model and Iacovou *et al.*'s (1995) original research model. The first difference is the inclusion of the top management support factor as a Critical Success Factor of CRM technological initiatives. Several innovation studies have reported a positive association between top management support and innovation behaviour (Kimberley and Evanisko, 1981; Meyer and Goes, 1988). Since CRM technological initiatives are considered innovations, top management support is posited to be an important factor that influences the level of innovation adoption within organizations (Rai *et al.*, 1997). Top management support is widely accepted in MIS literature as a paramount factor for innovations. Both practitioners and researchers have also voiced top management support as an important factor in innovative initiatives.

The second difference is that the knowledge management capabilities construct has been added in order to broaden the scope of research in this investigation of technology innovation. Several studies have identified the intangible characteristics of knowledge management capabilities as an important construct to consider for CRM success (Jutla *et al.*, 2001; Battista and Verhun, 2000).

The third difference in the research model is the use of a customer-focused approach (Jutla *et al.*, 2001) to assess CRM impact; the actual benefits that an organization receive through the use of CRM technology. This approach was chosen because the customer metrics framework (Jutla *et al.*, 2001) is highly pertinent to CRM and is also strongly aligned with of Iacovou *et al.*'s (1995) technology adoption and impact construct as depicted in Table 4 (p. 44).

The fourth difference in the research model is the inclusion of the CRM Infrastructure construct. The goal of this dummy construct is to classify the different applications of CRM that are supported in the literature and to support the investigation of the specifics of each CRM Infrastructure.

### **3.2 Definition of variables**

The CSFs of CRM technological initiatives are defined as the limited number of areas that must achieve satisfactory results to make CRM implementation a success.

Perceived benefits is the extent to which managers comprehend and recognize the relative advantage that CRM technology can provide to the organization before any

implementation. More specifically, operational perceived benefits are defined as the operational savings due to the improved internal efficiency of the organization. In addition, strategic perceived benefits are defined as the tactical, opportunistic and competitive advantages due to the impact of CRM on the business processes and relationships.

Organizational readiness refers to the level of financial resources and technological resources available to the organization for CRM technological initiatives.

Top management support refers to the extent to which CRM efforts are promoted by the top/corporate management in an organization.

Knowledge management capabilities, applied to CRM technological initiatives, is the ability of an organization to capture, manage and deliver real time authenticated customer, products, and services information in order to improve customer response and provide faster decision-making based on reliable information.

CRM impact is defined as the actual benefits that organizations receive through the use of CRM technology from an organizational focus (i.e in terms of customer retention rate and profitability) and from a customer focus (i.e in terms of perceived customer satisfaction).

### **3.3 Research Hypotheses**

The correlational research strategy was selected to test the hypotheses and the relationship between the variables in the proposed research model. Since the goal of this

study is to validate five pre-defined Critical Success Factors of CRM technological initiatives, the correlational strategy will permit the measurement of the relationships between the proposed research model variables across multiple cases. This research strategy will also help to determine the statistical significance of each construct's relationship across multiple cases.

The proposed research model is tested with seven main hypotheses in order to answer the research question:

**H1:** Operational perceived benefits from using CRM are positively linked to CRM impact.

As shown in Figure 3 (p. 30), it is posited that operational perceived benefits from using CRM are positively related to the actual benefits from using CRM. This proposition has been used in other empirical studies to measure the relationship between actual benefits and the recognition of benefits, in this case operational perceived benefits (Iacovou *et al.*, 1995; Kettinger and Hackbarth, 1997).

**H2:** Strategic perceived benefits from using CRM are positively linked to CRM impact.

As shown in Figure 3 (p. 30), it is posited that strategic perceived benefits from using CRM are positively related to the actual benefits from using CRM. This proposition has been used in other empirical studies to measure the relationship between actual benefits and the recognition of benefits, in this case strategic perceived benefits (Iacovou *et al.*, 1995; Kettinger and Hackbarth, 1997).

**H3:** Top management support is positively linked to CRM impact.

CRM technological initiatives usually imply the implementation of customer-centric business strategies, a redesign of functional activities and a re-engineering of work processes that require significant top management support. Top management support includes support for a major change in business processes, support to diminish resistance to change and support for financial and technological investments. Therefore, it is hypothesized that CRM technological initiatives, supported with top management support, are more prone to achieve actual benefits and is positively linked to CRM impact.

**H4:** Organizational readiness (both technological and financial) is positively linked to CRM impact.

Organizational readiness refers to the level of technological resources and financial resources that are available to an organization. CRM technological initiatives are generally considered as costly and complex innovations that demand advanced technological skills, integrated information sources and costly information systems infrastructures. Therefore, organizations with a higher balance of IT sophistication, technological skills and financial resources are more prone to achieve actual benefits from using CRM (Iacovou *et al.*, 1995; Kettinger and Hackbarth, 1997).

**H5:** Organizational readiness, in terms of technological readiness and financial readiness, is positively linked to knowledge management capabilities.

According to Alavi *et al.* (1999), knowledge management capabilities are inherently based on the *Information-based* capabilities, the *Technology-based* capabilities and the *Culture-based* capabilities of an organization. An important pre-requisite to developing and achieving knowledge management capabilities rests in the information systems infrastructure of an organization. Therefore, it is hypothesised that organizational readiness, in terms of technological readiness and financial readiness, is positively linked to knowledge management capabilities.

**H6:** Knowledge management capabilities are positively linked to CRM impact.

This proposition is based on the rationale that knowledge management capabilities will help achieve a holistic view of the customers internally as well as provide a unified face to all customers externally. These internal and external capabilities will, in turn, permit an organization to reap actual benefits from using CRM. Jutla *et al.* (2001) and Battista *et al.* (2000) both suggested that the sharing of unified customer information is one of the most important elements in a successful CRM initiative.

**H7:** Each of the three supported CRM Infrastructures (namely CSS, SFA, EMA) has a specific profile of Critical Success Factors that is positively linked and best support CRM impact.

Each CRM Infrastructure distinctly supports a very different organizational function; customer support and service, sales, and marketing. Therefore, it is

hypothesized that each CRM Infrastructure will possess a specific set or profile of Critical Success Factors that will best support the actual benefits from using CRM. This last hypothesis, though exploratory, can potentially provide valuable information for specific CRM technological Infrastructures.

## **4. METHODOLOGY**

This section describes the key methodological activities in regard to the sample population, the pre-testing procedure, the operationalization of the research model constructs, the layout of the measurement instrument, and the data collection strategies that were utilized to achieve the stated objectives in this correlational study.

### **4.1 Sample population**

A self-administered mail survey, consisting of one questionnaire, was the chosen method to test the proposed research model and the seven hypotheses put forward. The initial sample of respondents for this survey was to be provided by the CRM Power Institute, [www.ecustomerworld.com](http://www.ecustomerworld.com). The source of the respondents was to be compiled from a list of attendants of the CRMPower2000 conference held in September 2000 in Toronto, Ontario. One limitation of this data collection methodology is the bias introduced by addressing this questionnaire to a population already interested in CRM technological initiatives. However, due to the paucity of CRM adoption in Canadian organizations, this data collection strategy was the most reasonable approach at the time as it would optimize the number of qualified participants. Unfortunately, a phone conversation with the president and CEO of the CRM Power Institute revealed that the list of the CRM Power 2000 attendants could not be shared for proprietary reasons.

Therefore, a self-administered mail survey consisting of one questionnaire was conducted with a nationwide random sample of 1000 organizations extracted from Dun and Bradstreet's database in March 2001. The selection criterion that was requested



against Dun and Bradstreet's database was as follows: a random sample of 1000 CEOs or Presidents of private organizations in Canada, which employed 250 or more employees. The chosen subjects under study originated from five main Standard Industry Classification (SIC) code industries: (1) "20-39" Manufacturing, (2) "40-49" Transportation and Communication, (3) "52-59" Retail, (4) "60-67" Finance, Insurance or Real Estate and (5) "70-89" Services.

#### **4.2 Operationalization of the constructs**

Data collection by mail survey was one of the most important tasks in this study. The development of a reliable and valid survey instrument was critical for this study. Since a validated survey instrument that encompasses the Critical Success Factors of CRM technological initiatives did not exist, one was created to satisfy the requirements of the study.

Whenever possible, pre-tested measurement scales from prior empirical research literature were adapted and used in the questionnaire. However, given the relative innovation of CRM and the paucity of research in this area, several variables in the questionnaire were adapted from previous academic measurement approaches that have been identified as appropriately pertinent to CRM (See Table 3, p. 40). Approximately 36 case studies from Siebel Systems, the confirmed leader in CRM, were also used to verify the consistency of the questionnaire (Siebel, 2001).

Table 3: Matrix of constructs and corresponding measurement references

Constructs	Section in the Questionnaire	Number of Items	Questions	Measurement References
Operational perceived benefits	Section I Perceived benefits of CRM	5	3, 5a-c, 10	Iacovou <i>et al.</i> (1995)
Strategic perceived benefits	• Section I Perceived benefits of CRM	5	1, 2, 4, 8, 9	Iacovou <i>et al.</i> (1995)
Organizational readiness	• Section I Organizational readiness • Section IV Financial readiness	8	1-6 8-9	Iacovou <i>et al.</i> (1995)
Knowledge management capabilities	• Section I Knowledge Management Capabilities	9	1-9	Kaplan <i>et al.</i> (1992)
Top management support	• Section I Organizational readiness	4	7-10	Rai <i>et al.</i> (1997)
CRM impact	• Section III CRM impact	10	1a-d, 2a-e, 3	Jutla <i>et al.</i> (2001)
CRM Infrastructures	• Section I	3	CRM Infrastructure section	(Fluss, 2000; Battista and Verhun, 2000; Baker, 2000; Craig, 2000; Anonymous, 2000)

The operational and strategic perceived benefits constructs of the CRM impact research model were adapted from a validated research model, Iacovou *et al.*'s (1995) EDI Adoption and Impact model. Even though CRM and EDI share very different objectives, the measurement items in regard to the operational and strategic perceived benefits constructs were found to be very appropriate for CRM. As such, the measurement items from Iacovou *et al.*'s (1995) perceived benefits construct were adapted to CRM and re-worded in ten questionnaire items. The operational perceived benefits construct was made up of five items and the strategic perceived benefits construct consisted of five items as shown in Table 3 (p. 40).

The organizational readiness construct of the CRM impact research model was adapted from Iacovou *et al.* (1995) EDI Adoption model. Even though CRM and EDI share very different objectives, Iacovou *et al.*'s (1995) organizational readiness measurement items were found to be very appropriate to measure technological resources for CRM. As such, the measurement items of organizational readiness from Iacovou *et al.* (1995) were adapted to CRM and re-worded in six questionnaire items.

The proposed research model is also enriched with the knowledge management capabilities construct; a construct that has been identified by many as a key enabler for success and a very complex construct to measure due to its intangible characteristics (Skyrme and Amidon, 1998). The measurement items for the knowledge management capabilities construct, operationalized in nine items, have been developed from an adapted version of the Balanced Scorecard devised by Kaplan *et al.* (1992) and complemented with Alavi *et al.* (1999) knowledge management capabilities framework. Since only the intangible knowledge management capabilities measurements are sought

in this study, the measurement items will focus on the *internal* business perspective quadrant of the Balanced Scorecard methodology. The Balanced Scorecard *internal* items are complemented with Alavi *et al.*'s (1999) Technology-based, Information-based and Culture-based capabilities items. The nine measurement items follow one main question: What must the organization excel at internally, in terms of Technology-based capabilities, Information-based capabilities and Culture-based capabilities as per Alavi *et al.*'s (1999) definition, to meet its customers' expectations?

The top management support construct of the CRM impact research model was derived from Rai *et al.*'s (1997) Executive Information Systems (EIS) Adoption model and is formulated in four measurement items in the questionnaire. These four measurement items were previously used to measure top management support for Executive Information Systems (EIS). However, their remarkable versatility makes them relevantly applicable to different research domains.

The CRM impact construct, operationalized in ten items, is based on Jutla *et al.*'s (2001) original customer metrics framework. These measurement items have been specifically identified as metrics that can be used to measure, monitor, and infuse feedback to assess the performance of CRM technological initiatives. These ten instrumented measurement items were found to be highly consistent with seven items from Iacovou *et al.*'s (1995) technology adoption and impact framework. The following list includes the measurement items that were derived from Iacovou *et al.*'s (1995) technology adoption and impact framework that is non-related to trading partnerships from EDI:

- (1) Is the firm more competitive than other firms because of its ability to transact via the technology?
- (2) What are the advantages and disadvantages realized by the firm due to the technology use?
- (3) What was the impact of the technology on the firm's operations?
- (4) Has the use of the technology improved the service provided to the firm's customers?
- (5) Has the use of the technology improved the efficiency of the firm's operations?
- (6) Has the use of the technology improved the firm's control over business operations?
- (7) Has the use of the technology improved the firm's operations flexibility?

The close relationship between Jutla *et al.*'s (2001) customer metrics framework and the seven derived technology impact measurement items from Iacovou *et al.* (1995) EDI adoption framework are shown in Table 4 (p. 44). The former framework is preferred because of its high pertinence to studying CRM impact and its alignment with the recent propositions from several researchers (Jutla *et al.*, 2001).

Table 4: CRM Impact Metrics (Jutla *et al.*, 2001; Iacovou *et al.*, 1995).

<p align="center"><b><u>Jutla <i>et al.</i> (2001)</u></b>  <b><u>Customer Metrics</u></b>  <b><u>Framework</u></b></p>	<p align="center"><b><u>Iacovou <i>et al.</i> (1995)</u></b>  <b><u>Technology Impact</u></b>  <b><u>Framework</u></b></p>	<p align="center"><b><u>Link between Customer</u></b>  <b><u>Metrics and Technology</u></b>  <b><u>Impact frameworks</u></b></p>
<ul style="list-style-type: none"> <li>▪ Organization's customer Retention rate (old, new, and repeat customers).</li> </ul>	<ul style="list-style-type: none"> <li>▪ Item 2: Advantages from Technology usage.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Item 2: Advantages of using CRM include: increased customer retention rate for old, new and repeat customers because of better knowledge and understanding of the customers with technology usage.</li> </ul>
<ul style="list-style-type: none"> <li>▪ Customer satisfaction in terms of: on time delivery of products and services, innovative products and services, customized products and services and employees team spirit.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Item 3 &amp; 5: Impact and Efficiency of operations.</li> <li>▪ Item 6: Operations control.</li> <li>▪ Item 4: Improved service to customers.</li> <li>▪ Item 7: Firms operations flexibility.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Items (3,4,5,6): On time Delivery of products and Services, innovative Products and services, Customized products and Services and high Employees' team spirit.</li> <li>▪ Item 7: Customized Products and services.</li> </ul>
<ul style="list-style-type: none"> <li>▪ Customer profitability in terms of market shares in targeted segments.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Item 1: Increased competitiveness.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Item 1: Market share gain in targeted segments implies increased competitiveness.</li> </ul>

### **4.3 Layout of the questionnaire**

Section I of the questionnaire was used to categorize the CRM infrastructure or infrastructures that have been implemented or are being implemented at the participating organizations. The respondents were asked to indicate the CRM project(s) duration in months as well as the CRM project(s) completion in percentage. Furthermore, the respondents were asked to provide their subjective measure of their organization's knowledge management capabilities, operational and strategic perceived benefits of CRM, and organizational readiness through the use of a 5-point Likert-type scale ranging from (1) Highly Disagree to (5) Highly Agree.

Section II of the questionnaire was intended only for organizations that have not implemented any CRM project. This section of the questionnaire sought to capture the reasons why a CRM project has not yet been conducted and also to inquire if the organization is planning to start a CRM project in the future. Respondents who answered the question in Section II were asked to skip Section III and continue with Section IV.

Section III of the questionnaire, intended for organizations that have implemented or are implementing at least one CRM initiative, used a 5-point Likert-type scale to measure CRM impact or the respondents' perceived actual benefits received as a result of the CRM infrastructure(s) implementation and usage. The third section of the questionnaire permitted the use of the "NA" or "Not Applicable" option for any item that is not applicable to the respondents' situation.

Section IV of the questionnaire was used to collect background information for each respondent and the organization they work for. Questions 8 and 9 of this section

also inquired about the respondents' information systems department budget and CRM budget as one way of assessing the financial readiness of their respective CRM technological initiatives.

#### **4.4 Pre-testing of the questionnaire**

Prior to mailing the survey, face validity of the survey instrument was assessed with the help of a panel of industry CRM experts. A pilot study was conducted whereby the contents of the survey instrument was validated and pre-tested by six highly experienced CRM specialists from an IT consulting company based in Montreal, Quebec. The objectives of the pilot study were to ensure that the survey was clear, concise, and that the measurement items portrayed their intended meaning. The pilot participants were asked to read the cover letter, complete the survey, and provide feedback as well as overall reaction to the survey based on their industry expertise.

Due to the "out-of-the-office" consulting nature of each pilot participant's job, the participants were initially contacted by electronic mail (March 9th, 2001). The purpose of the pilot study was briefly explained in the email and the participants were informed that they would receive a cover letter and a questionnaire. Each participant was asked to return the pre-test survey 10 days later (March 19th, 2001).

On receipt of the six pre-tested survey instruments, the feedback of each participant were carefully analyzed and incorporated in the survey. In addition to the improvement in the clarity of the survey, the two customer profitability items from the CRM impact construct were removed namely:



1. The ratio of customer costs per market segment of an organization towards its competitors.
2. The organization's wallet shares in specific market segments.

These two items were removed from the questionnaire because the pilot participants reported some concerns about the difficulty for an organization to assess its customer profitability towards its competitors.

The pilot participants also expressed some concerns for the two items of the financial readiness sub-construct (organizational readiness construct) because of the difficulty in making a distinction between IS budget and CRM budget. However, these two questions were kept because they could provide some insights into current information systems and CRM investments.

Since this survey was to be distributed across Canada, a French version of the survey instrument and its associated cover and follow-up letters were developed for the French speaking respondents in the province of Quebec. The translation of the French version of the survey instrument, cover letter and follow-up letter were validated by three fluently bilingual persons, a Concordia University graduate student, an experienced computer engineer, and a doctorate in software engineering.

The final versions of the questionnaires that comprise the operationalized constructs discussed in this chapter can be found at the end of this thesis (Refer to p. 108 and p.112).

#### **4.5 Data collection and sample**

The survey, accompanied by a cover letter that stated the nature and purpose of the study, was mailed to a random sample of 1000 CEOs and Presidents on Monday, April 23<sup>rd</sup> 2001. One week later, 1000 follow up letters (without attached questionnaires) were sent to the same target population. Participation to this study was voluntary and each respondent was assured that the results would remain strictly confidential and anonymous.

Furthermore, an electronic version of the cover letter and the questionnaire were made available on the Web. The initial purpose was to provide a fast way of accessing the questionnaire if a respondent did not receive a questionnaire by the time the follow up letters were received. In view of increasing the number of respondents, a bulletin board message was also posted on the CRM Forum Web site on May 2<sup>nd</sup> 2001.

Of the 1000 questionnaires distributed, 59 questionnaires could not reach their destination and therefore the initial mail-out count was 941 questionnaires. A total of 132 responses were returned for an initial response rate of 14.03% but 15 responses had to be discarded because they were judged incomplete. The CRM Forum bulletin board posting did not result in any returns. From a total of 117 usable responses, 16 additional questionnaires had to be discarded because the respondents said that they implemented at least one CRM technological initiative but did not report any values for the CRM impact measurements; the dependent variable in the research model. The final number of usable questionnaires was 101 for a response rate of 10.73%. The 101 valid respondents were then categorized as adopters and non-adopters of CRM technology. As such, 57

organizations reported having implemented at least one CRM initiative, leaving the remaining 44 organizations as non-adopters of CRM technology.

A low response rate of 10.73% raises concerns of possible response bias. There can be several reasons to explain the low response rate in this study. First, the instrument focused on CRM impact or the actual benefits from CRM and some questions required factual responses. Second, CRM technological initiatives are still in the early stages of macro-adoption across the population of potential adopters and organizations with little or no use for CRM technology may have found the questionnaire "early" in timing and disregarded it for this reason. Of the 16 respondents who did not report any values for the CRM impact measurements (i.e the dependent variables), 9 respondents mentioned that this survey was "too early" to measure the actual benefits of using CRM. Third, the questionnaire may not have been targeted directly to the executives most knowledgeable about CRM efforts and our national survey approach may have lowered the response rate.

## **5. DATA ANALYSIS AND RESULTS**

This chapter reviews the procedures and processes that were used to evaluate and analyze the collected data. Section 5.1 describes the chosen statistical analysis and structural modeling tools used in this study. Section 5.2 presents the demographics statistical analyses of the collected data. Section 5.3 presents the assessment of the measurement model using the Structural Equation Modeling Confirmatory Factor Analysis technique. Finally, section 5.4 presents the assessment of the structural model using the Structural Equation Modeling Confirmatory Path Analysis technique.

### **5.1 Statistical analysis and structural modeling tools**

This study used a combination of two statistical analysis and structural modeling tools namely SPSS version 10 and PLS version 2.0 (PLS Graph and PLS-PC).

SPSS statistical software was used to provide all the demographic analyses of the sample of respondents and to calculate correlation coefficients between items as well as correlation coefficients between constructs. Demographic analyses included frequency distributions and descriptive statistics. Furthermore, an independent sample t-test was performed between the sample of adopters of CRM technology (n=57) and the sample of non-adopters of CRM technology (n=44) to seek for possible characteristics differences.

PLS Graph, a component-based software package developed by Chin and Fee (1995), was used to assess the measurement model and the structural model with the

Confirmatory Factor Analysis technique. The Partial Least Squares (PLS) statistical method was developed for the analysis of latent variable structural models involving multiple constructs with multiple indicators. PLS is a second-generation multivariate statistical technique that allows the testing of psychometric properties of the scales used to measure variables, as well as the strength and direction of the relationships among variables (Cassel, Hackl and Westlund, 1999).

PLS is a viable alternative to LISREL and provides two substantial advantages. First, the data does not have to be normally distributed when using the Partial Least Squares technique. Second, PLS possesses the ability to work with small sample size as long as the sample size is at least 5 times larger than the number of items contained in the most substantial construct; a condition that is met in this study (Gopal, Bostrom and Chin, 1993; Wold, 1989).

Structural Equation Modeling with PLS is done in two stages to form a network of constructs, item loadings and path coefficients measures: 1) assessment of the measurement model that included item reliability, convergent validity and discriminant validity, and 2) assessment of the structural model. Items loadings indicate the strength of the items, while the estimated path coefficients indicate the strength and the sign of the theoretical relationships between model constructs (Hulland, 1999; Igbaria and Greenhaus, 1992; Thompson, Higgins and Howell, 1991).

Structural Equation Modeling or SEM-based procedures have substantial advantages over first-generation techniques such as principal components analysis, factor

analysis, discriminant analysis, or multiple regression. Researchers have a greater flexibility to interplay between theory and data. Specifically, SEM procedures provides researchers with the flexibility to: (a) model relationships among multiple predictor and criterion variables, (b) construct unobservable latent variables, (c) model errors in measurements for observed variables, and (d) statistically test a priori theoretical and measurement assumptions against empirical data (Anderson and Gerbing, 1988).

The research model and its associated hypotheses were further tested using PLS Confirmatory Path Analysis technique. PLS Confirmatory Path analysis is one of a number of Structural Equation Modeling tests that can be used to calculate the path coefficient between constructs. One of the major strengths of path analysis is its ability to differentiate between direct and indirect effects between variables. Structural Equation Modeling (SEM) based path analysis assumes that variances and covariances of the independent variables are parameters to be estimated. Therefore, SEM-based path analysis provides a better estimation of the path coefficients than traditional techniques.

## **5.2 Demographic analyses**

Demographic analyses were conducted to describe the traits of the sample of respondents. Demographic statistical tests such as descriptive statistics, frequency distributions and independent sample t-test were done on the sample of adopters of CRM technology (n=57) and on the sample of non-adopters of CRM technology (n=44).

## Descriptive statistics

Table 5 (as shown below) provides the descriptive statistics of the seven main constructs in the research model. Detailed descriptive statistics of each item can be found in Table 13 (p. 103) from the Appendix A section. Descriptive statistics are univariate statistics that describe the characteristics of one variable at a time and can also be calculated per construct to provide mean and median information about central tendency in the data.

Several missing variables were identified that could potentially confound the hypothesized relationships in the research model. A methodological approach of replacing missing variables with the sample mean, at the construct level, was established and adopted throughout the course of this study. For example, if a construct with 5 items recorded scales of 4, 5, 4, 5, and “missing”; the fifth missing value is replaced with the mean of the 4 entries. Therefore, it is normal that some “*Minimum*” values in Table 5 (as shown below) did not appear as integer values.

**Table 5. Descriptive statistics per construct**

<b>Constructs/Sub-Constructs</b>	<b>N</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>Std. Deviation</b>
Operational perceived benefits	101	1.40	5.00	3.4553	.6500
Strategic perceived benefits	101	2.00	5.00	4.0132	.5461
Organizational readiness	101	1.67	5.00	3.5275	.7416
Knowledge management capabilities	101	2.11	5.00	3.5991	.6135
Top management support	101	1.00	5.00	3.3465	.9017
CRM impact (Org. satisfaction)	101	2.67	5.00	3.7890	.3962
CRM impact (Cust. satisfaction)	101	2.75	5.00	3.7414	.3841

## **Frequency distributions**

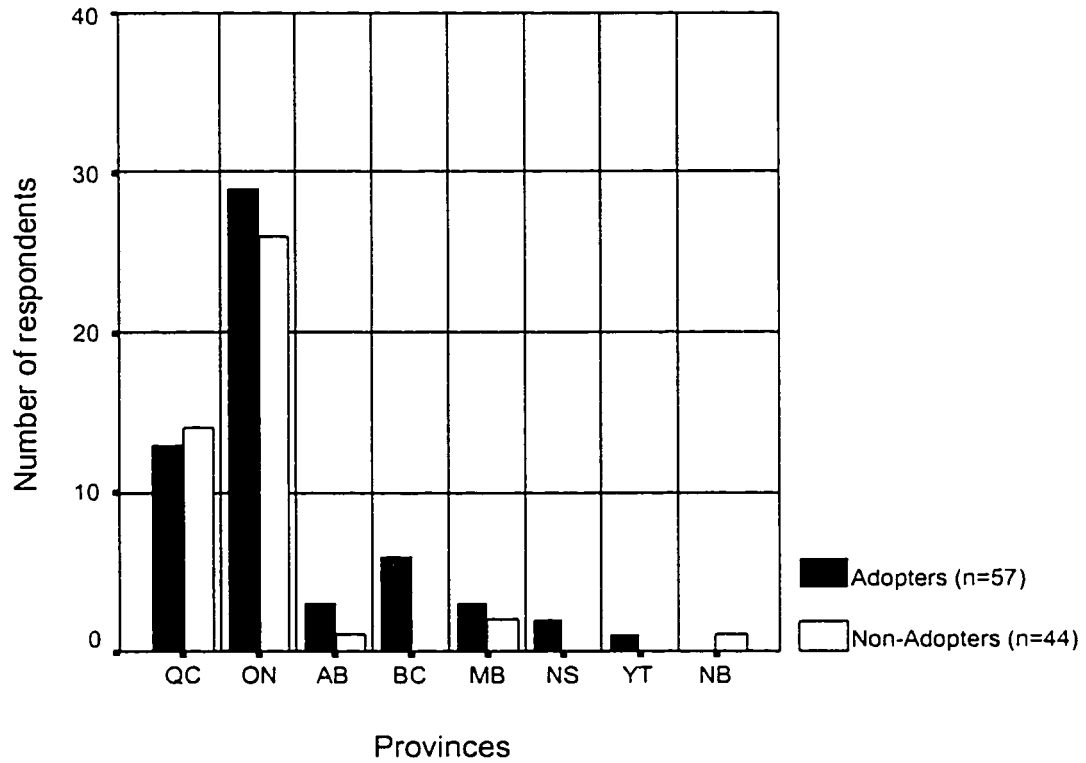
Different frequency distribution tests were performed to calculate the distribution of the respondents across provinces, across industries, per title of respondents, and per number of years of work experience with their respective organizations. Also, other demographic frequency distributions such as the number of employees in the organization, the number of employees in the MIS department, the implemented CRM infrastructure(s), the allocated CRM budget and the CRM software deployment were calculated.

### ***Respondents' distribution across provinces and industries***

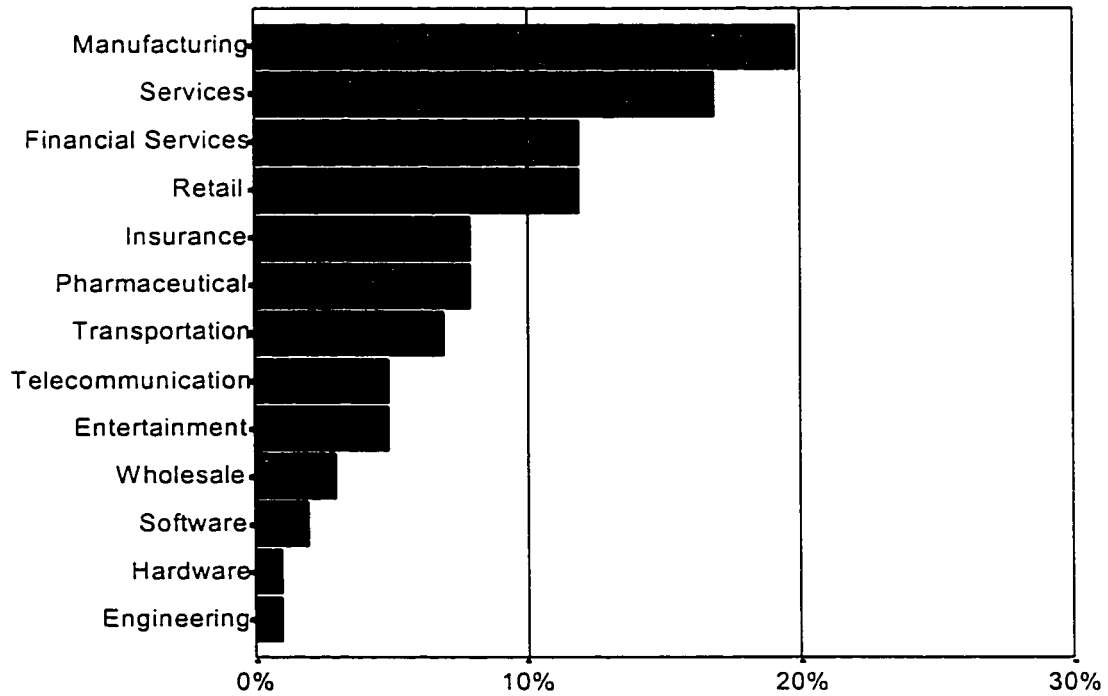
As shown in Figures 4a and 4b (p. 55), responding organizations (n=101) represented a total of 8 provinces and a wide variety of industries; 13 vertical sectors to be more specific. Not all the vertical sectors were equal in this CRM survey and the top four vertical sectors represented over 60 percent of the respondents. These key vertical sectors were manufacturing, services, financial services, and retail. Of the 14 vertical sectors that were identified in the CRM survey instrument, only the dot.com category did not register any respondent. It is possible that dot.com organizations portrayed their CRM technological initiatives more from an electronic CRM (eCRM) perspective.



**Figure 4a. Respondents' distribution across provinces (n = 101)**



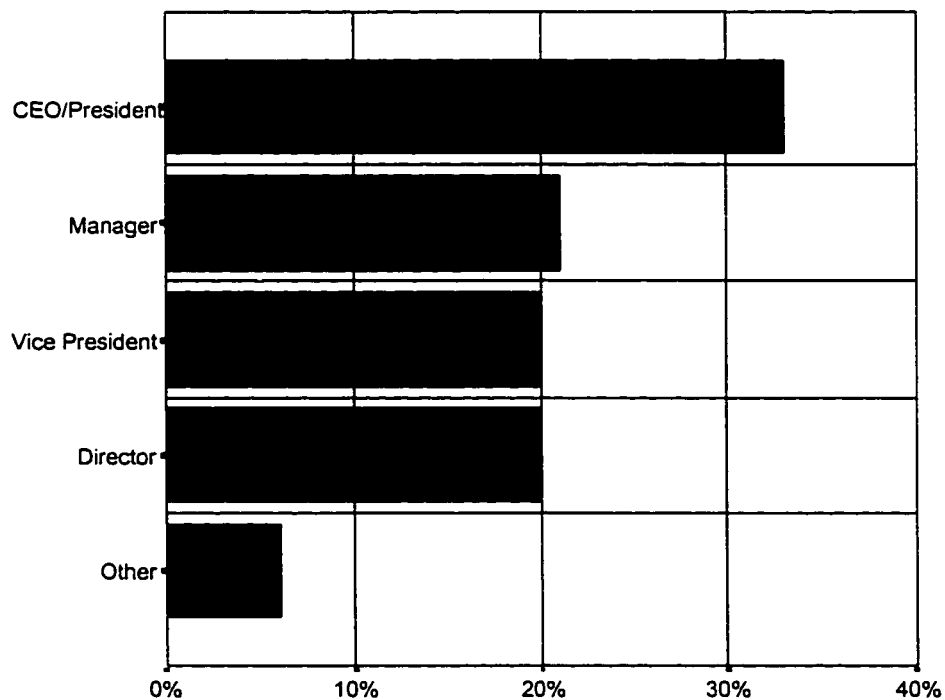
**Figure 4b. Industries distribution (n = 101)**



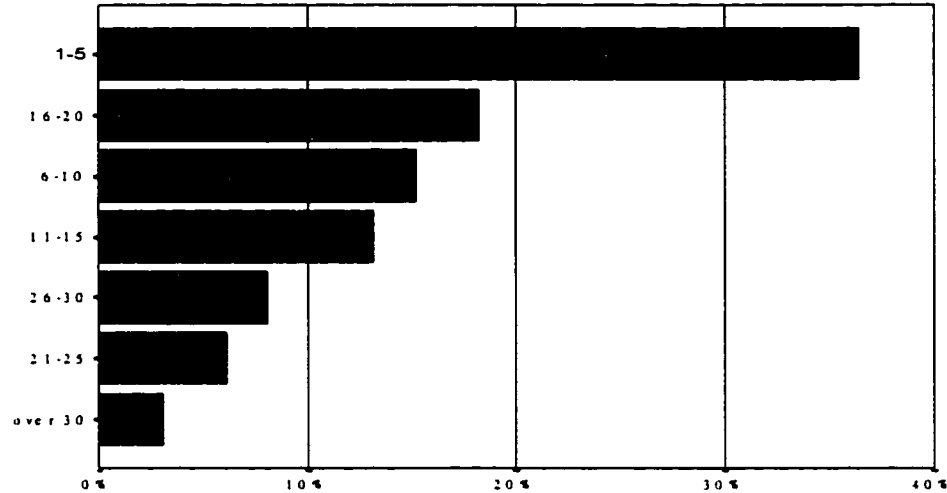
***Respondents' job title and employment experience***

On average, respondents had occupied their current position for about 5 years and have been with their respective organization for about 12 years. More than 50 percent of the respondents held executive positions either as Chief Executive Officer, President, or Vice-President. Therefore, the respondents likely had a good understanding of the CRM issues facing their current organization since CRM technological initiatives are, after all, considered as strategic initiatives. Figure 5 (as shown below) summarizes the distribution of the respondents' job position across the sample population. In addition, Figure 6 (p. 57) summarizes the distribution of the respondents' years of experience with their respective organization.

**Figure 5. Respondents' job titles (n=101)**



**Figure 6. Number of years of experience with the organization (n=101)**



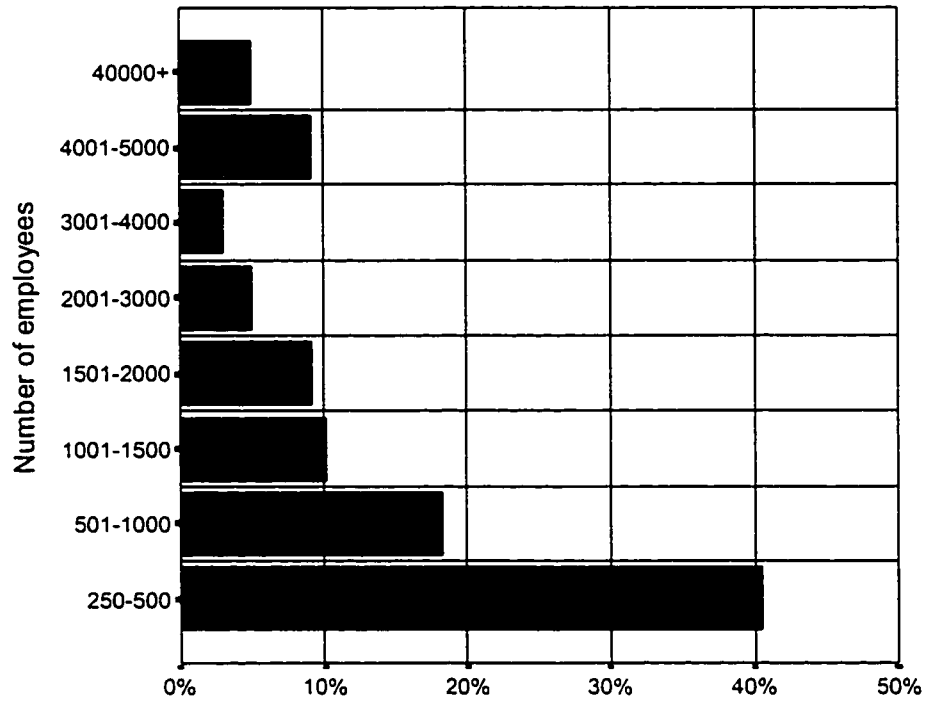
### *Organizations' profiles*

Organizations reported annual revenue ranging from \$1,000,000 (CAN) to \$70,000,000,000 (CAN); implying a large bracket in organizational size and revenue. The average revenue of the 101 organizations was \$1,700,000,000 (CAN). MIS budget ranged from \$25,000 (CAN) to \$300,000,000 (CAN) while the average MIS budget was calculated to be \$18,000,000 (CAN). The average MIS budget of the sample of adopters of CRM technology was \$22,000,000 (CAN) while the average MIS budget for the sample of non-adopters of CRM technology was \$12,000,000 (CAN); approximately 83.33% higher for the sample of adopters of CRM technology.

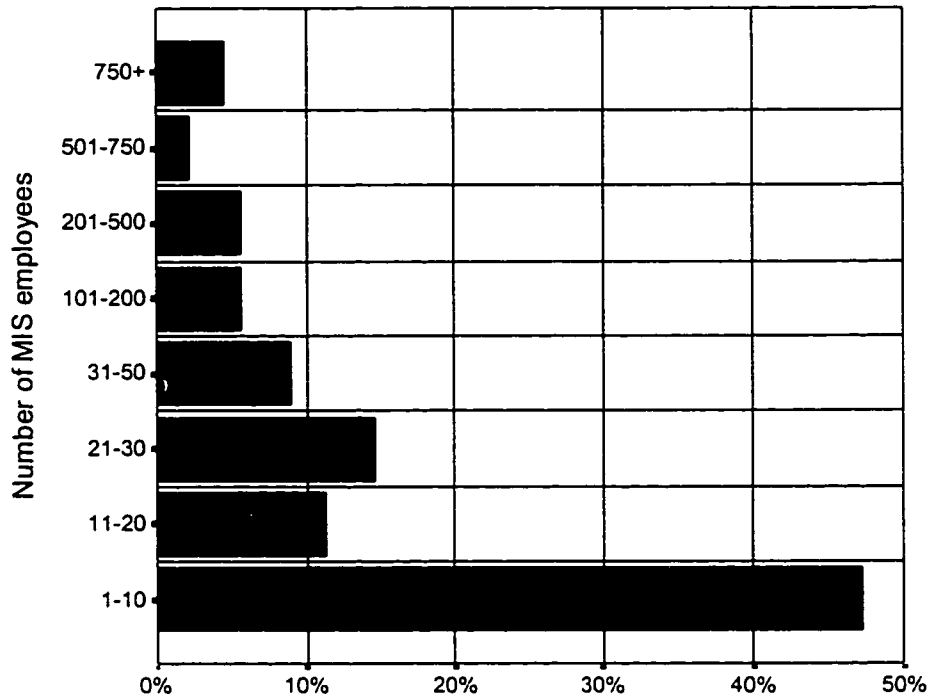
The smallest organization reported a total of 250 employees in the entire organization while the largest organization reported over 40,000 employees in Canada. Figure 7 (p. 58) summarizes the distribution of employees in the organization. Figure 8 (p. 59) summarizes the distribution of employees in the MIS department and it can

deduced that organizations differed significantly in size; with some reporting more than 750 employees in their MIS departments alone.

**Figure 7. Number of employees in the organization (n=101)**



**Figure 8. Number of employees in the MIS department (n=101)**



As shown in Table 6 (p. 60), the average number of employees and the average number of MIS employees were calculated for each sector of industry. The ratio of employees per MIS employee was also calculated for the entire sample of respondents (n=101) as well as for the sample of adopters of CRM technology (n=57). The ratio of employees per MIS employee with respect to adopters of CRM technology was found to be higher for three industries (manufacturing, retail, and wholesale). The same ratio was found to be lower for six industries (transportation, insurance, telecommunication, entertainment, pharmaceutical, and services).

**Table 6. Ratio of employees to MIS employees**

<b>Industries</b>	<b>Average no. of employees in the organization (n=101)</b>	<b>Average no. of MIS employees in the organization (n=101)</b>	<b>Ratio of employees:MIS employees (n=101)</b>	<b>Ratio of employees: MIS employees “adopters” (n=57)</b>
Transportation	7600	55	102	75
Insurance	1274	149	19	8
Telecommunication	4906	406	27	20
Software	550	120	7	N/A <sup>1</sup>
Entertainment	2160	20	113	16
Manufacturing	1816	8	156	209
Pharmaceutical	3311	16	264	41
Financial Services	15310	464	25	26
Hardware	600	30	20	20
Retail	6540	44	176	245
Wholesale	4866	40	93	109
Services	1002	20	305	200
Engineering	2700	35	77	77

<sup>1</sup> Division by zero is not applicable because the only respondent (adopter of CRM technology) for this particular industry did not report any entry for MIS employee question

### *CRM Infrastructure deployments*

The results of this study confirmed the literature review on CRM Infrastructure deployments. Respondents implemented three main types of CRM Infrastructures namely: Customer Support and Service (CSS), Sales Force Automation (SFA), and Enterprise Marketing Automation (EMA). Furthermore, as expected, several respondents reported that they implemented more than one CRM Infrastructure in their organizations as part of their CRM technological initiatives.

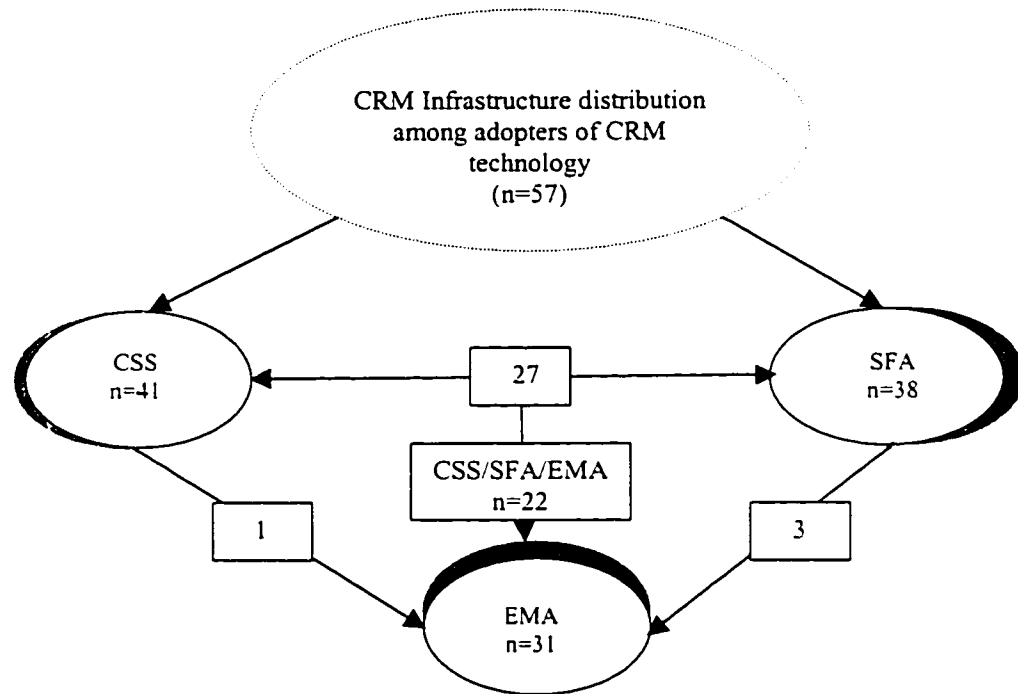
61.4% of the respondents (or 35 of 57 respondents) answered to the CRM project duration question. The shortest CRM project duration was 4 months, the longest CRM project lasted 72 months, and the average CRM project duration was almost 21 months. Also, it is noteworthy to mention that several respondents reported that “CRM projects are infinite commitment and have become an integral part of the company’s strategy”.

When asked about the approximate CRM project completion, 33.33% of the respondents (or 19 of 57 respondents) reported that their CRM technological initiatives were approximately completed at 80%. Furthermore, 19.3% of the respondents (or 11 of 57 respondents) were in an early phase of CRM implementation; that is below 50% of CRM project completion.

As shown in Figure 9 (p. 62), 71.9% (41 of 57) of all CRM technology adopters reported implementing Customer Support and Service (CSS) projects, 66.7% (38 of 57) implemented Sales Force Automation (SFA) projects, and 54.4% (31 of 57) implemented Enterprise Marketing Automation (EMA) projects. 38.6% (22 of 57) of the sample of

CRM technology adopters reported implementing all three types of CRM Infrastructures simultaneously.

**Figure 9. CRM Infrastructure distribution (n=57)**



***Adequacy of CRM Budget and CRM Budget distribution***

63.2% of the respondents (or 36 of 57 respondents) replied to the CRM budget adequacy question. When asked if they found their CRM budget adequate, 75% of the respondents who answered to that question (or 27 of 36 respondents) rated their organization’s CRM budget as adequate. The minimum allocated CRM budget was reported to be \$40,000 (CAN), the maximum was \$22,000,000 (CAN), and the average was \$4,193,351 (CAN). Figure 10 (p. 63) illustrates the percentage CRM budget distribution.



**Figure 10. CRM budget distribution (n=57)**



***CRM budget versus MIS budget ratio per industry***

The CRM budget versus MIS budget ratio was calculated for 7 vertical sectors. Each of these 7 vertical sectors had at least one respondent who reported a value for both the MIS budget and the CRM budget. As show in Table 7 (p. 64), the collected data seems to indicate that the pharmaceutical industry has been heavily investing in their CRM technological initiatives (as much as 233.34% of their MIS budget), followed by the services/consulting industry (170% of their MIS budget), and the banking/financial services industry (44.08%). These results are aligned with previous findings for the ratio of employees per MIS employee (Table 6, p. 60). Lower ratios of employees to MIS employee in these two industries would seem to indicate that more MIS personnel are assigned per employee. These results could infer a correlation between the CRM/MIS budget ratio and the number of employees per MIS employee ratio.

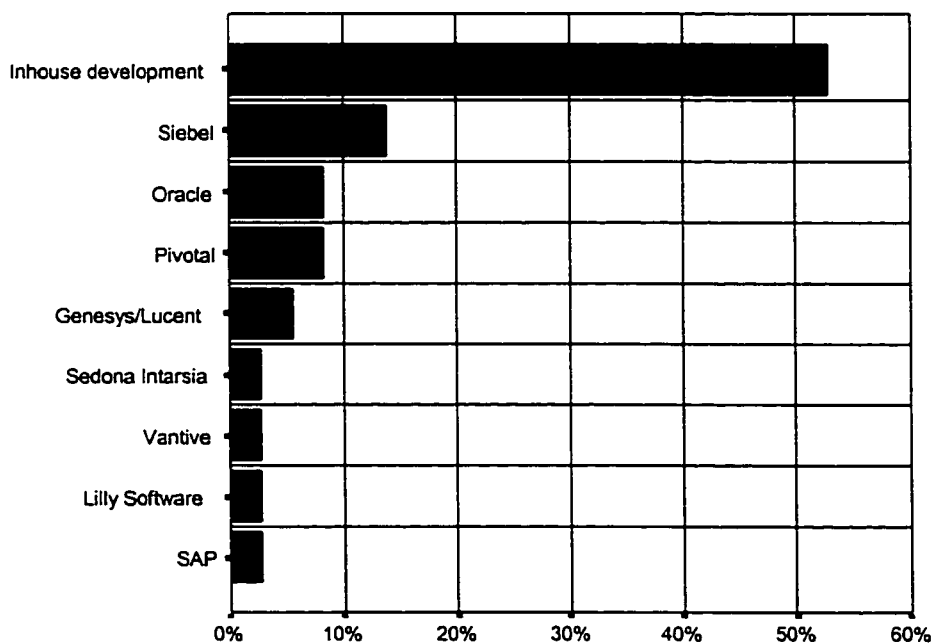
Table 7. CRM versus MIS budget ratio per industry

Industry	# of respondents who reported both MIS and CRM budget values	% represented for the entire industry	CRM/MIS budget ratio
Transportation	2	100%	0.1515
Insurance/Brokerage	1	25%	0.0667
Manufacturing	1	10%	0.0667
Pharmaceutical	2	40%	2.3334
Banking/Financial Services	5	50%	0.4408
Wholesale	1	100%	0.1000
Services/Consulting	3	37.5%	1.7000

### *CRM Software Deployments*

As shown in Figure 11 (as shown below), the collected data suggests that more than 50% of the adopters of CRM technology develop their own CRM technological initiatives in-house while the remaining utilized CRM software from a variety of CRM vendors.

Figure 11. CRM Software deployment distribution (n=57)



### **5.3 Independent sample t-test between adopters and non-adopters of CRM technology**

This statistical test is conducted at the construct level because the goal is to investigate for possible differences in the five proposed Critical Success Factors between adopters and non-adopters of CRM technology. As shown in Table 8a (p. 66), an independent sample t-test was performed between the sample of adopters of CRM technology (n=57) and the sample of non-adopters of CRM technology (n=44) for each construct (i.e for each Critical Success Factor). Statistically significant differences at the construct level would indicate differing respondents' perceptions for the five proposed Critical Success Factors of CRM technological initiatives: operational perceived benefits, strategic perceived benefits, organizational readiness, knowledge management capabilities, and top management support.

SPSS's independent sample t-test was used to assess the homogeneity of variance based on Levene's Test for Equality of Variances between these two sample populations. Levene's Test for Equality of Variances were assumed for all the five constructs (operational perceived benefits, strategic perceived benefits, organizational readiness, knowledge management capabilities and top management support). The results indicate a significant difference (Sig. 2-tailed) between the two samples for the strategic perceived benefits, and the top management support constructs at the 99% Confidence Interval (C.I). Knowledge management capabilities between the 2 samples was almost significant with a 0.051 value. The strategic perceived benefits construct was significant at the 0.01 level, and the top management support construct was significant at the 0.001 level.

Therefore, the null hypothesis is rejected for these three constructs (Taking into account that the p-value for the knowledge management capabilities construct can be rounded to the nearest 0.05).

Hence, it can be concluded that sufficient evidence exists to suggest that the two sample populations (adopters and non-adopters of CRM technology) differ in levels of strategic perceived benefits, top management support, and knowledge management capabilities. A detailed version of the results (Levene's Test, F-value, t-value, degrees of freedom, and mean difference) can be found in Appendix A, Table 8b (p. 102).

**Table 8a. Independent sample t-test per construct (99% Confidence Interval)**

<b>Constructs</b>	<b>Difference between Adopters and Non-Adopters of CRM technology</b>	<b>Significance Level<sup>1</sup></b>
Operational perceived benefits	Not significant	N/A
Strategic perceived benefits	Significant	0.007 **
Organizational readiness	Not significant	N/A
Top management support	Significant	0.000 ***
Knowledge management capabilities	Significant	0.051 *

Significance Level<sup>1</sup>: Two-tail t-test \*: p<0.05, \*\*: p<0.01, \*\*\*: p<0.001

***Reasons for not implementing a CRM project***

This survey also asked the respondents who have not implemented any CRM technological initiatives (i.e non-Adopters of CRM technology sample, n=44) to provide a reason why a CRM project has not yet been implemented in their organization.

Different reasons were provided and the responses were aggregated in seven main categories and sorted from the most frequent reason to the least frequent reason:

- 1) *“We have insufficient allocation of resources (Human resources, capital, IT Infrastructure)”*
- 2) *“CRM is not seen as a priority or the organization has other priorities or too many projects are being done at the same time”*
- 3) *“We are currently in a CRM assessment phase”*
- 4) *“We do not have a formalized CRM approach yet but are planning to develop one soon”*
- 5) *“CRM is not applicable for our business”*
- 6) *“We are a very decentralized organization and therefore rely on our people for customer relationships”*
- 7) *“We have just grown to a size where CRM is affordable”*

#### **5.4 Assessment of the Measurement Model**

The assessment of the measurement model is conducted at three levels - construct unidimensionality, construct reliability and construct validity (both convergent and discriminant validity). This approach evaluates if the measurement scales in the survey instrument produce a set of unidimensional, reliable and valid constructs and is pursued with PLS using the Confirmatory Factor Analysis technique. Construct unidimensionality indicates whether the items of a construct only measure this construct (Hair, Anderson, Tatham and Black, 1992). The reliability of a survey instrument is the degree to which survey measures are free from error and yield consistent errors (Peter,

1979). Construct validity of a survey instrument is defined as the degree to which it truly measures the constructs that it is intended to measure (Peter, 1979). Convergent and discriminant validity are subcategories of construct validity and evidence for both convergent and discriminant validity demonstrates construct validity but neither one alone is sufficient for establishing construct validity.

The results of the Confirmatory Factor Analysis, as shown in Table 9 (p. 70), produced no significant deviations from the proposed research framework. Five scale items from the survey instrument failed to load above the 0.50 recommended loadings value namely those items that have been crossed in Table 9 (p. 70).

One operational perceived benefits item, "*CRM will help decrease operational costs*", loaded strongly as a strategic perceived benefits item (Refer to Table 9, p. 70). This inconsistency could be explained by the opportunistic and strategic potential of implementing a CRM strategy as opposed to the expected operational savings due to a CRM implementation (Iacovou *et al.*, 1995). CRM implementations are often stigmatized as costly investments and operational savings may be offset by start-up costs in the short-term. Porter (1985) had recognized the importance of incurring costs and creating value in order to gain a competitive advantage. According to Porter (1985), achieving competitive advantage often requires cross-functional integration and a rearrangement of processes in view of creating advantageous relationships throughout the value chain. The respondents to this study seemed to agree that reducing operational costs due to CRM should be more of a strategic perceived benefits item.

The CRM impact construct loaded in two separate sub-constructs with PLS's Confirmatory Factor Analysis statistical test. These two sub-constructs were operationalized following Jutla *et al.* (2001) customer metrics framework in two dimensions: an organizational focus (i.e internal focus) and a customer focus (i.e external focus). The segmentation of the CRM impact construct from an organizational focus and from a customer focus proved to be very consistent with a recent Gartner Group CRM conference (Gartner, 2001). Gartner Group refers to the organizational focus as the internal focus and the customer focus as the external focus (Gartner, 2001). Internal focus, also termed as organizational collaboration, is defined as the interplay of changes in strategy, organizational structures, processes, metrics, compensation, skill, and technology within the organization whereas external focus, also termed as customer experience, is defined as the customer experience as a result of CRM (Gartner, 2001). Seligman (2000) and Day (2000) also regarded CRM impact or the value added of CRM both for the organization and for the customer; that is internally and externally.

Despite the above-mentioned minor adjustments, the Confirmatory Factor Analysis statistical test (Table 9, page 70) confirmed most of the theoretical foundations of the proposed research model. The final results appeared to provide a better measurement of the constructs. Table 10 (p. 71) illustrates the items per construct after the Confirmatory Factor Analysis statistical test.

**Table 9. PLS Confirmatory Factor Analysis per construct**

**LV Loading<sup>1</sup> structure matrix (for Independent variables)**

	1	2	3	4	5
SPB1	78	40	11	14	19
SPB2	75	35	10	2	27
OPB3	71	44	11	-2	27
<del>SPB4</del>	<del>49</del>	<del>20</del>	<del>6</del>	<del>3</del>	<del>2</del>
OPB5	50	65	14	11	4
OPB6	47	90	13	23	3
OPB7	42	88	16	19	-2
<del>SPB8</del>	<del>16</del>	<del>25</del>	<del>15</del>	<del>1</del>	<del>8</del>
SPB9	64	41	7	-2	22
<del>OPB10</del>	<del>44</del>	<del>45</del>	<del>25</del>	<del>2</del>	<del>33</del>
OR1	16	27	78	12	41
OR2	0	5	62	15	26
OR3	0	17	73	35	31
OR4	9	9	84	37	51
OR5	19	23	87	23	56
OR6	25	15	68	21	40
TOP1	5	21	36	86	31
TOP2	11	14	25	93	23
TOP3	-7	19	29	80	15
TOP4	13	12	20	87	27
KMC1	9	-3	46	19	78
KMC2	18	11	62	29	71
KMC3	32	17	39	11	74
KMC4	18	2	-4	12	57
KMC5	25	10	55	10	80
KMC6	20	3	43	17	86
KMC7	18	15	43	20	60
<del>KMC8</del>	<del>9</del>	<del>9</del>	<del>15</del>	<del>31</del>	<del>48</del>
<del>KMC9</del>	<del>1</del>	<del>8</del>	<del>21</del>	<del>34</del>	<del>49</del>

**LV Loading<sup>1</sup> structure matrix (for Dependent variables)**

	1	2
CRMI-ORG1	81	43
CRMI-ORG2	84	45
CRMI-ORG3	81	50
CRMI-ORG4	61	46
CRMI-ORG5	57	44
CRMI-CUST6	46	70
CRMI-CUST7	41	78
CRMI-CUST8	24	63
CRMI-CUST9	42	73
CRMI-ORG10	60	58

<sup>1</sup> Crossed items loaded below 0.50 recommended value



**Table 10. Items per construct after CFA**

<b>Construct</b>	<b>Sub-construct</b>	<b>Section in the questionnaire</b>	<b>Items</b>
Perceived benefits	Operational	Section I – Perceived Benefits	Q5a
			Q5b
			Q5c
	Strategic	Section I – Perceived Benefits	Q1
			Q2
			Q3
			Q7
Organizational readiness	Technological	Section I – Org. Readiness	Q1
			Q2
			Q3
			Q4
			Q5
			Q6
Top management support		Section I – Org. Readiness	Q7
			Q8
			Q9
			Q10
KM capabilities		Section I – KMC	Q1
			Q2
			Q3
			Q4
			Q5
			Q6
			Q7
CRM impact	Internal	Section III – CRM Impact	Q1a
			Q1b
			Q1c
			Q1d
			Q2a
	External	Section III – CRM Impact	Q3
			Q2b
			Q2c
			Q2d
			Q2e

**Construct unidimensionality** or item reliability indicated whether the items only measure this construct. Hair, Anderson, Tatham and Black (1992) recommended that only the items with loadings equal or greater than 0.50 were very significant. Therefore, only items carrying a loadings value of 0.50 and above were kept. In addition, the loadings must have the highest value for the construct it represents in order to confirm unidimensionality. The initial and final number of items per construct is shown in Table 11 (p. 73).

**Construct reliability** can be demonstrated if multiple uses with the same group obtained consistent results. Construct reliability is most commonly calculated using Cronbach Alpha or Coefficient Alpha - a coefficient of reliability that measures how well a set of items (or variables) measures a single latent construct (Peter, 1979; Churchill, 1979). However, construct reliability was assessed using the  $\rho$  coefficient in this study. The  $\rho$  coefficient, the ratio of construct variance to the sum of construct and error variance, is superior than the Cronbach Alpha coefficient because it does not depend on the number of items in a construct. The  $\rho$  coefficient is calculated using the following formulae:

$$\rho = (\sum|\lambda_i|)^2 / (\sum|\lambda_i|)^2 + \sum(1-\lambda_i^2) \text{ where } \lambda_i \text{ is the standardized loading relating variable } i \text{ to the construct.}$$

According to Fornell and Larcker (1981), a value greater than 0.50 indicates that at least 50% of the variance in measurement is captured by the construct variance and therefore would constitute a reliable construct. As per Table 11 (p. 73), the  $\rho$  coefficients

range from 0.821 to 0.921 for the six constructs in the research model, thus confirming their reliability.

**Table 11. Construct Reliability (Confirmatory Factor Analysis)**

Constructs	Initial # of items	Final # of items	Rho ( $\rho$ )
Operational PB	5	3	0.911
Strategic PB	5	4	0.865
OR	6	6	0.888
KMC	9	7	0.894
TOP	4	4	0.921
CRMI-ORG	6	6	0.868
CRMI-CUST	4	4	0.821

$\rho = (\sum|\lambda_i|)^2 / (\sum|\lambda_i|)^2 + \sum(1-\lambda_i^2)$  where  $\lambda_i$  is the standardized loading relating variable  $i$  to the construct.

**Convergent validity** tests that items that should be related are in reality related. With PLS, the  $\rho$  coefficient is calculated from the respective loadings of the items. Nunnally (1967) established criterion recommends that any construct having a  $\rho$  value equal or greater than 0.70 is reliable and should be kept. Here, the  $\rho$  values are seen to converge adequately on their respective constructs, with coefficients in the 0.821 to 0.921 range.

**Discriminant validity** assesses the extent to which constructs are unique from each other. Discriminant validity must be assessed in the presence of multiple constructs in a research model and can be tested by determining whether the correlation between any two constructs is significantly different from unity, i.e. whether the confidence interval around the correlation includes 1.0 (Anderson and Gerbing, 1988).

Discriminant validity must be assessed from two aspects:

- 1) If the items associated with a construct correlate more highly with each other than the items associated with other constructs in the research model.
- 2) If the calculated Average Variance Extracted (AVE) for each measure is higher than all variances shared between the measures and is superior to 0.50 (Fornell and Larker, 1981). Barclay *et al.* (1995) provided to the following formulae to calculate the Average Variance Extracted (AVE) value:

$$AVE = \frac{\sum \lambda_i^2}{(\sum \lambda_i^2 + \sum (1 - \lambda_i^2))}$$

where  $\lambda_i$  is the standardized loading relating variable  $i$  to the construct.

As shown below in Table 12, both conditions for discriminant validity were confirmed for all the constructs.

**Table 12. Discriminant Validity (Confirmatory Factor Analysis)**

	Operational PB	Strategic PB	OR	KMC	TOP	CRMI-ORG	CRMI-CUST
Operational PB	<b>0.773</b>						
Strategic PB	0.100	<b>0.619</b>					
OR	0.042	0.002	<b>0.573</b>				
KMC	0.029	0.036	0.306	<b>0.552</b>			
TOP	0.023	0.000	0.108	0.080	<b>0.745</b>		
CRMI-ORG	0.000	0.014	0.134	0.442	0.149	<b>0.528</b>	
CRMI-CUST	0.002	0.028	0.135	0.259	0.053	0.281	<b>0.537</b>

Diagonals represent the average variance extracted (AVE), while the other matrix entries represent the shared variance among the constructs.

## 5.5 Assessment of the Structural Model

The structural model was evaluated three times using PLS's Confirmatory Path Analysis statistical technique. First, Confirmatory Path Analysis was calculated for the combined supported CRM Infrastructures (i.e CSS, SFA, and EMA), second in regard to the Customer Support and Service (CSS) CRM Infrastructure only, and last in regard to the Sales Force Automation (SFA) CRM Infrastructure only. Since only 31 respondents reported implementing an EMA CRM Infrastructure, the minimal condition for PLS analysis was not met for the sample of EMA CRM adopters. The biggest construct in the research model, knowledge management capabilities, was made up of 7 items and at least 35 respondents were needed to pursue significant PLS statistical analysis (Gopal, Bostrom and Chin, 1993; Wold, 1989). This finding confirmed a comment made by one of the CRM experts during the pre-testing phase namely: *"I would be surprised to find as many CRM Infrastructure deployments in the marketing function compared with sales and customer support and service functions at this point in time in Canada"*.

Hypothesis 7, a proposition that seeks to investigate if the three supported CRM Infrastructures (CSS, SFA, EMA) had a specific profile of Critical Success Factors, was therefore assessed twice in two separate structural analysis runs, namely for the CSS and SFA CRM Infrastructures.

The estimated path coefficients were calculated using a non-parametric test of significance, namely PLS Jack-Knife procedure (Wildt, Lambert, and Durand, 1982). PLS Confirmatory Path Analysis also calculated  $R^2$  or the proportion of the variance in the endogenous variables that can be accounted for by respective antecedents.

The dependent variable, CRM impact, is assessed as a second-order factor in the research model. The two sub-constructs of CRM impact were operationalized from an organizational/internal Focus and from a customer/external Focus. Organizational focus refers to the organizations' satisfaction with customer retention rate and customer profitability. Customer focus refers to the organizations' perceived customer satisfaction in terms of introduction of innovative products and services, better lead times, on time delivery, anticipation of emerging needs, customization, and team spirit.

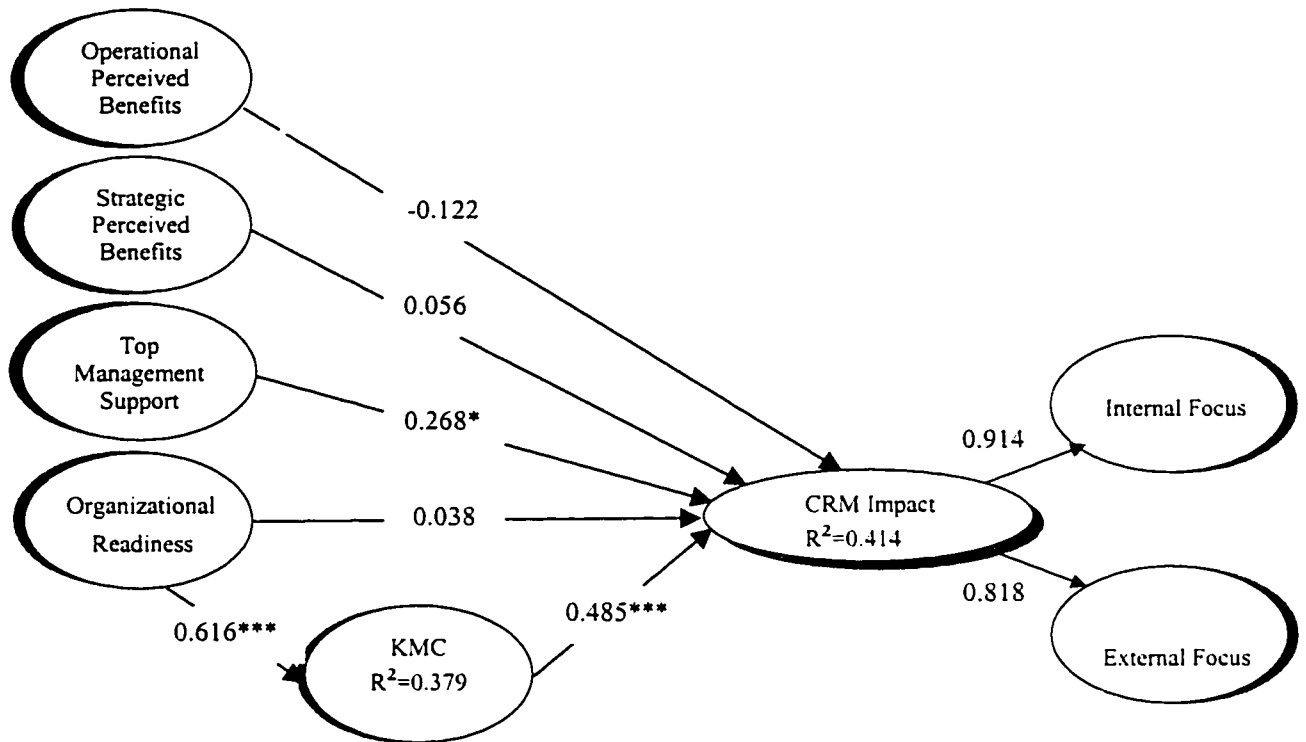
The second-order factor is an arithmetic assessment of weights with its two first-order sub-constructs (organization focus and customer focus); where each first-order sub-construct abstractly contains its respective items. Therefore the CRM impact second-order factor is made up of two calculated items, organization focus and customer focus.

The weights of the two first-order sub-constructs were calculated using PLS Confirmatory Analysis standardized items variance using the following formulae:

First-Order weight =  $\sum (p_i * \lambda_i) / i$  where  $\lambda_i$  is the standardized value (i.e reported Likert Scale value for the first-order sub-construct) relating variable  $i$  to the construct and  $p_i$  is the standardized variance relating to variable  $i$ .

The Confirmatory Path Analysis test results of the structural model assessment for the combined CRM Infrastructures (CSS, SFA, and EMA) are presented in Figure 12 (p. 77). Structural model assessments for the CSS and SFA CRM Infrastructures are provided in Figure 13 (p. 80) and Figure 14 (p. 83) respectively.

### 5.5.1 Combined CRM Infrastructures (CSS, SFA, and EMA)



**Figure 12. Combined CRM Infrastructures path analysis and significance results (One-tail t-test \*:  $p < 0.05$ , \*\*:  $p < 0.01$ , \*\*\*:  $p < 0.001$ ;  $n = 57$ )**

Hypothesis 1 tested the relationship between operational perceived benefits and CRM impact; the actual benefits received through the use of CRM. The causal relationship between operational perceived benefits and CRM impact revealed no significant relationship for the combined CRM Infrastructures (Path Coefficient = -0.122,  $p > 0.05$ ).

Hypothesis 2 tested the relationship between strategic perceived benefits and CRM impact. The causal relationship between strategic perceived benefits and CRM

impact was also not significant for the combined CRM Infrastructures (Path Coefficient = 0.056,  $p > 0.05$ ).

Hypothesis 3 tested the relationship between top management support and CRM impact. Top management support was found to be positively significant with respect to CRM impact for the combined CRM Infrastructures (Path Coefficient = 0.268,  $p < 0.05$ ). Since all the items loaded negatively and that the resulting path coefficient was also negative, the effective relationship between top management support and CRM impact is positive.

Hypothesis 4 tested the relationship between organizational readiness and CRM impact. Organizational readiness, in terms of IT readiness, was not significant with regard to CRM impact for the combined CRM Infrastructures. This seems to imply that IT readiness, by itself, will not matter in terms of CRM impact for the combined CRM Infrastructures (Path Coefficient = 0.038,  $p > 0.05$ ).

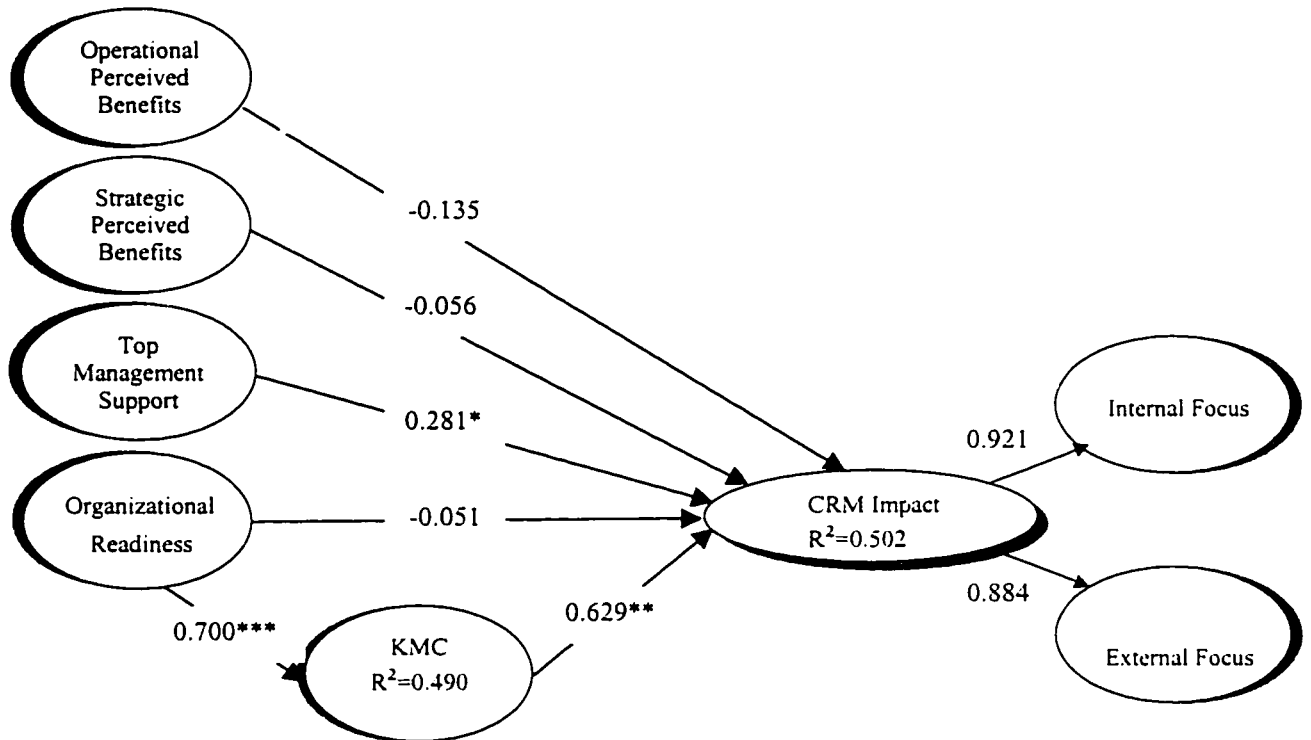
Hypothesis 5 tested the relationship between organizational readiness and knowledge management capabilities. Organizational readiness, more specifically IT readiness, was found to be strongly and positively significant with knowledge management capabilities for the combined CRM Infrastructures (Path Coefficient = 0.616,  $p < 0.001$ ).

Hypothesis 6 tested the relationship between an organization's knowledge management capabilities and CRM impact. Possessing knowledge management capabilities was found to be strongly and positively significant with regard to CRM



impact for the combined CRM Infrastructures (Path Coefficient = 0.485,  $p < 0.001$ ). Therefore hypothesis 6 is accepted for the combined CRM Infrastructures (CSS, SFA, and EMA).

### 5.5.2 Customer Support and Service (CSS) CRM Infrastructure



**Figure 13. CSS CRM Infrastructure path analysis and significance results (One-tail t-test \*:  $p < 0.05$ , \*\*:  $p < 0.01$ , \*\*\*:  $p < 0.001$ ;  $n = 41$ )**

Hypothesis 1 tested the relationship between operational perceived benefits and CRM impact; the actual benefits received through the use of CRM. The causal relationship between operational perceived benefits and CRM impact revealed no significant relationship for the CSS CRM Infrastructure (Path Coefficient = -0.135,  $p > 0.05$ ).

Hypothesis 2 tested the relationship between strategic perceived benefits and CRM impact. The causal relationship between strategic perceived benefits and CRM impact was also not significant for the CSS CRM Infrastructure (Path Coefficient = -0.056,  $p > 0.05$ ).

Hypothesis 3 tested the relationship between top management support and CRM impact. Top management support was found to be positively significant with respect to CRM impact for the CSS CRM Infrastructure (Path Coefficient = 0.281,  $p < 0.05$ ). Since all the items loaded negatively and that the resulting path coefficient was also negative, the effective relationship between top management support and CRM impact is positive.

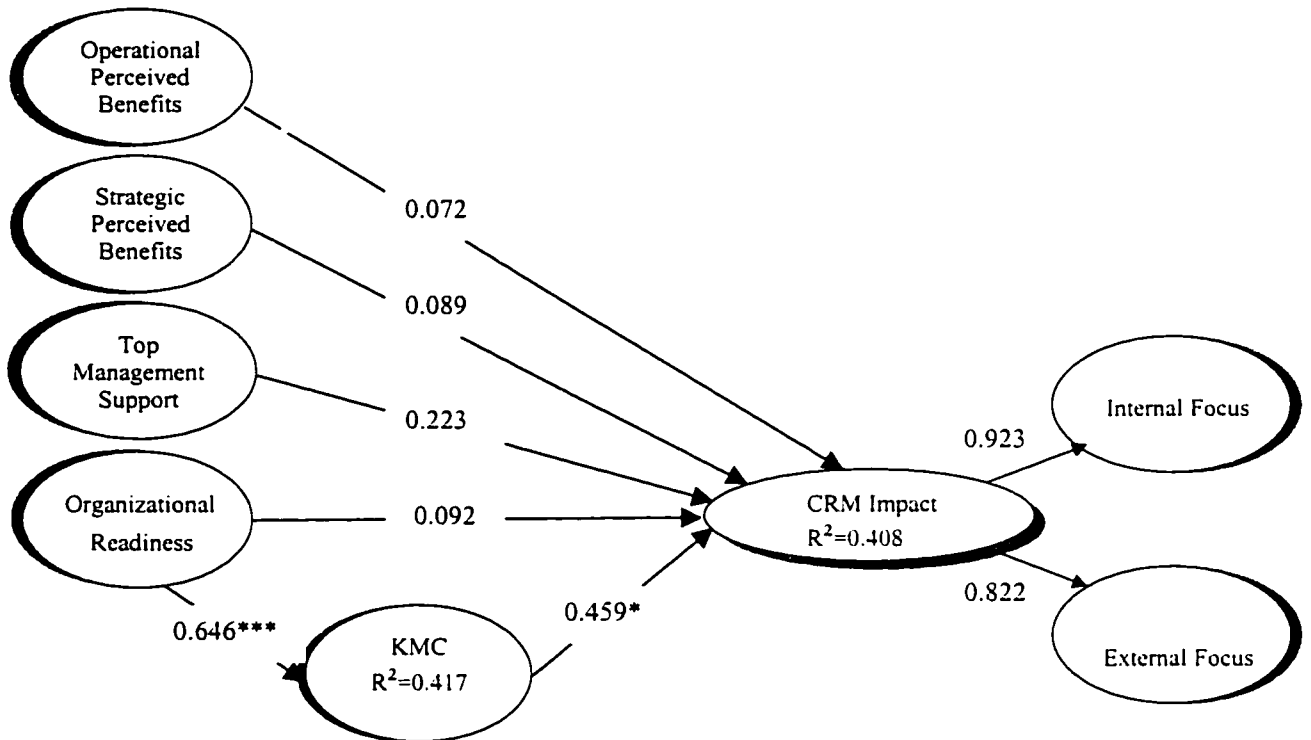
Hypothesis 4 tested the relationship between organizational readiness and CRM impact. Organizational readiness, in terms of IT readiness, was not significant with regard to CRM impact for the CSS CRM Infrastructure. This seems to imply that IT readiness, by itself, will not matter in terms of CRM impact for the CSS CRM Infrastructure (Path Coefficient = -0.051,  $p > 0.05$ ).

Hypothesis 5 tested the relationship between organizational readiness and knowledge management capabilities. Organizational readiness, more specifically IT readiness, was found to be strongly and positively significant with knowledge management capabilities for the CSS CRM Infrastructure (Path Coefficient = 0.700,  $p < 0.001$ ).

Hypothesis 6 tested the relationship between an organization's knowledge management capabilities and CRM impact. Possessing knowledge management

capabilities was found to be strongly and positively significant with regard to CRM impact for the CSS CRM Infrastructure (Path Coefficient = 0.629,  $p < 0.01$ ). Therefore hypothesis 6 is accepted for the CSS CRM Infrastructure.

### 5.5.3 Sales Force Automation (SFA) CRM Infrastructure



**Figure 14. SFA CRM Infrastructure path analysis and significance results (One-tail t-test \*:  $p < 0.05$ , \*\*:  $p < 0.01$ , \*\*\*:  $p < 0.001$ ;  $n = 38$ )**

Hypothesis 1 tested the relationship between operational perceived benefits and CRM impact; the actual benefits received through the use of CRM. The causal relationship between operational perceived benefits and CRM impact revealed no significant relationship for the SFA CRM Infrastructure (Path Coefficient = 0.072,  $p > 0.05$ ).

Hypothesis 2 tested the relationship between strategic perceived benefits and CRM impact. The causal relationship between strategic perceived benefits and CRM impact was also not significant for the SFA CRM Infrastructure (Path Coefficient = 0.089,  $p > 0.05$ ).

Hypothesis 3 tested the relationship between top management support and CRM impact. The causal relationship between top management support and CRM impact revealed no significant relationship for the SFA CRM Infrastructure (Path Coefficient = 0.223,  $p > 0.05$ ).

Hypothesis 4 tested the relationship between organizational readiness and CRM impact. Organizational readiness, in terms of IT readiness, was also not significant with regard to CRM impact for the SFA CRM Infrastructure. This seems to imply that IT readiness, by itself, will not matter in terms of CRM impact for the SFA CRM Infrastructure (Path Coefficient = 0.092,  $p > 0.05$ ).

Hypothesis 5 tested the relationship between organizational readiness and knowledge management capabilities. Organizational readiness, more specifically IT readiness, was found to be strongly and positively significant with knowledge management capabilities for the SFA CRM Infrastructure (Path Coefficient = 0.646,  $p < 0.001$ ).

Hypothesis 6 tested the relationship between an organization's knowledge management capabilities and CRM impact. Possessing knowledge management capabilities was found to be positively significant with regard to CRM impact for the

SFA CRM Infrastructure (Path Coefficient = 0.459,  $p < 0.05$ ). Therefore hypothesis 6 is accepted for the SFA CRM Infrastructure.

## 6. DISCUSSION

The conceptual framework of this study is derived from a proven technology adoption and impact model that has been adapted to apply to CRM technological initiatives. In this study, Iacovou *et al.*'s (1995) technology adoption and impact framework is augmented in two ways. First, the strong positive association between top management support and observed innovation behavior in past studies supports the top management support proposition as an additional critical enabler of CRM technological initiatives (Rai *et al.*, 1997; Jarvenpaa and Ives, 1991; Kimberly and Evanisko, 1981; Meyer and Goes, 1988). Second, possessing knowledge management capabilities is proposed as another critical enabler of CRM technological initiatives. This proposition is prone to emerge as a key factor in any IT-enabled and knowledge-intensive initiative such as CRM (Jutla, Craig and Bodorik, 2001; Battista and Verhun, 2000; Puschmann and Rainer, 2001; Fluss, 2000).

Any form of relationships, including customer relationship, requires at least two parties to exist. In this study, CRM impact is measured from both an internal focus (i.e organizational focus) and an external focus (i.e customer focus). Internal focus refers to the changes in an organization's business strategy, structure, business processes, metrics, compensation, skills, and technology. External focus refers to customer definition and segmentation, an understanding of customer needs, expectations, feedback, communications and customer-focused metrics (Gartner, 2001; Seligman, 2000; Day, 2000).



This thesis investigates the Critical Success Factors of Customer Relationship Management initiatives in three common organizational functions: customer support and service, sales, and marketing. The proposed research model appeared to provide moderate power to explain the variance in CRM impact; notably, 41.4 percent for the combined CRM Infrastructures (CSS, SFA, and EMA), 50.2 percent for the CSS CRM Infrastructure alone, and 40.8 percent for the SFA CRM Infrastructure alone. The influence of each Critical Success Factor on the dependent variable, CRM impact, is discussed in detail in the next section.

## **6.1 Conclusion**

The proposed research framework was developed to analyze the Critical Success Factors of CRM technological initiatives and was evaluated with the help of 101 organizations across Canada. The findings from this study have a number of important implications for academics as well as for IS practitioners.

Although only 56.44 percent (or 57 of 101 organizations) actually implemented at least one CRM initiative, the collected data was also used to investigate for possible differences between the two sample populations of adopters of CRM technology (n=57) and non-adopters of CRM technology (n=44). The results revealed that sufficient evidence exists to suggest that the two sample populations differed in levels of strategic perceived benefits, top management support, and knowledge management capabilities. These results implied that there is a difference in terms of strategic perceived benefits between the sample populations of adopters and non-adopters of CRM technology

(Significance level of  $p=0.007$ ). Furthermore, top management support, or the extent to which CRM efforts are promoted by the top management, was significantly different between the two samples (Significance level of  $p=0.000$ ). Also, knowledge management capabilities or the ability of an organization to treat its customers on a holistic level was different between the two samples (Significance level of  $p=0.051$ ).

This study delved into specific profiles of Critical Success Factors for two specific CRM Infrastructures (CSS and SFA CRM Infrastructure). The number of responses for the EMA CRM Infrastructure was short of the minimum requirements for PLS Structural Modeling Confirmatory Path Analysis test and hence could not be pursued. The influence of the proposed Critical Success Factors on CRM impact for the three instances (i.e for the combined CSS/SFA/EMA CRM Infrastructures, for the CSS CRM Infrastructure alone, and for the SFA CRM Infrastructure alone) are elaborated in the next section.

### **6.1.1 Influence of Operational and Strategic Perceived Benefits**

Both the operational and the strategic perceived benefits showed no significant relationship with CRM impact for the three instances (i.e for the combined CSS/SFA/EMA CRM Infrastructures, for the CSS CRM Infrastructure alone, and for the SFA CRM Infrastructure alone). These results can be explained by the fact that CRM technological initiatives are still in a stage of infancy in Canada. There exists a number of perplexing factors that need to be addressed before overcoming the hype around CRM technological initiatives. A more concrete understanding of the operational and strategic

perceived benefits of CRM will likely grow as the level of CRM macro-adoption increases amongst organizations in Canada.

### **6.1.2 Influence of Organizational Readiness**

Organizational readiness, or IT readiness to be more specific, was not significant with respect to CRM impact for the three instances. It can be concluded that an organization might possess the best IT Infrastructure but if it does not use its IT Infrastructure adequately to support and manage its customer relationships, it is simply not being customer-centric. As a result, the actual benefits from using CRM (Both internal/organizational benefits and external/customer benefits) are minimized since levels of knowledge will be minimal. These results confirm that CRM technological initiatives are much more than technological innovations and are not solely technology-driven. In fact, CRM technological initiatives imply the implementation of a customer-centric business strategy, a redesign of functional activities, and a re-engineering of work processes around all customer touch points using technology as an enabler.

### **6.1.3 Influence of Knowledge Management Capabilities**

Possessing Knowledge management capabilities was found to be the most significant Critical Success Factor affecting CRM impact for the three instances. These results confirm that high levels of knowledge management capabilities seem to foster effective and efficient management of customer relationships. Possessing knowledge management capabilities also imply that the IT Infrastructure is being utilized to reap

technological benefits and create operational, analytical and collaborative knowledge about customers, products, and services.

#### **6.1.4 Influence of Top Management Support**

Top management support was found to be significant for two instances, the combined CSS/SFA/EMA CRM Infrastructures and the CSS CRM Infrastructure. These results seem to indicate that top management support is a Critical Success Factor when CRM technological initiatives are considered as a whole and when CRM technological initiatives serve the customer support and service functions of an organization.

The results also indicate that the respondents did not view top management support as important when CRM technological initiatives are implemented in the sales function of an organization (i.e SFA CRM Infrastructure). This can be explained by the fact that the sales function has always been a trivial function in an organization. Sales personnel or representatives trivially managed and held customer relationships with and without the help of Information Technology. Therefore, organizations' executives may have a tendency to redirect their CRM efforts in other areas where higher Return on Investment from Information Technology usage may occur.

For instance, organizations' executives have just recently started paying more deliberate attention to their customers (i.e becoming customer-centric) and CSS is now seen as a growing envelope that can manage and grow long-term customer relationships. This enhanced focus might explain why top management support is seen as a Critical Success Factor with respect to CSS CRM technological initiatives and not for SFA CRM

technological initiatives. Organizations' executives may have felt the unnecessary need to re-affirm their support after the approval of the SFA CRM technological project. On the other hand, organizations' executives may have felt the need to affirm their support for CSS CRM technological initiatives – especially if their organizations are being redesigned around a customer-centric philosophy.

#### **6.1.5 Influence of Organizational Readiness on KMC**

The causal relationship between organizational readiness (IT readiness to be more specific) and knowledge management capabilities was found to be highly significant for the three instances. These findings are in total agreement with the theoretical background because possessing a strong IT Infrastructure is a key prerequisite to developing knowledge management capabilities. Knowledge management capabilities rely strongly on an IT Infrastructure to capture, manage and deliver real time authenticated customer, products and services information in order to improve customer response and provide faster decision-making in all customer touch points.

#### **6.2 Contribution of this study**

The current study is the first empirical study, to our knowledge, that delivers the Critical Success Factors of CRM technological initiatives. This study has also delved into specific profiles of Critical Success Factors for the distinct CSS and SFA CRM Infrastructures. In doing so, it has provided several significant contributions to the body of knowledge. The proposed research framework can be used as a foundation for the

further study of the perplexing factors that determine the achievement of successful CRM technological initiatives in different organizational functions. Organizations that are considering the implementation of a CRM strategy can utilize the results of this study to become better acquainted with the Critical Success Factors of a CRM initiative.

Also, the proposed research framework has been augmented so that it is better suited to analyze broader IT-enabled innovations. The proposed research framework extends Iacovou *et al.*'s (1995) technology adoption and impact framework in introducing the knowledge management capabilities component; an increasingly important determinant in the fast-paced, knowledge sharing and electronic driven economy of today. Furthermore, Iacovou *et al.*'s (1995) technology adoption and impact framework is reinforced with the top management support factor, a well-recognized critical factor in innovation behavior.

Finally, this thesis delivers a measurement instrument that can be used to facilitate future research. Future researchers will be able to use the measurement instrument, the extensive literature review, and the future directions to pursue further research in the field of CRM.

### **6.3 Limitations**

This self-reporting study has several limitations. Survey-lead research involves two possible sources of errors; variability and bias errors (Joliffe, 1986). Variability errors in survey data can occur due to the respondents perceptual differences, the lack of control over the respondents, and the respondents' relative level of competence and

familiarity with the topic of interest (Babbie, 1989; Kumar, Stern and Anderson, 1993; Kerlinger, 1986; Zahra and Govin, 1993). Bias responses can result from the use of single key respondents (CEOs and Presidents in this survey), and non-response to the survey (John, 1984; Joliffe, 1986).

This survey used a random sample of respondents and a pre-validated survey instrument to reduce variability and bias errors. Generalizability of the results or external validity has been minimized with the use of a sample comprising of organizations from multiple vertical sectors of industry. As illustrated in Figure 5 (p. 56), bias errors were minimized by the diversified profile of the respondents. However, as a result of the sample diversification, it is possible that the respondents to this study perceived various levels of top management support due to their role in their respective organization. Future studies could consider using samples of multiple respondents to diversify perceptions and experiences. Differing perspectives might provide a new way of examining CRM deployments and unveil additional Critical Success Factors of CRM technological initiatives.

Also, due to the paucity of research in the field of CRM coupled with the early adoption rate of CRM technological initiatives in Canada, this study used a number of non-empirically tested benchmarks to establish a set of testable research hypotheses. Nonetheless, the unidimensionality, reliability and validity results of the proposed research model proved to be very strong. The Confirmatory Factor Analysis also confirmed most of the theoretical foundations behind the proposed research model. However, one might want to use an even larger sample to reach a more stable research

model despite the fact that the collected data satisfied the minimum goals of five observations for the biggest construct items.

#### **6.4 Future research directions**

Data obtained from the mail survey was merely a snapshot of organizations interested in IS-supported CRM technological initiatives across Canada. Further follow-on research, to consolidate the issues encountered in this study, is undoubtedly an opportunity that could be pursued. For instance, a longitudinal study to extend the findings of this work would be an important step in developing a better understanding of the Critical Success Factors of CRM technological initiatives. Since CRM technological initiatives are long-term business strategies, longitudinal studies could be undertaken with the same organizations to see if the same findings hold over time.

Furthermore, the lack of correlation between the operational and strategic perceived benefits of CRM technological initiatives and CRM impact needs to be investigated and suggests an opportunity for further research. Using a reduced research model that excludes the knowledge management capabilities construct, both operational and strategic perceived benefits of EMA CRM technological initiatives were found to be significant at the 0.01 level (Li Kam Wa and Croteau, 2001). The use of this reduced research model was necessary to meet the requirements for significant PLS analysis and has provided valuable insights for EMA CRM initiatives.



Also, this study did not verify Iacovou *et al.*'s (1995) external pressure construct as a possible Critical Success Factor of CRM technological initiatives. This is because external pressure from trading partners did not apply to CRM technological initiatives. However, it would be interesting to investigate if external pressure from an organization's competitors would play a significant role in the success of a CRM initiative.

Finally, there is a need for a replication study that would re-test the same objectives and the validity of the research model. Future research efforts could also focus on differing organizational characteristics such as organizational sizes (companies with 1000 employees or more) and specific vertical sectors (banking or financial services, pharmaceutical, or manufacturing). It would also be very interesting to study the impact of differing internal characteristics of an organization with respect to the achievement of CRM technological initiatives. Internal characteristics such as organizational culture, organizational structure, knowledge sharing and collaboration amongst employees and/or business partners, and compensation strategies (in CSS, SFA, and EMA functions) could be investigated as other Critical Success Factors of CRM technological initiatives.

## 7. BIBLIOGRAPHY

- Alavi, M. and Leidner, D. (1999), "Knowledge Management Systems: Emerging Views and Practices from the field", Proceedings of the 32<sup>nd</sup> Hawaii International Conference on System Sciences.
- Anderson, J.C. and Gerbing, D.W. (1988), "Structural Equation Modeling in Practice: A Review and Recommended Two-Step Procedure", *Psychological Bulletin*, Vol. 103, Issue 3, pp. 411-423.
- Anonymous (2000), "CRM Power 2000", *National Post*, September 5, pp. E1-E17.
- Atkinson, A.A., Waterhouse, J. H., and Wells, R.B. (1997), "A stakeholder approach to strategic performance measurement", *Sloan Management Review*, Cambridge, Vol. 38, Issue 3, pp. 25-37.
- Babbie, E. (1989), "The practice of Social Research", Belmont, CA, Walsworth Co.
- Baker, S. (2000), "Getting the most from your intranet and extranet strategies", *The Journal of Business Strategy*, Boston, Vol. 21, Issue 4, pp. 40-43.
- Barclay, D., Higgins, C., and Thompson, R. (1995), "The Partial Least Squares (PLS) Approach to Causal Modeling: Personal Computer Adoption and Use as an Illustration", *Technology Studies*, Vol. 2, No. 2, pp. 285-309.
- Barsky, N.P. and Marchant, G. (2000), "The most valuable resource – measuring and managing intellectual capital", *Strategic Finance*, Montvale, Vol. 81, Issue 8, pp. 58-62.
- Battista, P. and Verhun, D. (2000), "Customer relationship management: The promise and the reality", *CMA Management*, May 2000, Vol. 74, Issue 4, pp. 34-37.
- Bohn, R.E. (1994), "Measuring and managing technological knowledge", *Sloan Management Review*, Cambridge, Vol. 36, Issue 1, pp. 61-73.
- Boynton, A.C. and Zmud, R.W. (1984), "An assessment of Critical Success Factors", *Sloan Management Review*, Cambridge, Vol. 25, Issue 4, pp. 17-28.
- Brown, S.M. (2000), "Searching for effective CRM", *Enterprise Systems Journal*, Dallas, Vol. 15, Issue 8, pp. 40-43.
- Brynjolfsson, E. and Hitt, L. (1998), "Beyond the productivity paradox", *Communications of the ACM*, Vol. 41, Issue 8, pp. 56-62.
- Butler, S. (2000), "Changing the game: CRM in the e-world", *The Journal of Business Strategy*, Boston, Vol. 21, Issue 2, pp. 13-14.

- Cassel, C., Hackl, P., and Westlund, A.H. (1999), "Robustness of Partial Least-Squares Method for Estimating Latent Variable Quality Structures", *Journal of Applied Statistics*, Vol. 26, Issue 4, pp. 435-446.
- Chin, W.W. and Fee, T. (1995), PLS Graph Software, v. 2910208
- Chu, P.C. (1995), "Conceiving strategic systems", *Journal of Systems Management*, Vol. 46, Issue 4, pp. 36-43.
- Churchill, G.A. (1979), "A paradigm for developing better marketing constructs", *Journal of Marketing Research*, Vol. 16, pp. 64-73.
- Cisco (1998), "Cisco Systems, Inc.: Implementing ERP", *Harvard Business School Publishing*, Boston, pp. 1-18.
- Close, W., Eisenfeld, B., Ferrara, C., Galvin, J., Hagemeyer, D., and Maoz, M. (2001), "CRM at Work: Eight Characteristics of CRM Winners", *Gartner Research*.
- Colgate, M.R. and Danaher, P.J. (2000), "Implementing a customer relationship strategy: The asymmetric impact of poor versus excellent execution", *Academy of Marketing Science Journal*, Greenvale, Vol. 28, Issue 3, pp. 375-387.
- Cooper, B.L., Watson, H.J., Wixom, B.H., and Goodhue, D.L. (2000), "Data warehousing supports corporate strategy at First American Corporation", *MIS Quarterly*, Minneapolis, Vol. 24, Issue 4, pp. 547-567.
- Craig, R. (2000), "CRM and corporate data", *Ent*, Fort Washington, Vol. 5, Issue 17, pp. 24-25.
- Day, G.S. (2000), "Managing market relationships", *Academy of Marketing Science Journal*, Greenvale, Vol. 28, Issue 1, pp. 24-30.
- Davenport, T.H. and Klahr, P. (1998), "Managing customer support knowledge", *California Management Review*, Berkeley, Vol. 40, Issue 3, pp. 195-208.
- Fluss, D. (2000), "The future of E-Service is E-CRM", *Inside Gartner Group*, pp. 1-3.
- Fornell, C.R. and Larcker, D.F. (1981), "Two Structural Equation Models with Unobservable Variables and Measurement Error", *Journal of Marketing Research*, pp. 39-50.
- Fusaro, L. (1999), "From a Market of Millions to a Million Markets of One", *Canadian Manager*, Vol. 24, Issue 4, pp. 18, 28.
- Galimi, J. (2000), "Strategic Analysis Report: CRM IT Requirements and Strategies for Payer Organizations", *Gartner Group*.

- Gartner (2001), "Customer Relationship Management: The Gartner Perspective", <http://www.crm-forum.com/library/gartner/gartner-002>, June 2001, Paris, France.
- Gartner Research (2001), "The CRM Maturity Model", *Gartner Group*.
- Goldberg, S.J. (1999), "Make sure objectives are clear when starting SFA technology", *Marketing News*, Chicago, Vol. 33, Issue 23, pp. 13-16.
- Gopal, A., Bostrom, R.P., and Chin, W.W. (1993), "Applying adaptive structuration theory to investigate the process of group support systems use", *Journal of Management Information Systems*, Armonk, Vol. 9, Issue 3, pp. 45.
- Guadagno, N. (2000), "The new economy demands Web-enabled call centers", *Call Center Solutions*, Norwalk, Vol. 19, Issue 1, pp. 62-70.
- Guleri, T. (2000), "CRM throughout the enterprise: How to make to happen", *Call Center Solutions*, Norwalk, Vol. 18, Issue 12, pp. 44-49.
- Hahnke, J. (2001), "The Critical Phase of the CRM Lifecycle. Without CRM analytics, your customer won't even know you're there", [www.hyperion.com](http://www.hyperion.com).
- Hair, J.F., Anderson, R.E., Tatham, R.L., and Black, W.C. (1992), *Multivariate Data Analysis with Readings*, 3rd edition, New York, MacMillan.
- Hoffman, D.L. and Novak, T.P. (1996), "A New Marketing Paradigm for Electronic Commerce", *The Information Society*, pp. 1-9.
- Hulland, J. (1999), "Use of Partial Least Squares (PLS) in Strategic Management Research: A Review of Four Recent Studies", *Strategic Management Journal*, Vol. 20, pp. 195-204.
- Iacovou, C., Benbasat, I., and Dexter, A.S. (1995), "Electronic Data Interchange and small organizations: Adoption and impact of technology", *MIS Quarterly*, Vol. 19, Issue 4, pp. 465-485.
- Igbaria, M. and Greenhaus, J.H. (1992), "Determinants of MIS Employees' Turnover Intentions: A Structural Equation Model", *Association for Computing Machinery Communications of the ACM*, Vol. 35, Issue 2, pp. 35-49.
- Javenpaa, S.L., Dickson, G.W., and DeSanctis, G.L. (1984), "Methodological issues in experimental IS research: Experiences and recommendations", Proceedings of the fifth International Conference on Information Systems, Tucson, AZ.
- Jenkins, D. (1999), "Customer Relationship Management and the data warehouse", *Call Center Solutions*, Norwalk, Vol. 18, Issue 2, pp. 88-92.

- John, G. (1984), "An empirical investigation of some antecedents of opportunism in a marketing channel", *Journal of Marketing research*, Vol. 21, pp. 278-289.
- Johnson, A.M. (1999), "The customer who would be king", *CIO*, Vol. 12, Issue 21, pp. 182-186.
- Joliffe, F.R. (1986), "Survey Design and Analysis", New York: John Wiley & Sons.
- Jutla, D., Craig, J., and Bodorik, P. (2001), "Enabling and Measuring Electronic Customer Relationship Management Readiness", Proceedings of the 34<sup>th</sup> Hawaii International Conferences on System Sciences.
- Kaplan, R.S. and Norton, D.P. (1992), "The Balanced Scorecard – Measures that drive performance", *Harvard Business Review*, Vol. 70, Issue 1, pp. 71-79.
- Karimi, J., Somers, T. M., and Gupta, Y. P. (2001), "Impact of information technology management practices on customer services", *Journal of Management Information Systems*, Vol. 17, Issue 4, pp. 125-158.
- Kerlinger, F.N. (1986), "Foundations of Behavioral Research", Orlando, FL, Holt, Rinehart and Winston.
- Kettinger, W.J. and Hackbarth, G. (1997), "Selling in the era of the Net: Integration of Electronic Commerce in Small Firms", Proceedings of ICIS, Atlanta, pp. 249-262.
- Kimberley, J. and Evanisko, M. (1981), "Organizational innovation: The influence of individual, organizational, and contextual factors on hospital adoption of technological and administrative innovations", *Academy of Management Journal*, Vol. 24, Issue 4, pp. 689-713.
- Kumar, N., Stern, L.W., and Anderson, J.C. (1993), "Conducting interorganizational research using key informants", *Academy of Management Journal*, Vol. 36, Issue 6, pp. 1633-1651.
- Li Kam Wa, P. and Croteau, A. M., (2001), "Insights into the Critical Success Factors of Customer Relationships Marketing Technological Initiatives: An Outlook of Current Practices in Canada", Proceedings of the 9<sup>th</sup> International Conference on Relationship Marketing, Montreal, pp. 1-18.
- Lord, C. (2000), "The practicalities of developing a successful e-Business strategy", *The Journal of Business Strategy*, Boston, Vol. 21, Issue 2, pp. 40-43.
- Mahmood, M. A. (2000), "Special issue: Impacts of information technology investment on organizational performance", *Journal of Management Information Systems*, Armonk, Vol. 16, Issue 4, pp. 3-8.

- Maoz, M. (2000), "Management Update: The Benefits of Extending the Contact Center to the Web", *Inside Gartner Group*, pp. 1-4.
- McKendrick, J. (2000), "CRM and data warehouses need each other to prosper", *Ent*, Fort Washington, Vol. 5, Issue 1, pp. 29,39.
- Meyer, A.D. and Goes, J.B. (1988), "Organizational assimilation of innovations: A multilevel contextual analysis", *Academy of Management Journal*, Vol. 31, Issue 4, pp. 897-923.
- Mitchell, P.J. (1998), "Aligning customer call center for 2001", *Telemarketing and Call Center Solutions*, Norwalk, Vol. 16, Issue 10, pp. 64-69.
- Nelson, S. and Berg, T. (2000), "Customer Relationship Management: An overview", *Gartner Group*.
- Nemzow, M. (1999), "Ecommerce Stickiness for Customer Retention", *Journal of Internet Banking and Commerce*, Vol. 4, Issue 1, pp. 1-5.
- Nunnally, J. (1967), "Psychometric Theory", 1st edition, New York, McGraw-Hill.
- Peppers, D., Rogers, M., and Dorf, B. (1999), "Is your company ready for one-to-one marketing", *Harvard Business Review*, Boston, Vol. 77, Issue 1, pp. 151-160.
- Peter, J.P. (1979), "Reliability: A review of psychometric basics and recent marketing practices", *Journal of Marketing research*, Vol. 16, pp. 6-17.
- Porter, M. (1985), "Competitive Advantage: Creating and Sustaining Superior Performance", Free Press, New York.
- Puschmann, T. and Rainer, A. (2001), "Customer Relationship Management in the Pharmaceutical Industry", Proceedings of the 34<sup>th</sup> Hawaii International Conference on System Sciences.
- Rai, A. and Bajwa, D.S. (1997), "An Empirical Investigation into factors Relating to the Adoption of Executive Information Systems: An Analysis of EIS for Collaboration and Decision Support", *Decision Sciences*, Vol. 28, Issue 4, pp. 939-974.
- Rockart, J.F. (1979), "Chief Executives define their own data needs", *Harvard Business Review*, Vol. 57, Issue 2, pp. 81.
- Sawy, O.A.E. and Bowles, G. (1997), "Redesigning the customer support process for the electronic economy", *MIS Quarterly*, Minneapolis, Vol. 21, Issue 4, pp. 457-483.
- Seiders, K., Berry, L.L., and Gresham, L.G. (2000), "Attention, retailers! How convenient is your convenience strategy?", *Sloan Management Review*, Cambridge, Vol. 41, Issue 3, pp. 79-89.

- Seligman, M. (2000), "Sultans of sales", *New Zealand Management*, Auckland, Vol. 47, Issue 6, pp. 63-67.
- Sharri, M.Y. (1999), "Critical success factors for total quality management implementation in small and medium enterprises", *Total Quality Management*, Abingdon, Vol. 10, Issue 4, pp. 209.
- Sheridam, N. (1999), "Mining for Gold", *Communication International*, Vol. 26, Issue 9, pp. 51-54.
- Sherter, A. (1999), "Measuring CRM's bottom-line impact", *Bank Technology News*, New York, Vol. 12, Issue 4, pp. 41-44.
- Siebel (2001), "Siebel Systems Case Studies Web Site", <http://www.siebel.com/about-siebel/casestudies.asp>.
- Skyrme, D.J. and Amidon, D.M. (1998), "New measures of success", *The Journal of Business Strategy*, Vol. 19, Issue 1, pp. 20-24.
- Sodano, A. (2000), "Leveraging CRM to build better products", *National Underwriter*, Cincinnati, Vol. 104, Issue 26, pp. 23-27.
- Stevens, T. (1999), "Can you relate?", *IndustryWeek*, [www.industryweek.com](http://www.industryweek.com), pp. 1-3.
- Thompson, R.L., Higgins, C.A., and Howell, J.M. (1991), "Personal Computing: Toward a Conceptual Model of Utilization", *MIS Quarterly*, Vol. 15, Issue 1, pp. 125-143.
- Vance, D.M. (1997), "Information, Knowledge and Wisdom: The Epistemic hierarchy and Computer-Based Information System", Proceedings of the 1997 America's Conference on Information Systems.
- White, R.L. (2000), "Executing an integrated E-CRM infrastructure", *Call Center Solutions*, Norwalk, Vol. 18, Issue 10, pp. 50-54.
- Wildt, A.R., Lambert, Z.V., and Durand, R.M. (1982), "Applying the Jackknife Statistics in Testing and Interpreting Canonical Weights, Loadings, and Cross-Loadings", *Journal of Marketing Research*, Vol. 19, pp. 99-107.
- Wold, H. (1989), "Introduction to the second generation of multivariate analysis in Theoretical Empiricism: A General Rationale for Scientific Model-Building", New York, Paragon House, pp. vii-xl.
- Zahra, S.A. and Covin, J.G. (1993), "Business strategy, technology policy, and firm performance", *Strategic Management Journal*, Vol. 15, pp. 451-478.

## 8. APPENDIX A

**Table 8b. Detailed independent sample t-test (99% confidence interval)**

		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
Operational PB	Equal variances assumed	.293	.590	.930	99	.355	.1213
	Equal variances not assumed			.951	98.352	.344	.1213
Strategic PB	Equal variances assumed	.214	.645	2.747	99	.007	.2916
	Equal variances not assumed			2.718	88.635	.008	.2916
Org. Readiness	Equal variances assumed	.226	.635	.422	99	.674	6.302E-02
	Equal variances not assumed			.422	93.148	.674	6.302E-02
KMC	Equal variances assumed	1.114	.294	1.972	99	.051	.2393
	Equal variances not assumed			1.935	85.172	.056	.2393
Top Mgmt. Support	Equal variances assumed	.266	.607	4.279	99	.000	.7148
	Equal variances not assumed			4.342	96.873	.000	.7148



**Table 13. Descriptive statistics for all items**

		N	Min	Max	Mean	Std. Dev.
<b>Perceived Benefits</b>	Q1	101	1.00	5.00	3.9354	.7457
- Operational	Q2	101	2.00	5.00	4.1838	.6921
- Strategic	Q3	101	1.00	5.00	3.1078	.9639
	Q4	101	1.00	5.00	3.7062	.8779
	Q5a	101	1.00	5.00	3.6341	.9032
	Q5b	101	1.00	5.00	3.3472	.9103
	Q5c	101	1.00	5.00	3.4777	.8658
	Q6	101	1.00	5.00	3.9793	.8244
	Q7	101	1.00	5.00	4.2611	.7193
	Q8	101	2.00	5.00	3.7094	.7821
<b>Org. Readiness</b>	Q1	101	1.00	5.00	3.7817	.8149
	Q2	101	2.00	5.00	3.9587	.7059
	Q3	101	1.00	5.00	3.6399	1.0216
	Q4	101	1.00	5.00	3.1753	1.0864
	Q5	101	1.00	5.00	3.1861	1.1775
	Q6	101	1.00	5.00	3.4233	1.0376
<b>Top Mgmt. Supp.</b>	Q7	101	1.00	5.00	3.1780	1.0916
	Q8	101	1.00	5.00	3.4197	1.0423
	Q9	101	1.00	5.00	3.2618	.9643
	Q10	101	1.00	5.00	3.5265	1.0825
<b>KM Capabilities</b>	Q1	101	1.00	5.00	3.4382	.9676
	Q2	101	2.00	5.00	3.6431	.8357
	Q3	101	1.00	5.00	3.4046	.8980
	Q4	101	2.00	5.00	3.8228	.6927
	Q5	101	2.00	5.00	3.5072	.9526
	Q6	101	1.00	5.00	3.6896	.9271
	Q7	101	1.00	5.00	3.2067	.9374
	Q8	101	2.00	5.00	3.8663	.7298
	Q9	101	2.00	5.00	3.8129	.6680
<b>CRM Impact</b>	Q1	101	3.00	5.00	4.0784	.5068
	Q1b	101	2.00	5.00	3.8235	.5423
	Q1c	101	2.00	5.00	3.8868	.5772
	Q1d	101	2.00	5.00	3.5417	.5284
	Q2a	101	3.00	5.00	3.9038	.4530
	Q2b	101	2.00	5.00	3.6731	.5239
	Q2c	101	2.00	5.00	3.6531	.6091
	Q2d	101	3.00	5.00	3.8000	.4899
	Q2e	101	3.00	5.00	3.8393	.4643
	Q3	101	2.00	5.00	3.5000	.6633

**Table 14. Correlation matrix between constructs**

		OPB	SPB	ORDY	TOP	KMC	CRMI_ORG	CRMI_CUST
OPB	Pearson Correlation	1.000	.316	.205	.152	.169	-.004	.039
	Sig. (2-tailed)	.	.017	.126	.260	.209	.974	.773
	N	57	57	57	57	57	57	57
SPB	Pearson Correlation	.316	1.000	.049	.020	.191	.119	.166
	Sig. (2-tailed)	.017	.	.717	.881	.155	.377	.218
	N	57	57	57	57	57	57	57
ORDY	Pearson Correlation	.205	.049	1.000	.328	.553	.366	.367
	Sig. (2-tailed)	.126	.717	.	.013	.000	.005	.005
	N	57	57	57	57	57	57	57
TOP	Pearson Correlation	.152	.020	.328	1.000	.282	.386	.230
	Sig. (2-tailed)	.260	.881	.013	.	.033	.003	.085
	N	57	57	57	57	57	57	57
KMC	Pearson Correlation	.169	.191	.553	.282	1.000	.665	.509
	Sig. (2-tailed)	.209	.155	.000	.033	.	.000	.000
	N	57	57	57	57	57	57	57
CRMI_ORG	Pearson Correlation	-.004	.119	.366	.386	.665	1.000	.530
	Sig. (2-tailed)	.974	.377	.005	.003	.000	.	.000
	N	57	57	57	57	57	57	57
CRMI_CUST	Pearson Correlation	.039	.166	.367	.230	.509	.530	1.000
	Sig. (2-tailed)	.773	.218	.005	.085	.000	.000	.
	N	57	57	57	57	57	57	57

OPB: Operational perceived benefits  
 SPB: Strategic perceived benefits  
 ORDY: Organizational readiness  
 TOP: Top management support  
 KMC: Knowledge management capabilities  
 CRMI\_ORG: CRM impact (Organizational focus)  
 CRMI\_CUST: CRM impact (Customer focus)

**Sample cover letter**

*Date*

*Name*  
*Title*  
*Company*  
*Address*  
*City (Province)*  
*Postal Code*

**Subject: Study to investigate the Critical Success Factors of Customer Relationship Management**

Dear \_\_\_\_\_,

I am a graduate student at Concordia University, Montreal, completing a Master of Science degree in Administration and specializing in MIS. I am currently conducting a study, supervised by Dr. Anne-Marie Croteau, to investigate the Critical Success Factors of Customer Relationship Management (CRM) projects in Canadian organizations.

*Customer Relationship Management (CRM) is a customer-focused business strategy that aims to increase customer satisfaction and customer loyalty by offering a more responsive and customized service to each customer. CRM is implemented in organizations to optimize profitability and revenue. It is most commonly used in functional areas such as customer support and service, sales, and marketing.*

I strongly value your views on this topic and believe that responding should not take more than 15 minutes of your valuable time. Of course your participation is voluntary. Please be assured that all the information given to us will be kept confidential and the results will not disclose your identification. I would ask you to return your duly filled questionnaire by **Friday May 4<sup>th</sup>** using the enclosed envelope.

I would like to thank you in advance for your time and help in this matter. If you have any comments or questions regarding this matter, please feel free to contact me.

Best regards,

Peter Li Kam Wa  
M.Sc.A. Student  
John Molson School of Business  
Tel.: (514) 939-1430  
E-mail: peter\_lkw@yahoo.com

**Sample cover letter (French version)**

*Date*

*Nom*  
*Titre*  
*Compagnie*  
*Adresse*  
*Ville (Province)*  
*Code Postal*

**Objet: Étude sur la gestion des relations avec la clientèle.**

Cher/Chère \_\_\_\_\_,

Je suis étudiant à l'université Concordia et je complète présentement une maîtrise en sciences de l'administration. Dans le cadre de ma recherche, supervisée par Madame Anne-Marie Croteau, j'entreprends une étude sur la gestion des relations avec la clientèle (CRM). Je cherche à déterminer les facteurs clés de succès des projets CRM dans les entreprises canadiennes.

*La gestion des relations avec la clientèle (CRM) est une stratégie d'affaires orientée vers la satisfaction et la fidélité du client et implantée pour optimiser la rentabilité et le revenu de l'entreprise. Elle vise à offrir un service plus sensible et plus adapté aux besoins du client. Le CRM est le plus couramment utilisé pour les fonctions de support et service à la clientèle, de ventes et de marketing.*

J'apprécierais grandement connaître votre opinion sur ce sujet. Je vous invite donc à prendre 15 minutes de votre temps pour compléter le questionnaire ci-joint. Il va de soi que vous n'êtes pas tenu(e) de le compléter. De plus, je peux vous assurer que vos réponses seront gardées strictement confidentielles. Je vous demanderais de me retourner le questionnaire dûment complété d'ici **Vendredi le 4 mai** en utilisant l'enveloppe ci-jointe.

J'aimerais vous remercier à l'avance du temps que vous prendrez pour remplir ce questionnaire. Si vous avez des commentaires ou des questions, n'hésitez pas à me contacter. Veuillez agréer, cher/chère \_\_\_\_\_, l'expression de mes salutations les plus sincères.

Peter Li Kam Wa  
Étudiant à la Maîtrise des Sciences de la gestion  
École de gestion John-Molson  
Tél.: (514) 939-1430  
Courriel: peter\_lkw@yahoo.com

**Sample Follow-up letter**

*Date*

*Name*  
*Title*  
*Company*  
*Address*  
*City (Province)*  
*Postal Code*

**Subject: Follow-up regarding “Questionnaire to investigate the Critical Success Factors of Customer Relationship Management”**

Dear \_\_\_\_\_,

Last week, a questionnaire to investigate the Critical Success Factors of Customer Relationship Management (CRM) was mailed to you. Your participation is crucial to the success of this study and we seize this opportunity to encourage you to complete the questionnaire. We would also like to ensure that you received the questionnaire.

Please be assured that all the information given to us will be kept confidential and the results will not disclose your identification. If you have not received the questionnaire, I welcome you to contact me and I will ensure that a questionnaire is sent to you as soon as possible. You can also download a copy of the questionnaire on the Web at the following address: [alcor.concordia.ca/~peterlkw](http://alcor.concordia.ca/~peterlkw) (Username: g693p and Password: g693p). Of course, your participation is voluntary.

I would like to thank you in advance for your time and help in this matter.

Best regards,

Peter Li Kam Wa  
M.Sc.A. Student  
John Molson School of Business  
Tel.: (514) 939-1430  
E-mail: peter\_lkw@yahoo.com

**Sample Follow-up letter (French version)**

*Date*

*Nom*  
*Titre*  
*Compagnie*  
*Adresse*  
*Ville (Province)*  
*Code Postal*

**Objet: Suivi concernant l'étude sur la gestion des relations avec la clientèle**

Cher/Chère \_\_\_\_\_,

La semaine dernière, nous vous avons expédié un questionnaire sur la gestion des relations avec la clientèle (CRM). Pour mieux comprendre les facteurs clés de succès du CRM, nous avons extrêmement besoin de votre opinion. C'est pourquoi nous nous permettons d'insister en vous rappelant l'importance de votre participation à cette étude et nous vous incitons à compléter le questionnaire.

Soyez assuré que toute information que vous nous fournirez restera strictement confidentielle. Si vous n'avez pas reçu le questionnaire, je vous prie de me contacter et je m'assurerai qu'un questionnaire vous soit envoyé aussitôt que possible. Vous pouvez également télécharger une copie du questionnaire sur le Web à l'adresse suivante: **alcor.concordia.ca/~peterlkw** (Code utilisateur: g693p et Mot de passe: g693p). Votre participation est volontaire.

J'aimerais vous remercier à l'avance du temps que vous prendrez pour remplir ce questionnaire et pour votre aide. Veuillez agréer, *cher/chère* \_\_\_\_\_, l'expression de mes salutations les plus sincères.

Peter Li Kam Wa  
Étudiant à la Maîtrise des Sciences de la gestion  
École de gestion John-Molson  
Tel.: (514)-939-1430  
Courriel: peter\_lkw@yahoo.com

## CUSTOMER RELATIONSHIP MANAGEMENT SURVEY

Customer Relationship Management (CRM) is a customer-focused business strategy that aims to increase customer satisfaction and customer loyalty by offering a more responsive and customized service to each customer. CRM is implemented in organizations to optimize profitability and revenue. It is most commonly used in functional areas such as customer support and service, sales, and marketing.

### SECTION I

1. Has your organization implemented any CRM project(s)?  Yes  No

If you answered **Yes**, please indicate the functional area(s) where CRM has been implemented in your organization.

- Customer Support and Service  Sales  Marketing  
 Other \_\_\_\_\_

What is the CRM project duration: \_\_\_\_\_ Months ?

What is the CRM project completion in percentage \_\_\_\_\_ % ?

### PERCEIVED BENEFITS OF CRM

**Instructions:** Using the following scale, please indicate how you would judge your organization's comprehension in regard to the relative advantage that CRM can bring to the organization **before** implementation. Please circle the number that best represents your opinion.

Highly disagree	Disagree	Neutral	Agree	Highly agree
1	2	3	4	5

- |  |   |   |   |   |   |
|--|---|---|---|---|---|
| 1. CRM will increase the organization's profitability  | 1 | 2 | 3 | 4 | 5 |
| 2. CRM will help the organization gain a competitive edge  | 1 | 2 | 3 | 4 | 5 |
| 3. CRM will help decrease operational costs  | 1 | 2 | 3 | 4 | 5 |
| 4. CRM will enable the organization to gain access to new customer channels because of better customer understanding | 1 | 2 | 3 | 4 | 5 |
| 5. CRM will shorten the organization's   |   |   |   |   |   |
| a. ...customer support & service cycle   | 1 | 2 | 3 | 4 | 5 |
| b. ...sales cycle  | 1 | 2 | 3 | 4 | 5 |
| c. ...marketing cycle  | 1 | 2 | 3 | 4 | 5 |
| 6. CRM will enable the organization to handle more complex customer relationships                                    | 1 | 2 | 3 | 4 | 5 |
| 7. CRM will enable the organization to increase customer loyalty   | 1 | 2 | 3 | 4 | 5 |
| 8. CRM will increase the organization's employees productivity   | 1 | 2 | 3 | 4 | 5 |

## ORGANIZATIONAL READINESS

**Instructions:** Using the following scale, please indicate how you perceive your organization's actual technological resources and top management support. Please circle the number that best represents your opinion.

Highly disagree	Disagree	Neutral	Agree	Highly agree
1	2	3	4	5

- |  |   |   |   |   |   |
|--|---|---|---|---|---|
| 1. The organization possesses a good information systems infrastructure  | 1 | 2 | 3 | 4 | 5 |
| 2. The organization possesses a good telecommunications infrastructure   | 1 | 2 | 3 | 4 | 5 |
| 3. The organization's information systems are integrated across several functional areas                                 | 1 | 2 | 3 | 4 | 5 |
| 4. The organization possesses the necessary infrastructure to capture customer data from all customer interaction points | 1 | 2 | 3 | 4 | 5 |
| 5. The organization has the ability to consolidate all acquired customer-related data in a centralized database          | 1 | 2 | 3 | 4 | 5 |
| 6. Data sharing technologies to enable data access between information systems are available                             | 1 | 2 | 3 | 4 | 5 |
| 7. Top management's contact with the executive sponsor(s) on CRM related issues is frequent                              | 1 | 2 | 3 | 4 | 5 |
| 8. CRM is regarded as a high priority by top management  | 1 | 2 | 3 | 4 | 5 |
| 9. The executive sponsor(s) are regularly involved throughout the CRM project  | 1 | 2 | 3 | 4 | 5 |
| 10. Top management perceives CRM to be part of the organization's vision   | 1 | 2 | 3 | 4 | 5 |

## KNOWLEDGE MANAGEMENT CAPABILITIES

Knowledge Management capabilities is the ability of an organization to capture, manage, and deliver reliable customer, products and services information across the enterprise.

**Instructions:** Using the following scale, please indicate how you perceive your actual organization's Knowledge Management Capabilities. Please circle the number that best represents your opinion or circle "NA" for any item that is not applicable to your situation.

Highly disagree	Disagree	Neutral	Agree	Highly agree	Not applicable
1	2	3	4	5	NA

- |  |   |   |   |   |   |    |
|--|---|---|---|---|---|----|
| 1. The organization is able to provide fast customer response because of integrated customer knowledge across several functional areas | 1 | 2 | 3 | 4 | 5 | NA |
| 2. The organization is able to provide fast decision-making due to customer knowledge availability                                     | 1 | 2 | 3 | 4 | 5 | NA |
| 3. The organization is able to provide fast decision-making due to knowledge precision   | 1 | 2 | 3 | 4 | 5 | NA |
| 4. The organization makes good use of its employee expertise   | 1 | 2 | 3 | 4 | 5 | NA |



5. The organization can provide authentic customer information for quick and accurate customer interaction	1	2	3	4	5	NA
6. The organization can provide authentic product and services information for quick and accurate customer interaction	1	2	3	4	5	NA
7. The organization can generally predict future customers' expectations	1	2	3	4	5	NA
8. The organization promotes knowledge sharing between its employees	1	2	3	4	5	NA
9. The organization empowers employees with better resources to serve its customers	1	2	3	4	5	NA

## SECTION II

**Instructions:** This section should be filled out only if your organization has not implemented any CRM project yet. Please explain why no CRM project has been conducted yet.

---

If your organization is planning to start a CRM project, indicate the projected date? \_\_\_ Month \_\_\_ Year

Please continue to SECTION IV on the next page

## SECTION III

### CRM IMPACT

**Instructions:** Please proceed with this section if your organization has fully or partially implemented CRM. Using the following scale, please indicate how you perceive the actual benefits that your organization received through the use of CRM. Please circle the number that best represents your opinion or circle "NA" for any item that is not applicable to your situation.

Very low	Low	Medium	High	Very high	Not applicable
1	2	3	4	5	NA

1. The organization's satisfaction with
  - a. ...customer retention rate for old customers is 1 2 3 4 5 NA
  - b. ...customer retention rate for new customers is 1 2 3 4 5 NA
  - c. ...customer loyalty is 1 2 3 4 5 NA
  - d. ...market share gains in targeted customer segments is 1 2 3 4 5 NA
2. The organization's perceived customer satisfaction in terms of
  - a. ...on time delivery of products and services is 1 2 3 4 5 NA
  - b. ...innovative products and services is 1 2 3 4 5 NA
  - c. ...customized products and services is 1 2 3 4 5 NA
  - d. ...convenience to the customer is 1 2 3 4 5 NA
  - e. ...the employees' team spirit is 1 2 3 4 5 NA
3. The organization's anticipation of emerging customers' needs is 1 2 3 4 5 NA

## SECTION IV

**Instruction:** Please provide some background information for our analysis.

1. What is your job title? \_\_\_\_\_
2. How long have you held this position? \_\_\_\_\_
3. How long have you been working for this organization? \_\_\_\_\_
4. What is your organization's primary business activity?

<input type="checkbox"/> Transportation	<input type="checkbox"/> Banking or financial services
<input type="checkbox"/> Insurance or Brokerage	<input type="checkbox"/> .com
<input type="checkbox"/> Telecommunication	<input type="checkbox"/> Hardware
<input type="checkbox"/> Software	<input type="checkbox"/> Retail
<input type="checkbox"/> Entertainment	<input type="checkbox"/> Wholesale
<input type="checkbox"/> Manufacturing	<input type="checkbox"/> Services or Consulting
<input type="checkbox"/> Pharmaceutical	<input type="checkbox"/> Other (please specify) _____
5. How many employees work in your entire organization? \_\_\_\_\_
6. How many employees work in your information systems department? \_\_\_\_\_
7. What is your organization's estimated annual revenue? \_\_\_\_\_
8. What is your estimated budget for the information systems department? \_\_\_\_\_
9. What is your estimated organization's budget for CRM? \_\_\_\_\_
10. Do you find the above mentioned CRM budget adequate?     Yes     No

**Please return this questionnaire by using the attached envelope.  
Thank you for your precious cooperation!**

**If you wish to obtain a summary of the results of this survey,  
simply enclose your business card in the return envelope.**

**If you have any comments or questions, please feel free to contact us.**

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\_\_\_\_\_ This confidential number is only used for our reference.

## ÉTUDE SUR LA GESTION DES RELATIONS AVEC LA CLIENTÈLE

La gestion des relations avec la clientèle (CRM) est une stratégie d'affaires orientée vers la satisfaction et la fidélité du client et implantée pour optimiser la rentabilité et le revenu de l'entreprise. Elle vise à offrir un service plus sensible et plus adapté aux besoins du client. Le CRM est le plus couramment utilisé pour les fonctions de support et service à la clientèle, de ventes et de marketing.

### SECTION I

1. Votre entreprise a-t-elle implanté un projet(s) de CRM?  Oui  Non

Si vous avez répondu **Oui**, veuillez indiquer les fonctions où le CRM a été implanté dans votre entreprise.

Support et service à la clientèle  Ventes  Marketing

Autre \_\_\_\_\_

Quelle est la durée du projet de CRM? : \_\_\_\_\_ mois

Quel est le taux d'accomplissement du projet de CRM en pourcentage? \_\_\_\_\_ %

### AVANTAGES PERÇUS DU CRM

**Instructions:** En utilisant l'échelle suivante, veuillez indiquer dans quelle mesure vous êtes en accord avec les énoncés suivants concernant l'avantage relatif que le CRM pourrait apporter à votre entreprise avant son implantation. Veuillez encrer le chiffre qui représente le mieux votre opinion.

Fortement en désaccord	Désaccord	Neutre	Accord	Fortement en accord
1	2	3	4	5

- |  |   |   |   |   |   |
|--|---|---|---|---|---|
| 1. Le CRM augmentera la rentabilité de l'entreprise  | 1 | 2 | 3 | 4 | 5 |
| 2. Le CRM aidera l'entreprise à avoir un avantage concurrentiel  | 1 | 2 | 3 | 4 | 5 |
| 3. Le CRM aidera à diminuer les coûts opérationnels  | 1 | 2 | 3 | 4 | 5 |
| 4. Le CRM permettra à l'entreprise d'accéder à de nouveaux créneaux de clients en raison d'une meilleure compréhension des clients | 1 | 2 | 3 | 4 | 5 |
| 5. Le CRM raccourcira le   |   |   |   |   |   |
| a. ...cycle de support et service à la clientèle de l'entreprise   | 1 | 2 | 3 | 4 | 5 |
| b. ...cycle de ventes de l'entreprise  | 1 | 2 | 3 | 4 | 5 |
| c. ...cycle de marketing de l'entreprise   | 1 | 2 | 3 | 4 | 5 |
| 6. Le CRM permettra à l'entreprise de manipuler des rapports plus complexes avec le client   | 1 | 2 | 3 | 4 | 5 |
| 7. Le CRM permettra à l'entreprise d'augmenter la fidélité de client   | 1 | 2 | 3 | 4 | 5 |
| 8. Le CRM augmentera la productivité des employés de l'entreprise  | 1 | 2 | 3 | 4 | 5 |

## DISPOSITIONS DE L'ENTREPRISE

**Instructions:** En utilisant l'échelle suivante, veuillez indiquer dans quelle mesure vous êtes en accord avec les énoncés suivants concernant les ressources technologiques et le support des cadres supérieurs de votre entreprise. Veuillez encrer le chiffre qui représente le mieux votre opinion.

Fortement en désaccord	Désaccord	Neutre	Accord	Fortement en accord
1	2	3	4	5

- |  |   |   |   |   |   |
|--|---|---|---|---|---|
| 1. L'entreprise possède une bonne infrastructure informatique  | 1 | 2 | 3 | 4 | 5 |
| 2. L'entreprise possède une bonne infrastructure de télécommunications   | 1 | 2 | 3 | 4 | 5 |
| 3. Les systèmes informatiques de l'entreprise sont intégrés à travers plusieurs départements   | 1 | 2 | 3 | 4 | 5 |
| 4. L'entreprise possède l'infrastructure nécessaire pour saisir les données du client à tous les points d'interaction du client          | 1 | 2 | 3 | 4 | 5 |
| 5. L'entreprise a la capacité de consolider toutes les données du client dans une base de données centralisée                            | 1 | 2 | 3 | 4 | 5 |
| 6. Les technologies pour échanger des données sont disponibles pour permettre l'accès de données entre différents systèmes informatiques | 1 | 2 | 3 | 4 | 5 |
| 7. La haute direction contacte fréquemment le promoteur exécutif au sujet du projet CRM  | 1 | 2 | 3 | 4 | 5 |
| 8. Le CRM est considéré comme un projet de haute priorité par la haute direction de l'entreprise   | 1 | 2 | 3 | 4 | 5 |
| 9. Le promoteur exécutif est régulièrement impliqué durant le projet CRM   | 1 | 2 | 3 | 4 | 5 |
| 10. La haute direction perçoit le CRM comme faisant partie de la vision de l'entreprise  | 1 | 2 | 3 | 4 | 5 |

## GESTION DE LA CONNAISSANCE

La gestion de la connaissance est la capacité de l'entreprise de saisir, de gérer, et de partager des informations authentiques sur le client, les produits, et les services à travers l'entreprise.

**Instructions:** En utilisant l'échelle suivante, veuillez indiquer dans quelle mesure vous êtes en accord avec les énoncés suivants concernant les capacités réelles de gestion de la connaissance de votre entreprise. Veuillez encrer le chiffre qui représente le mieux votre opinion ou encrer "NA" pour tout élément non applicable à votre situation.

Fortement en désaccord	Désaccord	Neutre	Accord	Fortement en accord	Non applicable
1	2	3	4	5	NA

- |  |   |   |   |   |   |    |
|--|---|---|---|---|---|----|
| 1. L'entreprise peut fournir une réponse rapide au client à cause de la connaissance intégrée du client à travers plusieurs départements | 1 | 2 | 3 | 4 | 5 | NA |
| 2. L'entreprise peut prendre une décision rapide grâce à la disponibilité de la connaissance sur le client                               | 1 | 2 | 3 | 4 | 5 | NA |
| 3. L'entreprise peut prendre une décision rapide grâce à la précision de la connaissance sur le client                                   | 1 | 2 | 3 | 4 | 5 | NA |

- |   |   |   |   |   |   |    |
|---|---|---|---|---|---|----|
| 4. L'entreprise fait une bonne utilisation de l'expertise de ses employés   | 1 | 2 | 3 | 4 | 5 | NA |
| 5. L'entreprise peut fournir des informations authentiques sur le client en vue d'une interaction rapide et précise avec le client                    | 1 | 2 | 3 | 4 | 5 | NA |
| 6. L'entreprise peut fournir des informations authentiques sur les produits et les services en vue d'une interaction rapide et précise avec le client | 1 | 2 | 3 | 4 | 5 | NA |
| 7. L'entreprise peut prévoir les attentes futures des clients   | 1 | 2 | 3 | 4 | 5 | NA |
| 8. L'entreprise favorise le partage de connaissance entre ses employés  | 1 | 2 | 3 | 4 | 5 | NA |
| 9. L'entreprise procure aux employés des ressources pour mieux servir ses clients   | 1 | 2 | 3 | 4 | 5 | NA |

## **SECTION II**

**Instructions:** Cette section doit être complétée seulement si votre entreprise n'a pas encore implanté un projet de CRM. Veuillez expliquer pourquoi aucun projet de CRM n'a encore été effectué.

---

Veuillez indiquer la date prévue si vous projetez réaliser une implantation du CRM? \_\_\_ mois \_\_\_ année.  
Veuillez continuer à la **SECTION IV** sur la prochaine page

## **SECTION III**

### **IMPACT DU CRM**

**Instructions:** Cette section doit être complétée seulement si votre entreprise a réalisé un projet de CRM. En utilisant l'échelle suivante, veuillez indiquer dans quelle mesure vous êtes en accord avec les énoncés suivants concernant les avantages **réels** que votre entreprise a reçus en utilisant le CRM. Veuillez encircler le chiffre qui représente le mieux votre opinion ou encerclez "NA" pour tout élément non applicable à votre situation.

Très faible	Faible	Moyenne	Élevée	Très élevée	Non applicable
1	2	3	4	5	NA

- |  |   |   |   |   |   |    |
|--|---|---|---|---|---|----|
| 1. La satisfaction de l'entreprise avec                                  |   |   |   |   |   |    |
| a. ...le taux de conservation des anciens clients est                    | 1 | 2 | 3 | 4 | 5 | NA |
| b. ...le taux de conservation des nouveaux clients est                   | 1 | 2 | 3 | 4 | 5 | NA |
| c. ... la fidélité du client est   | 1 | 2 | 3 | 4 | 5 | NA |
| d. ... les gains de part du marché dans des segments visés du client est | 1 | 2 | 3 | 4 | 5 | NA |
| 2. La satisfaction du client perçue par l'entreprise en termes de        |   |   |   |   |   |    |
| a. ... livraison des produits et des services est                        | 1 | 2 | 3 | 4 | 5 | NA |
| b. ... nouveaux produits et services est                                 | 1 | 2 | 3 | 4 | 5 | NA |
| c. ... produits et services personnalisés est                            | 1 | 2 | 3 | 4 | 5 | NA |
| d. ... dispositions prises pour satisfaire ce dernier est                | 1 | 2 | 3 | 4 | 5 | NA |
| e. ... esprit d'équipe des employés est                                  | 1 | 2 | 3 | 4 | 5 | NA |
| 3. L'anticipation de l'entreprise des besoins des nouveaux clients est   | 1 | 2 | 3 | 4 | 5 | NA |

## **SECTION IV: RENSEIGNEMENTS GÉNÉRAUX**

1. Quel poste occupez-vous? \_\_\_\_\_
2. Depuis combien de temps occupez-vous ce poste? \_\_\_\_\_
3. Depuis combien de temps êtes-vous au service de cette entreprise? \_\_\_\_\_
4. Quelle est l'activité économique primaire de votre entreprise?

<input type="checkbox"/> Transport	<input type="checkbox"/> Opérations bancaires ou services financiers
<input type="checkbox"/> Assurances et courtage	<input type="checkbox"/> .com
<input type="checkbox"/> Télécommunications	<input type="checkbox"/> Matériel d'ordinateur
<input type="checkbox"/> Logiciel	<input type="checkbox"/> Ventes au détail
<input type="checkbox"/> Divertissement	<input type="checkbox"/> Ventes en gros
<input type="checkbox"/> Fabrication	<input type="checkbox"/> Services ou Consultation
<input type="checkbox"/> Pharmaceutiques	<input type="checkbox"/> Autre (indiquez s'il vous plait) _____
5. Combien d'employés travaillent au sein de votre entreprise? \_\_\_\_\_
6. Combien d'employés travaillent au sein de votre département informatique? \_\_\_\_\_
7. Quel est le revenu annuel approximatif de votre entreprise? \_\_\_\_\_
8. Quel est le budget approximatif alloué à votre département informatique? \_\_\_\_\_
9. Quel est le budget approximatif de votre entreprise alloué au CRM? \_\_\_\_\_
10. Trouvez-vous le budget pour le CRM adéquat?     Oui     Non

**Veillez retourner ce questionnaire en utilisant l'enveloppe ci-jointe.**

**Merci de votre précieuse collaboration!**

**Si vous souhaitez obtenir un sommaire exécutif des résultats de cette étude, insérez votre carte d'affaires dans l'enveloppe de retour.**

**Si vous avez des commentaires ou questions, n'hésitez pas à nous contacter.**

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\_\_\_\_\_ Ce numéro confidentiel est utilisé pour fins de référence uniquement.